Capital Regional District

625 Fisgard St.,
Victoria, BC V8W 1R7

Notice of Meeting and Meeting Agenda
Capital Regional District Board

Wednesday, October 14, 2020 | **1:10 PM** | **6th Floor Boardroom, 625 Fisgard Street, Victoria, BC**

The Capital Regional District strives to be a place where inclusion is paramount and all people are treated with dignity. We pledge to make our meetings a place where all feel welcome and respected.

1. TERRITORIAL ACKNOWLEDGEMENT

2. APPROVAL OF THE AGENDA

3. ADOPTION OF MINUTES

3.1. 20-612 Minutes of the September 9, 2020 Capital Regional District Board Meeting

Recommendation: That the minutes of the Capital Regional District Board meeting of September 9, 2020 be adopted as circulated.
(NWA)

Attachments: Minutes - September 9, 2020

4. REPORT OF THE CHAIR

5. PRESENTATIONS/DELEGATIONS

5.1 Presentations

5.1.1. 20-649 Presentation: Tseycum First Nation - Chief Tanya Jimmy: Re: Agenda Item 8.9.: First Nations Inclusion in CRD Governance

5.1.2. 20-639 Presentation: Pacheedaht First Nation - Chief Jeff Jones: Re: Agenda Item 8.17.: Comprehensive Community Development Plan Amendment Application

5.2 Delegations

5.2.1. 20-648 Delegation - Luke Mari; Representing the Pacific Gateway Marina: Re: Agenda Item 8.17.: Comprehensive Community Development Plan Amendment Application

Attachments: Delegation Submission Comments - L. Mari

5.2.2. 20-640 Delegation - Catherine Stephens; Resident of Juan de Fuca Electoral Area: Re: Agenda Item 8.5.: Hartland Traffic Study - Follow Up

Attachments: Delegation Submission Comments - C. Stephens

5.2.3. 20-641 Delegation - Dianne Twamley; Representing the Mt. Work Coalition: Re: Agenda Item 8.5.: Hartland Traffic Study - Follow Up

Attachments: Delegation Submission Comments - D. Twamley

5.2.4. 20-642 Delegation - Dan Klimke; Resident of the Juan de Fuca Electoral Area: Re: Agenda Item 8.6.: Solid Waste Management Plan - Next Steps

Attachments: Delegation Submission Comments - D. Klimke

5.2.5. 20-643 Delegation - Dylan Kos; Resident of Highlands: Re: Agenda Item 8.5.: Hartland Traffic Study - Follow Up

Attachments: Delegation Submission Comments - D. Kos

5.2.6. 20-644 Delegation - Marcie McLean; Member of the Victoria Family Court & Youth Justice Committee: Re: Agenda Item 8.13 Review of the Victoria Family Court and Youth Justice Committee

Attachments: Delegation Submission Comments - M. McLean

5.2.7. 20-646 Delegation - Daniel Kenway; Resident of the Juan de Fuca Electoral Area: Re: Agenda Item 8.6: Solid Waste Management Plan - Next Steps

Attachments: Delegation Submission Comments - D. Kenway

5.2.8. 20-647 Delegation - Jennifer Cormie; Resident of the Hartland Area: Re: Agenda Item 8.5.: Hartland Traffic Study - Follow Up

Attachments: Delegation Submission Comments - J. Cormie

6. CONSENT AGENDA

6.1. 20-492 Wastewater Treatment Project Q2 2020 Quarterly Report

Recommendation: The Core Area Liquid Waste Management Committee recommend to the Capital Regional District Board:
That this report be received for information.
(NWA)

Attachments: Staff Report: WTP Quarterly Report Q2 2020

6.2. 20-597 Wastewater Treatment Project July 2020 Monthly Report

Recommendation: The Core Area Liquid Waste Management Committee recommend to the Capital Regional District Board:
That this report be received for information.
(NWA)

Attachments: Staff Report: WTP July 2020 Monthly Report

6.3. 20-598 Wastewater Treatment Project August 2020 Monthly Report

Recommendation: The Core Area Liquid Waste Management Committee recommend to the Capital Regional District Board:
That this report be received for information.
(NWA)

Attachments: Staff Report: WTP August 2020 Monthly Report

6.4. 20-404 Bylaw No. 1465 - Livestock Kill Compensation; Alternatives for Electoral Area Participation

Recommendation: [The following motion was tabled at the September 9, 2020 Electoral Areas Committee:]
a) That staff be directed to convert the Animal Control Service created by Letters Patent to a service operated by establishing bylaw;
b) That staff be directed to separate-out the livestock kill compensation function into three separate services, one for each electoral area; and
c) That the bylaw for each livestock kill compensation service set an annual maximum at the recommendation of the applicable Electoral Area Director.
(NWA)

Attachments: Staff Report: Bylaw 1465-Livestock Kill Comp; Alternatives for EA Participation

Appendix A: Bylaw 1465 Animal Reg & Impounding Bylaw No. 1, 1986

6.5. 20-633 South Galiano Fire Society - Request for Fire Commission

Recommendation: The Electoral Area Services Committee recommends to the Capital Regional District Board:
That staff be directed to engage with the Society Board and its membership to discuss the implications and requirements of converting to commission governance, and report back to the Electoral Areas Committee if the Society wishes to proceed.
(NWA)

Attachments: Staff Report: South Galiano Fire Society - Request for Fire Commission

Appendix A: Correspondence SGVFD

6.6. 20-625 Union of British Columbia Municipalities Grant for Active Transportation - Motion of Support

Recommendation: That the Electoral Areas Committee recommends to the Capital Regional District Board: That the Board support an application to the Union of British Columbia Municipalities Active Transportation Planning Program for the Southern Gulf Islands Electoral Area to conduct community mapping of active transportation routes and direct staff to provide overall grant management.
(NWA)

Attachments: Staff Report: UBCM Grant for Active Transportation

Appendix A: CRD Internal Grant Proposal Form

6.7. 20-638 Investing in Canada Infrastructure Program (ICIP) - Rural and Northern Communities Program Grant Application: Juan de Fuca Electoral Area (Port Renfrew Water Service)

Recommendation: The Electoral Areas Committee recommends to the Capital Regional District Board:
1. That the September 9, 2020 Board resolution recommending that a grant application through the Investing in Canada Infrastructure Program - Rural and Northern Communities Program be submitted for the Wilderness Mountain Water Service project, be rescinded; and,
2. That the Board authorize staff to submit an application for grant funding for the JDF Electoral Area: Port Renfrew Water Service Supply upgrade Project through the Investing in Canada Infrastructure Program - Rural and Northern Communities Program; and that the Board supports the project and commits to its share ($50,000) of the project.
(NWA)

Attachments: Report: ICIP – Rural & Northern Comm Program Grant Application JdF EA

Appendix A: ICIP RNC Report to EAC & Board on 09-09-2020

Appendix B: ICIP Proposal JDF Port Renfrew Water Service

6.8. 20-518 Recycling Markets Update

Recommendation: The Environmental Services Committee recommends to the Capital Regional District Board:
That the Recycling Markets Update report be received for information.
(NWA)

Attachments: Staff Report: Recycling Markets Update

Appendix A: Province of BC Order in Council - June 29, 2020

6.9. 20-515 Millstream Meadows Remediation Project

Recommendation: The Environmental Services Committee recommends to the Capital Regional District Board:
That the Millstream Meadows project budget increase from $14.32M to $14.70M be incorporated into the 2021 capital plan, with the additional project budget of $0.38M funded from a combination of requisition under Bylaw No. 3519, Hartland tipping fees, provincial funding and the reserve funding from Septage Disposal service in 2021.
(WA)

Attachments: Staff Report: Millstream Meadows Remediation Project

Appendix A: Site Location Plan

Appendix B: Map - Extent of Inferred Contaminant Migration

6.10. 20-506 Community Efficiency Financing Program Grant

Recommendation: The Environmental Services Committee recommends to the Capital Regional District Board:
That approval be given to submit an application to the Federation of Canadian Municipalities Community Efficiency Financing grant program to study a regional accessible energy retrofit financing program.
(NWA)

Attachments: Staff Report: Community Efficiency Financing Program Grant

6.11. 20-578 First Nations Economic Development Partnership Model

Recommendation: That the First Nations Relations Committee recommends to the Capital Regional District Board:
That the CRD First Nation Economic Development Partnership Model Feasibility Study Report, 2020 be received for information.
(NWA)

Attachments: Staff Report: First Nations Economic Development Partnership Model

Appendix A: CRD FN Econ. Dev. Partnership Model Feasibility Study Rpt, 2020

6.12. 20-568 Michigan Redevelopment Project

Recommendation: That the Regional Housing Trust Fund (RHTF) Commission recommends to the Capital Regional District Board:
That a grant in the amount of $570,000 to the Capital Region Housing Corporation be approved to support the development of 38 units of affordable rental housing at 330 Michigan Street, Victoria, subject to meeting the terms of the RHTF Grant Funding Agreement.
(WP - All except Langford, Colwood and the JDF Electoral Area)

Attachments: Staff Report: Michigan Redevelopment Project

Appendix A: Michigan Square Application for Funding

Appendix B: Reg'l Housing Trust Fund Program Policy Guidelines

Excerpt from RHTF minutes

6.13. 20-569 2170 Charters Road

Recommendation: That the Regional Housing Trust Fund (RHTF) Commission recommends to the Capital Regional District Board:
That a grant in the amount of $330,000 to the M'akola Housing Society be approved to support the development of 22 units of affordable rental housing at 2170 Charters Road, Sooke, subject to meeting the terms of the RHTF Grant Funding Agreement.
(WP - All except Langford, Colwood and the JDF Electoral Area)

Attachments: Staff Report: 2170 Charters Road

Appendix A: Charters Application for Funding

Appendix B: Reg'l Housing Trust Fund Program Policy Guidelines

Excerpt from RHTF minutes

6.14. 20-570 2075 Drennan Street and 6418 Sooke Road

Recommendation: That the Regional Housing Trust Fund (RHTF) Commission recommends to the Capital Regional District Board:
That a grant in the amount of $765,000 to the M'akola Housing Society be approved to support the development of 51 units of affordable rental housing at 2075 Drennan Street and 6418 Sooke Road, Sooke, subject to meeting the terms of the RHTF Grant Funding Agreement.
(WP - All except Langford, Colwood and the JDF Electoral Area)

Attachments: Staff Report: 2075 Drennan Street and 6418 Sooke Road

Appendix A: Drennan and Sooke Application for Funding

Appendix B: Reg'l Housing Trust Fund Program Policy Guidelines

Excerpt from RHTF minutes

6.15. 20-571 Elk/Beaver Lake Remediation Project

Recommendation: The Regional Parks Committee recommends to the Capital Regional District Board:
1. That this report be received for information; and
2. That staff be directed to implement actions within the Elk/Beaver Lake Watershed Management Plan, as opportunities allow.
(WA)

Attachments: Staff Report: Elk/Beaver Remediation Project

Appendix A: Elk/Beaver Lake Watershed Management Plan - Sept 2020

6.16. 20-547 Regional Growth Strategy Consistency - Port Renfrew Comprehensive Community Development Plan

Recommendation: The Planning, Transportation and Protective Services Committee recommends to the Capital Regional District Board:
That proposed Bylaw No. 4096, "Comprehensive Community Development Plan for Port Renfrew, Bylaw No. 1, 2003, Amendment Bylaw No. 10, 2018" be reviewed as it relates to Bylaw No. 4017 "Capital Regional District Regional Growth Strategy Bylaw No.1, 2016" and be deemed consistent with the 2018 RGS Bylaw No. 4017.
(Voting Block A: JDF EA, Colwood, Langford*, Metchosin, Sooke)

Attachments: Staff Report: RGS Consistency-Port Renfrew Comprehensive Comm Dev Plan

Appendix A: RGS Evaluation Table – Bylaw 4096

Appendix B: Local Area Planning Staff Report to JdF LUC

Appendix B Supplementary: Amended Supplementary Report to LUC

6.17. 20-548 Regional Growth Strategy Consistency - Otter Point Official Community Plan

Recommendation: The Planning, Transportation and Protective Services Committee recommends to the Capital Regional District Board:
That proposed Bylaw No. 4317, "Otter Point Official Community Plan Bylaw, 2014, Amendment Bylaw No. 2, 2019" be reviewed as it relates to Bylaw No. 4017 "Capital Regional District Regional Growth Strategy Bylaw No.1, 2016" and be deemed consistent with the 2018 RGS Bylaw No. 4017.
(Voting Block A: JDF EA, Colwood, Langford*, Metchosin, Sooke)

Attachments: Staff Report: RGS Consistency - Otter Point OCP

Appendix A: RGS Evaluation Table – Bylaw No. 4317

Appendix B: Local Area Planning Staff Report to JdF LUC

7. ADMINISTRATION REPORTS

7.1. 20-590 CAO Quarterly Progress Report No. 3, 2020

Recommendation: That the CAO Quarterly Progress Report No. 3, 2020 be received for information.
(NWA)

Attachments: Staff Report: CAO Quarterly Progress Report No. 3 2020
Appendix A: Photographs of Corporate Activities and Initiatives
Appendix B: Board Priorities Dashboard Progress Q3,2020
Appendix C: Board Priorities Dashboard Summary of Completed Actions
Appendix D: Corporate Climate Change Initiatives
Appendix E: Advocacy Dashboard Q3, 2020
Appendix F: Operating Variance Report Q2
Appendix G: Capital Variance Report Q2
Appendix H: Human Resources Trends and Corporate Safety Q2

8. REPORTS OF COMMITTEES

Core Area Liquid Waste Management Committee

8.1. 20-577 Bylaw Nos. 4374 and 4375: Core Area Wastewater Loan Authorizations

Recommendation: The Core Area Liquid Waste Management Committee recommends to the Capital Regional District Board:
1. That Bylaw No. 4374, "Liquid Waste Management Core Area and Western Communities Service Loan Authorization Bylaw No. 1, 2020" be introduced and read a first, second, and third time;
2. That Bylaw No. 4374 be referred to the Inspector of Municipalities for approval.
3. That Bylaw No. 4375, "Liquid Waste Management Core Area and Western Communities Service Loan Authorization Bylaw No. 2, 2020" be introduced and read a first, second, and third time;
4. That Bylaw No. 4375 be referred to the municipal councils of the participants for approval, and if two-thirds of approval is received, to the Inspector of Municipalities.
(WA)

Attachments: Staff Report: Bylaw Nos. 4374 and 4375 Loan Authorizations
Appendix A: Bylaw No. 4374 Loan Authorization Bylaw No. 1
Appendix B: Bylaw No. 4375 Loan Authorization Bylaw No. 2

8.2. 20-576 Bylaw Nos. 4376, 4377, and 4378: Core Area Sewer Reserve Bylaws

Recommendation: The Core Area Liquid Waste Management Committee recommends to the Capital Regional District Board:
1. That Bylaw No. 4376, "Capital Regional District Sewer and Water Services Operating Reserve Fund Bylaw No. 1, 2016, Amendment Bylaw No. 2, 2020" be introduced and read a first, second, and third time; and
2. That Bylaw No. 4376 be adopted.
3. That Bylaw No. 4377, "Liquid Waste Management Core Area and Western Communities Service Debt Repayment Reserve Establishment Bylaw No. 1, 2020", be introduced and read a first, second, and third time; and
4. That Bylaw No. 4377 be adopted.
5. That Bylaw No. 4378, "Liquid Waste Management Core Area and Western Communities Service Capital Reserve No. 1, 2020", be introduced and read a first, second, and third time; and
6. That Bylaw No. 4378 be adopted.
(WP, 2/3rds on adoption - Colwood, Esquimalt, Langford, Oak Bay, Saanich, Victoria, View Royal)

Attachments: Staff Report: Bylaws 4376, 4377 and 4378 Reserve Establishment
Appendix A: Bylaw 4376 Sewer and Water Operating Reserve Funds
Appendix B: Bylaw 4377 Establish Debt Repayment Reserves
Appendix C: Bylaw 4378 Establish Sewer And Water Capital Reserves

Electoral Areas Committee

8.3. 20-533 Bylaw No. 4365: Tax Exemption (Permissive) Bylaw, 2020

Recommendation: The Governance and Finance Committee and the Electoral Areas Committee recommends to the Capital Regional District Board:
1. That Bylaw No. 4365, "Tax Exemption (Permissive) Bylaw, 2020" be introduced and read a first, second and third time;
2. That Bylaw No. 4365 be adopted.
(WA, 2/3rds on adoption)

Attachments: Staff Report: Bylaw 4365 Permissive Tax Exemption 2020
Appendix A: Bylaw 4365 Tax Exemption (Permissive) Bylaw 2020
Appendix B: Permissive Tax Correspondence 2020
Appendix C: BC Assessment Property Classification

8.4. 20-593 Salt Spring Island - Stormwater Quality Service Bylaw Amendment

Recommendation: The Electoral Areas Committee recommends to the Capital Regional District Board:
1. That Bylaw No. 4360, "Salt Spring Island Stormwater Quality Management Extended Service Establishment No. 1, 1996, Amendment Bylaw No. 2, 2020" be introduced and read a first, second and third time; and
2. That Bylaw 4360 be referred to the SSI Electoral Area Director for consent and upon receiving consent, be referred to the Inspector of Municipalities for approval.
(NWA)

Attachments: Staff Report: SSI - Stormwater Quality Service Bylaw Amendment
Appendix A: Bylaw No. 2454 - SSI Stormwater Quality Bylaw, 1996
Appendix B: Bylaw No. 4178 - SSI Stormwater Quality Bylaw, 2017
Appendix C: New Bylaw No. 4360, SSI Stormwater Quality Bylaw, 2020

Environmental Services Committee

8.5. 20-541 Hartland Traffic Study - Follow Up

Recommendation: The Environmental Services Committee recommends to the Capital Regional District Board:
1. That the revised Stantec Opinion of Probable Cost for the Willis Point Road truck climbing lane options and the revised Bunt & Associates Hartland Landfill Alternate Access Transportation Impact Analysis be received for information; and
2. That these materials be incorporated into future public consultation for the draft Solid Waste Management Plan.
(NWA)

Attachments: Staff Report: Hartland Traffic Study - Follow Up

Appendix A: Opinion of Probable Cost (Stantec)

Appendix B: Willis Pt Rd Truck Climbing Lane Concept Drawings (Stantec)

Appendix C: Willis Pt Rd Truck Climing Lane Options - Location Map

Appendix D: Hartland Long-term Conceptual Filling Plan

Appendix E: Transportation Impact Analysis (Bunt & Associates)

8.6. 20-531 Solid Waste Management Plan - Next Steps

Recommendation: The Environmental Services Committee recommends to the Capital Regional District Board:
1. That the waste reduction target remain at 250 kg/capita/year by 2030 but goal 1 be changed to read "To surpass the provincial per capita waste disposal target and achieve 125 kg/capita/year";
2. That the Solid Waste Advisory Committee's recommended additions be added to the draft Solid Waste Management Plan; and
3. That staff proceed with community and local government consultation on the draft Solid Waste Management Plan, including targeted stakeholder consultation with residents in the areas of Hartland Landfill, Prospect Lake, Willis Point and Highlands.
(WA)

Attachments: Staff Report: Solid Waste Management Plan - Next Steps

Appendix A: Chronology - Solid Waste Management Planning - 2011-2020

Appendix B: Draft Solid Waste Management Plan - June 2020

Appendix C: SWAC Roundtable Feedback - July 2020

Appendix D: SWAC - Presentation - August 7, 2020

8.7. 20-520 Summary Review of Waste-to-Energy Options

Recommendation: [At the September 16 2020 Environmental Services Committee, direction was given that the Esquimalt Integrated Resource Management study be placed in the report as an appendix of this item for review at the next Board meeting, and the following motion was amended:]
The Environmental Services Committee recommends to the Capital Regional District Board:
That this report be received for information.
That the staff explore the Enerkem Biofuels Facility to augment the previous CRD completed work and as a secondary option, explore the Nova Scotia Chester demonstration municipal waste processing facility.
(NWA)

Attachments: Staff Report: Summary Review of Waste-to-Energy Options

Appendix A: Background Staff Reports to CRD Committees - 2015-2018

Attachment: Esquimalt IRM Summary Report - Pivotal (August 21 2020)

Attachment: Esquimalt IRM Technical Report - Pivotol (June 29, 2020)

First Nations Relations Committee

8.8. 20-635 Presentation: First Nations Relations Mandate Refresher

Recommendation: [At the September 30, 2020 First Nations Relations Committee meeting, a motion was made directing that a presentation provided by Ms. Morley and First Nations Relations staff be provided at the October meeting of the Capital Regional District Board:]
That the presentation be received for information.
(NWA)

Attachments: Presentation: FN Relations Mandate Refresher

8.9. 20-580 First Nations Inclusion in CRD Governance

Recommendation: [The following motion was amended at the September 30, 2020 First Nations Relations Committee meeting:]
That the First Nations Relations Committee recommends to the Capital Regional District Board:
1. That Bylaw No. 4368, Capital Regional District Board Procedures Bylaw, 2012, Amendment Bylaw No. 11, 2020 be introduced and read a first, second and third time.
2. That Bylaw No. 4368 be adopted;
3. That the Terms of Reference for the First Nations Relations Committee, Governance and Finance Committee, Environmental Services Committee, Solid Waste Advisory Committee, Planning Transportation and Protective Services Committee, and Regional Parks Committee be amended to allow for First Nations Membership starting in January 2021.
4. That staff be directed to include $75,000 in the 2021 Provisional Budget to support the planned amendments to the Board Remuneration and Travel Reimbursement Policy.
5. That staff report back to the Governance and Finance committee in November with options related to closed meetings.
(NWA, 2/3rds on adoption)

Attachments: Staff Report: First Nations Inclusion in CRD Governance
Appendix A: Report to First Nations Relations Comm. Mtg. February 26, 2020
Appendix B: Model for First Nations Inclusion
Appendix C: First Nations Inclusion Chart
Appendix D: Bylaw No. 4368

Governance and Finance Committee

8.10. 20-532 2019-2022 Accountability Service Planning

Recommendation: [At the October 7, 2020, Governance and Finance Committee the following motion was referred without discussion to the Capital Regional District Board:]
That Appendix A Community Need Summary - Accountability be approved as presented and advanced to the October 28, 2020 provisional budget review process.
(NWA)

Attachments: Staff Report: 2021 Service Planning - Accountability
Appendix A: Community Need Summary - Accountability
Appendix B: Accountability - Initiatives Progress Report

8.11. 20-565 2019-2022 Arts & Culture Service Planning

Recommendation: [At the October 7, 2020 Governance and Finance Committee meeting the following motion was referred without discussion to the Capital Regional District Board:]
That Appendix A Community Need Summary - Arts & Culture be approved as presented and advanced to the October 28, 2020 provisional budget review process.
(NWA)

Attachments: Staff Report: 2021 Service Planning Arts & Culture

Appendix A: Community Need Summary Arts & Culture

Appendix B: Arts & Culture Initiatives Progress Report

8.12. 20-574 Investing in Canada Infrastructure Program (ICIP); Green Infrastructure - Climate Change Mitigation - CleanBC Communities Fund Stream

Recommendation: [At the October 7, 2020 Governance and Finance Committee meeting the following motion was referred without discussion to the Capital Regional District Board:]
That the Capital Regional District Board (the Board) authorize staff to submit an application for grant funding for the Sub-Regional Panorama Recreation Energy Recovery Project through the Investing in Canada Infrastructure Program - CleanBC Communities Fund Program; and that the Board supports the project and commits to its share ($753,427) of the project.
(NWA)

Attachments: Staff Report: Investing in Canada Infrastructure Program CleanBC

Appendix A: Panorama Recreation Energy Recovery Project

8.13. 20-599 Review of the Victoria Family Court and Youth Justice Committee

Recommendation: The Governance and Finance Committee recommends to the Capital Regional District Board:
That staff be directed to report back on the process to restructure the Committee in accordance with the recommendations set out in Appendix H.

[The following motion arising was made at the October 7, 2020 meeting of the Governance and Finance Committee:]
That the report be referred out to all member municipalities.
(NWA)

Attachments: Staff Report: Review of the Victoria Family Court & Youth Justice Committee

Appendix A: Review actions

Appendix B: Summary of legislative grant of authority

Appendix C: Sections of the Provincial Court Act, Youth Criminal Justice Act

Appendix D: Projects 2000 to 2018

Appendix E: Projects to 2020

Appendix F: Vancouver's Children, Youth & Families Advisory Committee TOR

Appendix G: Richmond Family Court Committee Terms of Reference

Appendix H: Recommendations for Restructuring Committee

8.14. 20-567 Capital Regional District External Grants Update

Recommendation: [At the October 7, 2020 Governance and Finance Committee meeting the following motion was referred without discussion to the Capital Regional District Board:]
That the Capital Regional District External Grants Update be received for information.
(NWA)

Attachments: Staff Report: CRD External Grants Update

Appendix A: CRD Grant Dashboards

Hospitals and Housing Committee

8.15. 20-586 1224 Richardson Housing Agreement and Bylaw

Recommendation: That the Hospitals and Housing Committee recommends to the Capital Regional District Board:
a) That Bylaw No. 4369, "Resale Control and Housing Agreement Bylaw (1224 Richardson Street), 2020" be introduced and read a first, second and third time; and
b) That Bylaw No. 4369 be adopted.
(WA, 2/3rds on adoption)

Attachments: Staff Report: 1224 Richardson Housing Agreement and Bylaw

Appendix A: Bylaw No. 4369

Juan de Fuca Land Use Committee

8.16. 20-600 Public Hearing Report on Bylaw No. 4316, “Juan de Fuca Land Use Bylaw, 1992, Amendment Bylaw No. 147, 2019” and Bylaw No. 4317, “Otter Point Official Community Plan Bylaw No. 1, 2014, Amendment Bylaw No. 2, 2019”

Recommendation: a) That the minutes that form the Reports of the Public Hearing for Bylaw No. 4316, "Juan de Fuca Land Use Bylaw, 1992, Amendment Bylaw No. 147, 2019" and Bylaw No. 4317, "Otter Point Official Community Plan Bylaw No. 1, 2014, Amendment Bylaw No. 2, 2019", which are certified as a fair and accurate summary of the representations that were made at the public hearings held on September 21, 2020, for Bylaw Nos. 4316 and 4317, be received; and
b) That Bylaw Nos. 4316 and 4317 be read a third time.
c) That adoption of Bylaw Nos. 4316 and 4317 be withheld pending:
i) Confirmation from a Qualified Environmental Professional that the vegetative screening requirements in the M-3 zone and the recommendations for restoration of the riparian area outlined in the Conditions and Impacts report prepared by Corvidae Environmental Consulting Inc., dated February 2020, have been implemented;
ii) Registration of a covenant on title pursuant to Section 219 of the Land Title Act in favour of the CRD requiring that the fire protection works related to the sawmill operation, described in the letter from the Otter Point Volunteer Fire Department dated January 30, 2020, be installed and conveyed to CRD prior to subdivision or further building construction.
(Voting Block A: JDF EA, Colwood, Langford*, Metchosin, Sooke)

Attachments: Staff Report: Public Hearing Report on Bylaw Nos. 4316 and 4317

Appendix A: Proposed Bylaw No. 4316

Appendix B: Proposed Bylaw No. 4317

Appendix C: Reports of the Public Hearing

8.17. 20-329 Comprehensive Community Development Plan Amendment Application for:
That Part of Section 97, Renfrew District as Shown Coloured Red on Plan 344R (PID: 009-592-342);
Lot 1, Section 97, Renfrew District, Plan EPP24972 (PID: 028-991-125);

That Part of District Lot 17, Renfrew District Shown Outlined in Red on Plan 347R (PID: 009-575-006); and
Those Parts of Block A and B, District Lot 751, Together with Unsurveyed Crown Foreshore or Land Covered by Water Being Part of the Bed of Port San Juan, All Within Renfrew District, Shown Outlined in Red on Licence V905027, Containing 3.86 Hectares, More or Less

Recommendation: [At the September 15, 2020 Juan de Fuca Land Use Committee meeting, the following motion was amended:]

That the Land Use Committee recommends to the Capital Regional District (CRD) Board:
a) That the referral of proposed Bylaw No. 4096, "Comprehensive Community Development Plan for Port Renfrew, Bylaw No. 1, 2003, Amendment Bylaw No. 13, 2020" to a Public Information Meeting in Port Renfrew, the Juan de Fuca Electoral Area Parks and Recreation Advisory Commission; CRD departments; BC Hydro; Cowichan Valley Regional District; Department of Fisheries and Oceans; District of Sooke; Island Health; Ministry of Environment and Climate Change Strategy; Ministry of Forests, Lands and Natural Resource Operations; Ministry of Transportation and Infrastructure; Pacheedaht First Nation; RCMP; Sooke School District #62 be approved and the comments received;
b) That proposed Bylaw No. 4096, "Comprehensive Community Development Plan for Port Renfrew, Bylaw No. 1, 2003, Amendment Bylaw No. 13, 2020" be introduced and read a first time and read a second time;
c) That in accordance with the provisions of Section 469 of the Local Government Act, the Director for the Juan de Fuca Electoral Area, or Alternate Director, be delegated authority to hold a public hearing with respect to Bylaw No. 4096; and
d) That prior to adoption of the bylaws, the applicant:
i. Register a covenant on the title of the lands pursuant to Section 219 of the Land Title Act in favour of the CRD securing the Archaeological Impact Assessment prepared by Duncan McLaren, PhD, dated July 31, 2018, and the geotechnical report prepared by Bruce Dagg, P.Eng., dated November 19, 2015, and require that any land alteration requiring blasting or excavation within 100 m of a sea cave be reviewed and monitored by a geotechnical engineer and monitored by a representative from the Pacheedaht;
e) That Plan Nos. 1 and 2 of Bylaw No. 4096 be amended to remove a part of Lot 1, Section 97, Renfrew District, Plan EPP24972 prior to public hearing.
(Voting Block A: JDF EA, Colwood, Langford*, Metchosin, Sooke)

Attachments:
Amended Supplementary Staff Report
Appendix A (Amended Supplementary): Correspondence-Pacheedaht FN
Appendix B (Amended Supplementary): Bylaw No. 4096
Proposed Bylaw No. 4096 - As Amended September 15, 2020
Supplementary Staff Report
Appendix A (Supplementary): Correspondence-Pacheedaht FN
Staff Report
Appendix A: Subject Property Map
Appendix B: Orthophoto Plan
Appendix C: Site Plans
Appendix D: Concept Sketch
Appendix E: Proposed Bylaw No. 4096
Appendix F: Referral Comments
Appendix G: Environmental Report
LUC Minutes Excerpt

Juan De Fuca Water Distribution Commission

8.18. 20-606 Bylaw No. 4379: Juan de Fuca Water Distribution Loan Authorization Bylaw

Recommendation: The Juan De Fuca Distribution Commission recommends to the Capital Regional District Board:
1. That Bylaw No. 4379, Juan de Fuca Water Distribution Facilities Loan Authorization Bylaw No. 5, 2020, be introduced and read a first, second, and third time;
2. That elector assent for Bylaw No. 4379 in the entire service area be obtained via alternative approval process, according to section 345 of the Local Government Act, and if successful, referred to the Inspector of Municipalities for approval.
(WA)

Attachments:
Staff Report: Bylaw 4379, JDF Water Distribution Loan Authorization
Appendix A: Bylaw 4379 JDF Water Distribution Loan Authorization

9. BYLAWS

10. NOTICE(S) OF MOTION

10.1. 20-553 Motion with Notice: CRD External Appointments (C. Plant)

Recommendation: The Governance and Finance Committee recommend to the Capital Regional District Board:
That staff report back on developing and implementing a standardized process for CRD appointments to external boards.
(NWA)

11. NEW BUSINESS

12. MOTION TO CLOSE THE MEETING

12.1. 20-617 Motion to Close the Meeting

Recommendation: 1. That the meeting be closed for Appointments in accordance with Section 90(1)(a) of the Community Charter. [2 items]
2. That the meeting be closed for Labour Relations under Section (90)(1)(c) of the Community Charter. [2 items]
3. That the meeting be closed for Land Acquisition in accordance with Section 90(1)(e) of the Community Charter; and
4. That such disclosures could reasonably be expected to harm the interests of the Regional District. [3 items]
5. That the meeting be closed for Contract Negotiations in accordance with Section (90)(1)(k) of the Community Charter; and
6. That such disclosures could reasonably be expected to harm the interests of the Regional District. [1 item]
7. That the meeting be closed under Section 21 of FOIPPA in accordance with Section 90(1)(j) of the Community Charter. [1 item]
(NWA)

13. RISE AND REPORT

14. ADJOURNMENT

Votinq Key:
NWA - Non-weighted vote of all Directors
NWP - Non-weighted vote of participants (as listed)
WA - Weighted vote of all Directors
WP - Weighted vote of participants (as listed)

Capital Regional District

625 Fisgard St.,
Victoria, BC V8W 1R7

Meeting Minutes

Capital Regional District Board

Wednesday, September 9, 2020 **1:10 PM** **6th Floor Boardroom**
625 Fisgard Street
Victoria, BC

PRESENT
Directors: C. Plant (Chair), D. Blackwell (Vice-Chair), S. Brice, B. Desjardins (EP), F. Haynes, L. Helps, M. Hicks, G. Holman, B. Mabberley (for D. Howe), B. Isitt, J. Loveday, C. McNeil-Smith, R. Martin, R. Mersereau, K. Murdoch, G. Orr, J. Ranns, D. Screech, L. Seaton, M. Tait, N. Taylor, K. Williams, R. Windsor, G. Young

Staff: R. Lapham, Chief Administrative Officer; N. Chan, Chief Financial Officer; L. Hutcheson, General Manager, Parks and Environmental Services; K. Lorette, General Manager, Planning and Protective Services; K. Morley, General Manager, Corporate Services; T. Robbins, General Manager, Integrated Water Services; M. Lagoa, Acting Deputy Corporate Officer; S. Closson, Committee Clerk (Recorder);

EP – Electronic Participation

Regrets: Director D. Howe

The meeting was called to order at 2:20 pm.

1. TERRITORIAL ACKNOWLEDGEMENT

A Territorial Acknowledgement was provided in the preceding meeting.

2. APPROVAL OF THE AGENDA

Item 6.3 is removed from the Consent Agenda and moved to be considered under Reports of Committees as Item 8.3a. Item 8.1 is removed from the agenda and tabled to the October 14, 2020 meeting.

MOVED by Director Windsor, SECONDED by Director Blackwell,
That the agenda for the September 9, 2020 Capital Regional District Board Meeting be approved as amended.
CARRIED

3. ADOPTION OF MINUTES

3.1. 20-538 Minutes of the August 12, 2020 Capital Regional District Board Meeting

MOVED by Director Seaton, SECONDED by Director Martin,
That the minutes of the Capital Regional District Board meeting of August 12, 2020 be adopted as circulated.
CARRIED

4. REPORT OF THE CHAIR

The Chair publicly thanked staff for their continued work on strategic priorities and in maintaining COVID-19 safety protocols. Further to COVID-19 safety, the Chair addressed the boardroom seating and the social distancing protocols put in place.

The Chair corrected a statement from the August Board regarding the timing of hauled aggregate from the Hartland Landfill and clarified the hauling is to occur in the future and emphasized the importance of public faith in our process and the accuracy of our communication.

It was noted the beginning of service planning in coordination with our 2021 budgeting process. There are difficult decisions ahead and expenditures must be carefully considered.

5. PRESENTATIONS/DELEGATIONS

5.1 Presentations

There were no presentations.

5.2 Delegations

5.2.1. 20-550 Delegation - Mick Collins; Representing Victoria Golden Rods and Reels Fishing and Social Club: Re: Agenda Item 7.2.: Investing in Canada Infrastructure Program (ICIP) - Community, Culture and Recreation (CCR) Program

M. Collins spoke in favour of support for grant funding for the Elk Beaver Lake Oxygenation System Project.

6. CONSENT AGENDA

MOVED by Director Windsor, SECONDED by Alternate Director Mabberley,
That consent agenda items 6.1. through 6.7. be approved with the exception of Item 6.3. (now 8.3a).
CARRIED

6.1. 20-449 Appointment of Officers

That for the purpose of Section 233 of the Local Government Act and Section 28(3) of the Offence Act and in accordance with Capital Regional District Bylaw No. 2681, Jill Bobbitt, Amy Acheson, Nolan Tytgat, Darrelle Butler, Candice Wright, Jared Saxby, Branden Cameron and Michael Murphy be appointed as Assistant Bylaw Officers.
CARRIED

6.2. 20-450 District of Highlands Sheep Kill Compensation Claim - Munn Road

That payment be approved to Mr. John Buchanan, in the amount of $225, which is 75% of the decrease in market value of the total losses.
CARRIED

6.4. 20-510 Salt Spring Island Shared Services Model - Rural Dividend Grant

That the Capital Regional District Board approve the Rural Dividend amendments and authorize staff to direct award a contract in the amount of $95,000 to the Rural Islands Economic Partnership Society to perform such other tasks as to fulfill the terms of the Rural Economic Dividend Program grant.
CARRIED

6.5. 20-530 Annual General Meetings and Nomination Procedures for Commissions

That for the balance of 2020, new appointments for local service area committees and commissions shall be done by the Board based on Electoral Area Director recommendation and not through the Annual General Meeting process, except for those committees and commissions that currently have a mail-in ballot process underway.
CARRIED

6.6. 20-464 Cancellation of the Consent Process for Bylaw Nos. 4299 and 4300

That the CRD Board not proceed with Bylaw No. 4299, Royal Theatre Local Service Area Establishment Bylaw No. 1, 1988, Amendment Bylaw No. 1, 2019; and Bylaw No. 4300, McPherson Playhouse Local Service Area Establishment Bylaw No. 1, 1999, Amendment Bylaw No. 1, 2019.
CARRIED

6.7. 20-463 Motion with Notice: Youth Engagement Opportunities within the Capital Regional District (Directors Taylor, Orr, Helps)

That staff be directed to explore new youth engagement opportunities within the CRD, including consideration of collaboration with secondary and post-secondary education institutions and municipalities.
CARRIED

7. ADMINISTRATION REPORTS

7.1. 20-395 Solid Waste Management Plan - Traffic Impact Analysis

L. Hutchinson spoke to the Solid Waste Management Plan - Traffic Impact Analysis.

MOVED by Director Blackwell, SECONDED by Director Seaton,
That staff report back through the Environmental Services Committee on the additional consultation plan for the residents of Willis Point, Highlands, and the Hartland Area.
CARRIED

7.2. 20-481 Investing in Canada Infrastructure Program (ICIP) - Community, Culture, and Recreation (CCR) Program

N. Chan spoke to Investing in Canada Infrastructure Program (ICIP) - Community, Culture and Recreation Program grant application.

Discussion ensued on the following:

- Electoral Areas option to submit grant applications independently
- grant adjudication process
- alignment of funding agreements

MOVED by Director Blackwell, SECONDED by Director Seaton,
That the Capital Regional District Board (the Board) authorize staff to submit an application for grant funding for Regional: Elk Beaver Lake Oxygenation System Project through the Investing in Canada Infrastructure Program - Community, Culture, and Recreation Program; and that the Board supports the project and commits to its share ($700,000) of the project.

Director Windsor challenged whether the Chair be sustained in his ruling against a Point of Order.
SUSTAINED
Opposed: Windsor

MOVED by Director McNeil-Smith, SECONDED by Director Windsor,
That the motion be amended to include Item 3 from Alternative 2 of the staff report:
That the Capital Regional District Board (the Board) authorize staff to submit an application for grant funding for the Salt Spring Island: Fernwood Elementary School Athletic Field Upgrades Project through the Investing in Canada Infrastructure Program – Community, Culture and Recreation Program; and that the Board supports the project and commits to its share ($250,000) of the project.
CARRIED

MOVED by Director Blackwell, SECONDED by Director Seaton,
1. That the Capital Regional District Board (the Board) authorize staff to submit an application for grant funding for Regional: Elk Beaver Lake Oxygenation System Project through the Investing in Canada Infrastructure Program - Community, Culture, and Recreation Program; and that the Board supports the project and commits to its share ($700,000) of the project.
2. That the Capital Regional District Board (the Board) authorize staff to submit an application for grant funding for the Salt Spring Island: Fernwood Elementary School Athletic Field Upgrades Project through the Investing in Canada Infrastructure Program – Community, Culture and Recreation Program; and that the Board supports the project and commits to its share ($250,000) of the project.
CARRIED

MOVED by Director Blackwell, SECONDED by Director Hicks,
Refer the issue of how we adjudicate and put forward funding applications to the Governance and Finance Committee and write a letter to provincial and federal ministries that electoral areas should have the same opportunity as municipalities.
CARRIED

8. REPORTS OF COMMITTEES

Electoral Areas Committee

8.1. 20-404 Bylaw No. 1465 - Livestock Kill Compensation; Alternatives for Electoral Area Participation

This item was postponed to the October 14, 2020 meeting at the Approval of the Agenda.

8.2. 20-507 Parcel Tax Bylaw No. 4363 - Magic Lake Estates Wastewater System Upgrade

MOVED by Alternate Director Mabberley, SECONDED by Director Hicks,
That Bylaw No. 4363, "Magic Lake Estates Wastewater System Parcel Tax Roll Bylaw No. 1, 2020, A Bylaw to Authorize the Preparation of a Parcel Tax Roll for the Magic Lake Estates Wastewater System Upgrade" be introduced and read a first, second and third time;
CARRIED

MOVED by Alternate Director Mabberley, SECONDED by Director Hicks,
That Bylaw No. 4363 be adopted.
CARRIED

8.3. 20-535 Investing in Canada Infrastructure Program (ICIP) - Rural and Northern Communities (RNC) Program

This recommendation was amended at the Electoral Areas Committee meeting.

MOVED by Director Hicks, SECONDED by Alternate Director Mabberley,
That the Capital Regional District submit applications for three proposals, as endorsed in the following resolutions:
1. That the Capital Regional District Board (the Board) authorize staff to submit an application for grant funding for the SSI: Maliview WWTP Upgrading Project through the Investing in Canada Infrastructure Program – Rural and Northern Communities Program; and that the Board supports the project and commits to its share ($230,000) of the project; and
2. That the Capital Regional District Board (the Board) authorize staff to submit an application for grant funding for the JDF: Wilderness Mountain Water System Upgrades Project through the Investing in Canada Infrastructure Program – Rural and Northern Communities Program; and that the Board supports the project and commits to its share ($50,000) of the project; and
4. That the Capital Regional District Board (the Board) authorize staff to submit an application for grant funding for the SGI: Lyall Harbour Boot Cove Water System Upgrades through the Investing in Canada Infrastructure Program – Rural and Northern Communities Program; and that the Board supports the project and commits to its share ($50,000) of the project.
CARRIED

8.3a. 20-378 Request for a Review and Update of Bylaw No. 3780: Notice of Motion from Commissioner St-Pierre

MOVED by Director Hicks, SECONDED by Director Holman,
BE IT RESOLVED That the Regional Water Supply Commission recommends that the Electoral Area Services Committee recommends to the CRD Board:
That staff be requested to review the building bylaw with respect to onsite water collection to align with the CSA B805-18 Canadian National Rainwater Harvesting Standard and report back.
CARRIED

Governance and Finance Committee

8.4. 20-505 Bylaw No. 4366: 2020 to 2024 Financial Plan Bylaw, 2020, Amendment Bylaw No. 3, 2020

MOVED by Director Brice, SECONDED by Director Windsor,
That Bylaw No. 4366, "2020 to 2024 Financial Plan Bylaw, 2020, Amendment Bylaw No. 3, 2020" be introduced and read a first, second, and third time.
CARRIED

MOVED by Director Brice, SECONDED by Director Windsor,
That Bylaw No. 4366 be adopted.
CARRIED

9. BYLAWS

9.1. 20-536 Bylaw 4362 - Proposed Amendment to Bylaw 4029, Sooke and Electoral Area Recreation and Facilities Service Establishment Bylaw No. 1, 2016

MOVED by Director Tait, SECONDED by Director Hicks,
That Bylaw No. 4362 be adopted.
CARRIED

10. NOTICE(S) OF MOTION

10.1. 20-034 Motion with Notice: Kings Road - Director Holman

MOVED by Director Holman, SECONDED by Director Haynes,
That the motion be postponed until the April 14, 2021 meeting.
CARRIED

11. NEW BUSINESS

There was no new business.

12. MOTION TO CLOSE THE MEETING

12.1. 20-543 Motion to Close the Meeting

MOVED by Director Blackwell, SECONDED by Director Helps,
That the meeting be closed for Land Acquisition in accordance with Section 90(1)(e) of the Community Charter.
CARRIED

MOVED by Director Blackwell, SECONDED by Director Helps,
That such disclosures could reasonably be expected to harm the interests of the Regional District.
CARRIED

MOVED by Director Blackwell, SECONDED by Director Helps,
That the meeting be closed for Appointments in accordance with Section 90(1)(a) of the Community Charter.
CARRIED

MOVED by Director Blackwell, SECONDED by Director Helps,

That the meeting be closed under Section 21 of FOIPPA in accordance with Section 90(1)(j) of the Community Charter.
CARRIED

The Capital Regional District Board moved into closed session at 3:18 pm.

13. RISE AND REPORT

The Capital Regional District rose from closed session at 5:08 pm and reported on the following item:

3.1 Appointments to CRD Committees and Commissions
In accordance with Bylaw No. 3561, that the following person be appointed to the Pender Islands Parks and Recreation Commission for a term to start September 10, 2020 and expire December 31, 2021: Benjamin McConchie

14. ADJOURNMENT

MOVED by Director Helps, SECONDED by Director Murdoch,
That the September 9, 2020 Capital Regional District Board meeting be adjourned at 5:08 pm.
CARRIED

_____

CHAIR

CERTIFIED CORRECT:

_____

CORPORATE OFFICER

Sherri Closson

From: Legserv
Subject: FW: Addressing the Board - Submission

Your name::
Luke Mari

I represent::
Pacific Gateway Marina

Municipality/Electoral Area in which you reside::
Victoria

I wish to address::
Capital Regional District Board

Meeting Date::
October 14, 2020

Agenda Item::
RZ000242 Pacific Gateway Marina Rezoning

My reason(s) for appearing (is/are) and the substance of my presentation is as follows::
To present to the CRD Board the project details and key events in our dialogue with the Pacheedaht First Nation regarding the rezoning of the Pacific Gateway Marina in Port Renfrew.

Sherri Closson

From: Legserv
Subject: FW: Addressing the Board - Submission

Your name::
Catherine Stephens

I represent::

Municipality/Electoral Area in which you reside::
Juan de Fuca E.A.

I wish to address::
Capital Regional District Board

Meeting Date::
Oct 14, 2020, 1:10pm

Agenda Item::
8.5 Hartland Traffic Study Follow Up

My reason(s) for appearing (is/are) and the substance of my presentation is as follows::
Staff report EFE20-43 puts forward several "operational" reasons for moving access from Hartland Avenue to Willis Point Road. These reasons are based on the filling plan which, instead of filling from the furthest point from the existing access road (Cell 6), in fact started closest to the existing access,(Cell 3) The argument now is that in order to access the next areas to be filled, which are further away from Hartland Avenue, it is necessary to create a new access point in the NW corner of the Landfill, using Willis Point Road, thus bypassing Cell 3. Either this is very bad planning or it has been the hidden intention all along to shift the access point, without informing or consulting the public. In fact infrastructure to move the access, such as design of weighing stations, apparently started a number of years ago.

Has a decision already been made to shift the access point? If so, when was this made and what is the point of "consulting" the public. If it has not been made, then it is incumbent on the Board to consider the negative environmental impacts of changing access, and explore alternatives within the Landfill to access Cells 5 and 6 using existing roads within the site. Despite the list of reasons staff has produced to justify their plan to shift access, alternatives are feasible that will avoid the safety, environmental and congestion issues that will arise if access is shifted to Willis Point Road. Hartland has the funds, the engineering expertise and the aggregate onsite to achieve this. The Board should direct staff to produce an alternate plan. This is more than justified by the outcome which is to preserve Willis Point Road as the gateway to our parks and minimize environmental impact.

Sherri Closson

From: Legserv
Subject: FW: Addressing the Board - Submission

Your name::
Dianne Twamley

I represent::
Mt. Work Coalition

Municipality/Electoral Area in which you reside::
Central Saanich

I wish to address::
~~Arts Commission~~ Capital Regional District Board

Meeting Date::
October 14, 2020

Agenda Item::
Increase of truck traffic on Willis Point Rd because of changes at Hartland Dump.

My reason(s) for appearing (is/are) and the substance of my presentation is as follows::
Resident of Willis Point and member of Mt Work Coalition.

Willis Point Rd was built as a residential road to avoid Heals Range not to be an industrial road. Heavy increase in truck traffic because of suggested changes becomes a safety issue for all those who use the road.

The plans to increase the dump by 73 acres causes many problems with endangered wildlife, park usage and daily commutes by residents.

Sherri Closson

From: Legserv
Subject: FW: Addressing the Board - Submission

Your name::
Dan Klimke

Municipality/Electoral Area in which you reside::
Juan de Fuca E.A.

I wish to address::
Capital Regional District Board

Meeting Date::
Oct 14, 2020, 1:10pm

Agenda Item::
20-531 (8.6)

My reason(s) for appearing (is/are) and the substance of my presentation is as follows::
While the more aggressive waste reduction target of 125kg/capita/yr is laudable, the proposed solid waste management plan is essentially "more of the same". My concern, and points I wish to address, is that this approach is not addressing significant environmental and social/community risks.

Sherri Closson

From: Legserv
Subject: FW: Addressing the Board - Submission

Your name::
Dylan Kos

Municipality/Electoral Area in which you reside::
Highlands

I wish to address::
Capital Regional District Board

Meeting Date::
Oct 14, 2020, 1:10pm

Agenda Item::
Hartland Expansion

My reason(s) for appearing (is/are) and the substance of my presentation is as follows::
I am a resident in the Willis Point area, and I am concerned with the prospect of a massive expansion of the Hartland Landfill that will in doubtedly have various adverse effects to the surrounding natural environment .

I will have a PowerPoint or video presentation and will submit it at least 24 hours in advance of the meeting.:
No

Sherri Closson

From: Legserv
Subject: FW: Addressing the Board - Submission

Your name::
Marcie McLean

I represent::
a member of Victoria Family Court & Youth Justice Committee

Municipality/Electoral Area in which you reside::
Highlands

I wish to address::
Capital Regional District Board

Meeting Date::
October 14, 2020

Agenda Item::
8.13 Review of Victoria Family Court & Youth Justice Committee

My reason(s) for appearing (is/are) and the substance of my presentation is as follows::
I wish to address the Board regarding matters pertaining to the Review of the Committee and additional information pertaining to the CRD staff report.

Sherri Closson

From: Legserv
Subject: FW: Addressing the Board - Submission

Your name::
Daniel Kenway

Municipality/Electoral Area in which you reside::
Juan de Fuca E.A.

I wish to address::
Capital Regional District Board

Meeting Date::
~~Nov 18, 2020~~, October 14 1:10pm

Agenda Item::
8.6 Solid Waste Management Plan – Next Steps

My reason(s) for appearing (is/are) and the substance of my presentation is as follows::
Questions and Concerns about the consultation process regarding Hartland Lifetime Extension

I will have a PowerPoint or video presentation and will submit it at least 24 hours in advance of the meeting.:
Yes

Sherri Closson

From: Legserv
Subject: FW: Addressing the Board - Submission

Your name::
Jennifer Cormie

Municipality/Electoral Area in which you reside::
Juan de Fuca E.A.

I wish to address::
Capital Regional District Board

Meeting Date::
Oct 14, 2020, 1:10pm

Agenda Item::
8.5

My reason(s) for appearing (is/are) and the substance of my presentation is as follows::
Concern that the decision to move the entrance of Hartland Landfill has been made without recognition of the impact it has on recreational park users, cyclists and residents and that traffic studies do not reflect the inherent dangers of trucks on Willis Point Road.

Item 7.1

Wastewater Treatment Project
Treated for a cleaner future

REPORT TO CORE AREA WASTEWATER TREATMENT PROJECT BOARD
MEETING OF THURSDAY, JULY 30, 2020

SUBJECT **Wastewater Treatment Project Q2 2020 Quarterly Report**

ISSUE

To provide the Core Area Wastewater Treatment Project Board with the Wastewater Treatment Project Q2 2020 Quarterly Report Report.

BACKGROUND

On May 25, 2016 the Regional Board of the CRD:

i) Adopted by resolution the Core Area Wastewater Treatment Project Board Terms of Reference (Project Board Terms of Reference) for the purposes of establishing principles governing the Core Area Wastewater Treatment Project (the Wastewater Treatment Project or the WTP);
ii) Established the Core Area Wastewater Treatment Project Board (Project Board) under Bylaw 4109 (the CRD Core Area Wastewater Treatment Board Bylaw No. 1, 2016) for the purposes of administering the Core Area Wastewater Treatment Project; and
iii) Delegated certain of its powers, duties and functions to the Project Board under Bylaw 4110 (the CRD Core Area Wastewater Treatment Project Board Delegation Bylaw No. 1, 2016).

On September 14, 2016 the Regional Board of the CRD:

i) Received the final report of the Project Board with respect to its recommendation for the CAWTP, dated September 7, 2016 (the Final Report); and
ii) Approved the business case attached as Appendix 1 (the Business Case) to the Final Report.

DISCUSSION

The Core Area Wastewater Treatment Project Board (the Project Board) Terms of Reference requires, amongst other things: that the Project Board provide the CRD Board with monthly progress reports and a comprehensive quarterly report on the Project.

The Quarterly report for the period of April-June 2020 is attached as Appendix A.

RECOMMENDATION

That the Core Area Wastewater Treatment Project Board approve the following resolution:

RESOLVED that:

The Staff Report, 'Wastewater Treatment Project Q2 2020 Quarterly Report', be received for information and forwarded to the Core Area Liquid Waste Management Committee and CRD Board for information.



Elizabeth Scott, Deputy Project Director
Wastewater Treatment Project



Dave Clancy, Project Director
Wastewater Treatment Project
Concurrence

Attachments: 1

Appendix A: Wastewater Treatment Project Q2 2020 Quarterly Report

ES:er

Wastewater Treatment Project
Treated for a cleaner future

CRD Wastewater Treatment Project

Q2 2020 Quarterly Report

Reporting Period: April-June 2020

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1 Executive Summary

1.1 Introduction

This Quarterly Report covers the reporting period of April to June 2020 and outlines the progress made on the Wastewater Treatment Project over this time.

The Wastewater Treatment Project (the "Project") includes three main Project Components (the "Project Components"): the McLoughlin Point Wastewater Treatment Plant (the "McLoughlin Point WWTP"), the Residuals Treatment Facility (the "RTF") and the Conveyance System (which includes upgrades to the conveyance network including the construction of pump stations and pipes). The Project scope is being delivered through a number of contracts with a variety of contracting strategies.

Over the reporting period the COVID-19 public health emergency continued to have impacts on the Project. The Project Team and Project contractors are actively monitoring the status of the COVID-19 public health emergency and are taking additional precautions to protect our staff, contractors, and the public. Construction is ongoing at all of the Project's sites in accordance with guidelines established by the Provincial Health Officer.

While construction is ongoing, the public health emergency is impacting construction progress and may delay some interim project milestones, such as the transition to commissioning. However, based on current progress the Wastewater Treatment Project remains on schedule to meet the regulatory deadline for treatment by the end of 2020.

The McLoughlin Point WWTP Project Component is continuing with Harbour Resource Partners ("HRP" as the Design-Build contractor for the McLoughlin Point WWTP) progressing: Densadeg 1, 2 and 3 installation and hand over for commissioning; installation of the chemical distribution system; building envelopes in the Primary treatment area; moving bed bio reactor (MBBR) process equipment installation and covers; Biological Aerated Filter (BAF) equipment and tank covers in the Secondary treatment area; installation of disk filter walls; level 1 and 2 pumps, process piping and mechanical piping installation in the Tertiary treatment area; interior drywall, flooring and millwork, plumbing, glazing, and heating ventilation and air conditioning (HVAC) on level 1 and 2; and installation of the green roof in the Operations and Maintenance (O&M) building. In addition the blind was removed from the outfall and fiberglass reinforced plastic (FRP) baffles installed; and the main water service was installed and backfill progressed across the site.

The RTF Project Component is continuing with Hartland Resource Management Group ("HRMG" as the Design-Build-Finance-Operate-Maintain contractor for the RTF) progressing construction activities including: external pipe connections to Digester 1, and the Digested Solids Storage Tank (DSST); pneumatic testing of Digesters 2 and 3; electrical cable installation and terminations in the Other Municipal Solids Receiving Facility; electrical work, FRP grating and ducting installation and commencement of commissioning of systems in the Residuals Handling building; mechanical, electrical and insulation installations completed and commencement of commissioning of systems in the Residuals Drying Facility; hydro testing of water storage and effluent tanks; chemical piping installation; installation of FRP ducting in the Residuals Storage and Odour Control area; and fire alarm verification commenced in the Operations Building.

The Conveyance System is being delivered through seven construction contracts: two design-build contracts and five design-bid-build contracts.

The two design-build Conveyance System contracts progressed over the reporting period as follows:

- Clover Point Pump Station: Kenaidan Contracting Limited ("Kenaidan" as the Design-Build Contractor) progressed construction activities over the reporting period including: installation of new sanitary screens in the existing inlet sanitary channel; demolition of existing pump room and HVAC and electrical equipment on existing mezzanine floor; new pump station in operation under interim operating phase; forcemain successfully testing and backfilled; works at the new public plaza and washroom; installed fuel storage tank and exhaust fan for diesel generator; grit separation equipment installation; installation of seismic upgrades, fuelling system and diesel generator; and installation of landscape retaining walls and concrete seating.

- Macaulay Point Pump Station: Kenaidan Contracting Limited ("Kenaidan" as the Design-Build Contractor) progressed construction activities over the reporting period including: installation of wood siding panels, recycle water system and genset fuel tanks; installation of FRP platform, ducting and stairs; commencing commissioning of the programmable logic control and motor control centres; completed installation and pressure testing of the process piping in the pump room; completed commissioning of reclaimed water system, sewage pumps, odour control system and flow control valve; and completed HVAC functional test.

The design-bid-build Conveyance System contracts progressed over the reporting period, as follows:

- Clover Forcemain: Windley Contracting Ltd. ("Windley" as the Construction Contractor) continued construction activities including: cycle track and road restoration; commencing construction on the seawall balustrade replacement; poured new concrete wall; removal of existing wall; and commenced grading and cement pours for new sidewalk.

- Residual Solids Conveyance Line ("RSCL"): the RSCL is being delivered through two construction contracts, with work progressing as follows:

    - Residual Solids Pipes: Don Mann Excavating Ltd. ("Don Mann" as the Construction Contractor) continued construction activities over the reporting period, including: installation of valve chambers; completing pipe installation and pressure testing section from the north side of Tillicum Bridge to the south side of Admirals Bridge; completed air valve chamber on Grange Road; clean up and demobilization; and final surface restorations.

    - Residual Solids Pump Stations: Knappett Projects Inc. ("Knappett" as the Construction Contractor) continued construction activities including: pipe spools and electrical work at all three pump stations; installation of odour control units at all three pump stations; odour control unit underground vent and drain piping, commenced south pipe tie in and general backfill of the site at Pump Station 1; odour control slab was poured; installation of the surge tank and commencement

of commissioning activities at Pump Station 2; pressure testing and finishing items continued within the wet well and valve chamber; generator tested and commissioning activities carried out at Pump Station 3; and the Marigold crossing was completed with spool installation continuing and vent piping and trenching completed. Additionally, at Tillicum Bridge, the pipe spools were installed and the pipe was completed and pressure tested; and the pipe hangers and spools were installed at Admirals Bridge.

- Arbutus Attenuation Tank ("AAT"): NAC Constructors Ltd. (as the Construction Contractor) continued construction activities including: completed installation of secant piles, commenced formwork and rebar installation in preparation for concrete pours for sections of the ring beam; installed ducting from BC Hydro Pole to BC Hydro meter base; completed bulk excavation of the tank; and placed granular subbase spanning the full tank area.

- Trent Forcemain: Jacob Bros. Construction Inc. (as the Construction Contractor) progressed construction activities including: completion of storm sewer relocation on Bushby Street and Fairfield Road; completion of seawall investigation works; and completion of Fairfield Road watermain relocation; completed forcemain installation on Stannard Avenue; concrete flow through chamber stripped and backfilled; completed Eberts Street gravity main; and continued Fairfield Road forcemain installation.

1.2 Dashboard

Table 1 indicates the high level status of the Project and each Project Component with regards to the six Key Performance Indicators ("KPI") that were defined within the Project Charter.

There were no changes made to the KPIs over the reporting period.

The safety KPI for the Project and the conveyance system remains yellow. Over the quarterly reporting period six recordable safety incidents occurred and the total recordable incident frequency increased from 1.2 at the end of the first quarter of 2020 to 1.6. Over the reporting period the Project Team noted a trend in the number of safety incidents involving hand injuries. In April the Project Team sent a safety notice to all Contractors regarding hand injuries in the workplace, and in May sent a further e-mail noting the high incident of hand injuries, in order to draw contractors' attention to the trend, with the aim of increasing vigilance and correcting the trend. The Project Team continues to work with and ensure that all of the prime contractor partners maintain safety as their number one priority. The Project Team is also actively monitoring the status of the COVID-19 public health emergency and is taking additional precautions to protect our staff, contractors, and the public. The BC Government has designated construction as an essential service, and issued guidelines for construction sites to minimize the risks of COVID-19 transmission or illness. All Project contractors have implemented additional precautions to ensure the health and safety of their workers. These measures follow the direction set by the BC Government, including emphasizing the importance of maintaining social distance, increasing handwashing stations, reducing in-person meetings and increasing cleaning of common areas. The Project Team will continue to monitor contractors' compliance with the direction of the government as the situation evolves.

The schedule KPI for the Project overall and the Project components remains green. The COVID-19 public health emergency is impacting construction progress and may delay some interim project milestones, such as the transition to commissioning. However, construction is ongoing at all of the Project's sites, in accordance with provincial guidelines, and based on current progress the Wastewater Treatment Project remains on schedule to meet the regulatory deadline for treatment by the end of 2020.

The cost KPI for the Project overall and the conveyance system remained red over the reporting period, and are expected to remain red for the duration of the Project, primarily as a result of inflation in the Vancouver Island construction market. Other factors that have contributed to budget pressures include: design development to incorporate stakeholder input; geotechnical considerations including removal and disposal of contaminated material; and schedule constraints associated with the requirement to provide wastewater treatment by the regulatory deadline of December 31, 2020.

Based on the value of the contracts awarded to-date and the refreshed cost estimate for the scope remaining to be procured, the Project Team forecast the cost to complete the Project at $775M, or $10M over the Project's control budget. In May 2019 the CRD Board approved an increase in the Project's budget by $10M to $775M.

Subsequent to May 2019 the Project Team have continued to manage risks and there have been two main opposing budget drivers:

i) The Project's financing costs to-date have been lower than budgeted for two reasons: firstly as a result of low interest rates since the start of the Project, and secondly due to the receipt of funding from the provincial government earlier than forecast; and

ii) The Project's construction costs may be higher than budgeted as many contractors have advised that there are cost impacts from the COVID-19 public health emergency. Impacts include labour availability, work modifications to comply with provincial guidelines, and delays to the delivery of equipment and supplies.

It is too early to determine the cost impact to the Project, but if construction continues at the current pace the Project Team remain confident that the Project cost will be within the Project's $775M budget.

Table 1- Executive Summary Dashboard

Key Performance Indicators		Project Overall	WWTP	RTF	Conveyance System	Comments
Safety	Deliver the Project safely with zero fatalities and a total recordable incident frequency (TRIF) of no more than 1*.					Six recordable incidents occurred over the period. Site inspections are ongoing. The Project Team is actively monitoring the status of the COVID-19 public health emergency and is taking additional precautions to protect our staff, contractors, and the public. All Project contractors have implemented additional precautions to ensure the health and safety of their workers. The Project Team will continue to monitor and follow the direction of the government during this evolving situation.
Environment	Protect the environment by meeting all legislated environmental requirements and optimizing opportunities for resource recovery and greenhouse gas reduction.					Three minor environmental incidents occurred over the reporting period. Two were unplanned discharges from the Clover Point short outfall which triggered the CRD's Overflow Response Procedure. One was a small (<1 litre) release of gasoline that was cleaned up immediately.
Regulatory Requirements	Deliver the Project such that the Core Area complies with provincial and federal wastewater regulations.					No regulatory issues.
Stakeholders	Continue to build and maintain positive relationships with First Nations, local governments, communities, and other stakeholders.					Engagement activities were ongoing over the reporting period. Significant efforts were made to provide accurate and timely information to stakeholders.
Schedule	Deliver the Project by December 31, 2020.					The COVID-19 public health emergency is impacting construction progress and may delay some interim project milestones, such as the transition to commissioning. The Wastewater Treatment Project has made significant progress and currently remains on schedule to meet the regulatory deadline for treatment by the end of 2020.
Cost	Deliver the Project within the Control Budget ($765 million).					Based on the value of the contracts awarded to-date and a refreshed cost estimate for the scope remaining to be procured, the Project Team has forecast the cost to complete the Project at $775M, or $10M over the Project's Control Budget. This is primarily as a result of inflation in the Vancouver Island construction market. Other factors that have contributed to budget pressures include: design development to incorporate stakeholder input; geotechnical considerations including removal and disposal of contaminated material; and schedule constraints associated with the requirement to provide wastewater treatment by the regulatory deadline of December 31, 2020. The CRD Board have approved an increase in the Project's budget by $10M, to $775M. Many contractors have advised that there are cost impacts from the COVID-19 public health emergency. It is too early to determine the cost impact to the Project, but if construction continues at the current pace the Project Team remain confident that the Project cost will be within the Project's $775M budget, as a result of offsetting savings in financing costs.

* A TRIF of no more than 1 means that there is 1 or fewer recordable incidents (being a work-related injury or illness that requires medical treatment beyond first aid or causes death, days away from work, restricted work or transfer to another job, or loss of consciousness) for every 200,000 person-hours of work	
Status	Description
	KPI unlikely to be met
	KPI at risk unless correction action is taken
	KPI at risk but corrective action has been identified/is being implemented
	Good progress against KPI

2 Wastewater Treatment Project Progress

2.1 Safety

Safety information for the reporting period and cumulative for the Project from January 1, 2017 is summarized in Table 3.

The Project Team is actively monitoring the status of the COVID-19 public health emergency and is taking additional precautions to protect our staff, contractors, and the public. The BC Government has designated construction as an essential service, and issued guidelines for construction sites to minimize the risks of COVID-19 transmission or illness.

All Project contractors have implemented additional precautions to ensure the health and safety of their workers. These measures follow the direction set by the BC Government, including emphasizing the importance of maintaining social distance, increasing handwashing stations, reducing in-person meetings and increasing cleaning of common areas. The Project Team will continue to monitor contractors' compliance with the direction of the government during this evolving situation.

Site safety tours and weekly safety inspections were carried out by Project Management Office ("PMO") construction and safety personnel over the reporting period at all active worksites: McLoughlin Point WWTP, RTF, Macaulay Point Pump Station, Clover Point Pump Station, Clover Forcemain, Residual Solids Pipes, Residual Solids Pump Stations; Arbutus Attenuation Tank and Trent Forcemain.

Over the reporting period (April- June 2020) 42 safety incidents occurred, comprising: five medical aid recordable, one near-miss, twelve first-aid, one lost time recordable, and twenty-three report-only incidents, as summarized in Table 2.

Table 2: Safety Incidents over the Reporting Period

Date	Work Site	Incident Type	Description	Outcome	Corrective Action Taken
April 3, 2020	Residual Solids Pump Stations	First Aid	A worker stepped backwards and fell approximately 6 feet into an excavation. Worker stopped their fall causing them to injure their wrist.	Employee was assessed and treated on scene and put on Modified Duty. No further medical attention was required.	Tool-box talk reminding workers to be aware of their surroundings and their proximity to the work area was held.

Date	Work Site	Incident Type	Description	Outcome	Corrective Action Taken
April 6, 2020	McLoughlin Pt WWTP	First Aid	Worker was removing wire wheel from grinder when a wire poked through palm of their welding glove.	Worker notified Supervisor and reported to First Aid. No further medical treatment was required.	Tool-box talk held to remind workers to check their grinder for any possible hazards and that puncture resistant gloves must be worn when using a grinder.
April 7, 2020	Residual Solids Pump Stations	First Aid	A worker while chipping concrete had concrete dust enter their eye. Worker was wearing eye protection at the time.	Workers eye was flushed and they returned to work.	Toolbox talk reviewing the appropriate eye and face protection to be used for tasks that generate a significant amount of dust was held.
April 7, 2020	McLoughlin Pt WWTP	First Aid	Worker's wrench slipped pinching their hand between two surfaces.	Worker reported to First Aid to have the injury attended to. No further medical aid was needed.	Tool-box talk with workers was held to discuss the proper use of wrenches while loosening or tightening and keeping hands safe from being pinched in the event of slippage.
April 7, 2020	McLoughlin Pt WWTP	First Aid	Worker sustained a foot injury while stacking plywood. Worker was wearing appropriate footwear.	Worker was assessed by First Aid with no treatment provided and returned to work	Worker reminded to use proper lifting techniques and obtain assistance with awkward tasks.
April 11, 2020	Residual Solids Pipes	Report Only	Inspector observed an excavator operator hoisting a worker out of an excavation greater than 3 meters.	Meeting between Senior members of the Project Team and the contractor was held to review the incident and enforce that unsafe practices will not be tolerated.	Tool-box talk with the crew to reinforce safe work practices was held. Seriousness of the issue was clearly presented to the crew by the Contractors senior management.
April 13, 2020	Residual Solids Pump Stations	Report Only	The contractor discovered that some of their equipment at the Willis Point road lay down had been vandalized.	Incident reported to Police	Contractor reviewed their security at the laydown area and removed some of their equipment from the site.
April 15, 2020	McLoughlin Pt WWTP	Report Only	Workers while lifting felt some discomfort in their back. Worker continued to work but later reported it to their Supervisor	Worker was taken to First Aid and reported the incident and returned to work.	Tool-box talk on proper lifting techniques was held.
April 16, 2020	Clover Point Pump Station	Medical Aid Recordable	Worker was assisting with lowering a section of pipe and sustained a hand injury.	Worker was sent for a Medical Assessment. Worker fractured a knuckle and was put on modified duty.	Tool-Box talk on awareness of your surroundings and fully understanding the task at hand and properly assessing the risks prior to undertaking the task was held.
April 17, 2020	McLoughlin Pt WWTP	Medical Aid Recordable	Worker adjusting forks on the telehandler sustained a serious hand injury.	Worker was sent to Medical Aid and received 16 stitches and placed on Modified duty	Tool-Box talk on awareness of your surroundings and fully understanding the task at hand and properly assessing the risks prior to undertaking the task was held.

Date	Work Site	Incident Type	Description	Outcome	Corrective Action Taken
April 20, 2020	RTF	Report Only	A pressure test of digester 2 caused some of the bolts holding the roof sheets to pull through the panels.	Test was immediately stopped and tank depressurized. No workers were in the area during the pressure test.	Control zone was appropriate for the test. Issue with Digester 2 is under review.
April 22, 2020	McLoughlin Pt WWTP	Report Only	Worker's hand slipped while installing mechanical flange resulting in them over extending their elbow.	Worker reported incident to First Aid and returned to work.	Tool-box talk with crew on proper body positioning and securing the grip on a wrench to prevent slippage.
April 22, 2020	McLoughlin Pt WWTP	Report Only	Worker while lifting strained their back.	Worker reported incident to First Aid and returned to work.	Tool-box talk reviewing proper lifting methods and the use of mechanical lifting devices when moving heavy or awkward equipment was held.
April 23, 2020	Residual Solids Pump Stations	Report Only	An altercation between a TCP and a driver occurred at the intersection of Violet and Interurban.	Police were called to investigate the incident. No injuries were reported.	TCP asked to record license numbers of problematic drivers and to report them to their supervisor for follow up.
April 24, 2020	Residual Solids Pipes	Medical Aid Recordable	A worker sustained a hand injury from a hand grinder. The worker was wearing gloves at the time of the incident.	Worker was sent for a Medical Assessment and received 3 stitches	A tool-box talk reviewing the Safe Work Practice for the use of small hand tools was held. Also included in the talk was a review of the use of the correct gloves for the task.
April 28, 2020	Arbutus Attenuation Tank	Report Only	A worker while stepping down from a platform flexed their knee.	Worker reported to First Aid Attendant for assessment and returned to work.	Workers reminded in Tool-Box talk to be aware of their surroundings and to have platforms or other type of set-ups in place to aid in getting on and off platforms.
April 29, 2020	McLoughlin Pt WWTP	First Aid	Worker slipped engaging his safety harness causing them to strike their back on the edge of a plate settlers.	Worker reported to First Aid Attendant for assessment and returned to work.	Tool-box talk to ensure workers are aware of proper placement of their safety equipment and to always be aware of their surroundings.
April 30, 2020	McLoughlin Pt WWTP	First Aid	While guiding a pipe into position a worker overextended their wrist.	Workers wrist was assessed by First Aid and worker put on Modified Duties for the rest of the day	Tool-Box talk on proper assessments of work areas and proper lifting techniques was held.
May 1, 2020	Residual Solids Pump Stations	Lost Time Recordable	A worker sustained a hand injury when they lost their balance and crushed their finger between the handle of a cabinet and the steel cabinet.	Worker was sent to First Aid for assessment. An X-rays confirmed a fracture of the finger.	Tool-box talk held with crews to bring attention to the increase of hand injuries. They also reviewed the need for Hazard Assessments before starting work and in this case a working platform was recommended and installed.

Date	Work Site	Incident Type	Description	Outcome	Corrective Action Taken
May 5, 2020	Residual Solids Pump Stations	First Aid	Worker sustained a minor hand injury while trimming a piece of wood.	Worker reported to first aid where the laceration was cleaned and bandaged. No further follow up was required.	Tool-box talk to remind workers to wear the appropriate rated gloves for task was conducted.
May 6, 2020	McLoughlin Pt WWTP	First Aid	A Worker sustained a minor hand injury when they grabbed the end of a piece of pipe. Worker was wearing gloves at time of incident.	Worker reported to first aid where the laceration was cleaned and bandaged. No further follow up was required.	Tool-box talk to remind workers to wear the appropriate rated gloves for task was conducted.
May 11, 2020	Residual Solids Pipes	Medical Aid Recordable	A worker sustained a hand injury by striking their finger with a sledge hammer.	Worker reported to First Aid and was sent for x-rays. X-ray confirmed that the finger was fractured.	Tool-box talk with workers to remind them to focus on task and understand the hazards with the work being undertaken was conducted.
May 12, 2020	Residual Solids Pump Stations	Report Only	Worker was pulling a cable and experienced shoulder pain.	Worker reported to First Aid where they were evaluated with no follow up required.	Worker reminded to use good ergonomic practices and to perform stretching prior to any awkward task.
May 13, 2020	Residual Solids Pipes	Report Only	A worker over torqued a steel bolt on a pipe coupler causing it to break.	The pipe was under pressure and released water into the work area. No one was hurt in incident.	Tool-box talk reminding workers to be aware of the task at hand. Along with the proper use of small hand tools.
May 19, 2020	Clover Point Pump Station	Report Only	A member of the public disregarded notices indicating that Clover Point is a construction worksite and opened the construction gate.	A worker still on site inform the driver this was a construction site and they were trespassing. The driver accelerated around the worker and in doing so struck the workers hand with their mirror. The worker reported to First Aid and no further follow up was required.	The incident was reported to Police. A tool box talk reviewing the process of deescalating situations with members of the public was conducted.
May 20, 2020	Trent Forcemain	Report Only	A gas line was damaged by material sloughing into the excavation.	All equipment was immediately shut down and the area evacuated. Fortis was called and repaired the gas line.	A tool-box talk reviewing means and methods in securing the slope in an excavation was conducted.
May 21, 2020	Trent Forcemain	Report Only	While excavating a phone line was damaged interrupting the service to a nearby residence.	Locates were arranged prior to digging. Phone cable was not highlighted.	Phone Company attended site and repaired the service.
May 26, 2020	Residual Solids Pump Stations	Report Only	An inspector while descending using precast ladder rungs in a manhole fell approximately 1m.	One of the ladder rungs dislodged causing him to fall backwards striking his lower back against a pipe support. He reported to a medical facility to be evaluated with no treatment provided.	Safety Notice was issued to all Prime Contractors in regards to incident. All contractors were instructed to inspect ladder rungs in pre-cast manholes. No other issues were reported from any of the sites.
May 29, 2020	Arbutus Attenuation Tank	Report Only	A worker rolled their ankle on an uneven surface.	Worker reported incident to First Aid Attendant on site with no further treatment provided	Tool-box talk to discuss ensuring awareness of the work area and identification of hazards was conducted.

Date	Work Site	Incident Type	Description	Outcome	Corrective Action Taken
May 29, 2020	Residual Solids Pump Stations	Report Only	Worker was using a torque wrench on the bolts of a flange when the wrench slipped striking the worker in the face.	Worker received 2 chipped front teeth. Worker was assessed by First Aid Attendant and instructed to see a dentist to evaluate damaged teeth.	Tool-box talk to discuss proper body positioning when using handheld tools was conducted.
June 3, 2020	Trent Forcemain	Report Only	An excavator struck a gas utility.	Work was stopped, area evacuated and Fortis BC informed and came out to repair the line.	Tool-box talk to review the utilities checklist was held with the crew.
June 4, 2020	Residual Solids Pump Stations	First Aid	A worker while working on a panel had it topple onto them.	Worker reported to first aid. They sustained some minor scrapes but was not seriously injured. No follow up first aid was required.	Tool-box talk to remind workers to know the task at hand and get help when performing awkward tasks.
June 15, 2020	Residual Solids Pump Stations	Medical Aid Recordable	A worker lost a front tooth when struck in the face by a lifting hook that fell from a shelf.	Worker was treated at a dentist office and returned to full duties the following day.	Tool-box talk was held with workers to remind them that a hazard assessment must be performed prior to the work to identify all hazards.
June 15, 2020	McLoughlin Pt WWTP	First Aid	A worker while terminating wire felt material enter their eye. Glasses were being worn at the time.	Worker reported to first aid and had it flushed out. No further first aid treatment was required.	Workers reminded to ensure face shield and glasses are clean prior to tilting or removing.
June 16, 2020	McLoughlin Pt WWTP	First Aid	Worker put on safety glasses in the morning and felt something in their left eye.	Glasses were in workers vest pocket overnight and possibly had dust or debris on them.	Reminder in Daily News Letter for workers to clean their glasses before use.
June 18, 2020	McLoughlin Pt WWTP	Report Only	Office worker noticed a small fire coming from an ashtray in the designated smoking area.	Garbage had been put in the ashtray which caught on fire. Fire was extinguished immediately, no injuries sustained.	Reminder in company Daily News Letter to refrain from using the ashtrays for garbage.
June 18, 2020	McLoughlin Pt WWTP	Report Only	While grinding a worker felt material in their eye. Safety glasses and face shield was being used at the time.	Worker reported to first aid and had it flushed out. No further first aid treatment was required.	Workers reminded to ensure face shield and glasses are clean prior to tilting or removing.
June 18, 2020	McLoughlin Pt WWTP	Near Miss	A ladder used to access a scaffold shifted while a worker was descending.	No injuries were sustain by the worker.	Site inspection of all scaffolding was performed to ensure ladders were secured.
June 24, 2020	Residuals Treatment Facility	Report Only	Arial Work Platform struck and damaged exterior building panels.	No injuries sustained however minor property damage occurred.	Tool-box talk to discuss the use of spotters when backing or moving equipment in restricted areas.
June 24, 2020	Residuals Treatment Facility	Report Only	Telehandler Operator struck light standard with outrigger.	Outrigger had been left down while they were backing up to reposition the equipment.	Tool-box talk to discuss the use of spotters when backing or moving equipment in restricted areas was held.
June 26, 2020	Residual Solids Pump Stations	Report Only	An employee while reversing their truck struck a parked vehicle.	No injuries to any workers however damage to parked vehicle occurred.	Tool-box talk regarding use of a spotter when backing vehicles or equipment with limited visibility was held.
June 28, 2020	Residuals Treatment Facility	Report Only	Worker while lifting sustained a back injury.	Worker continued with their duties but pain worsened and reported to First Aid. Worker was put on Modified Duty.	Tool-box talk in regards to good ergonomic practices and proper lifting and bending techniques was held.

Key safety activities conducted during April included:

- bi-weekly project update meetings with prime contractors: Kenaidan, Windley, Don Mann, HRP, Knappett, Jacob Bros and NAC;
- weekly project update meetings with prime contractor: HRMG;
- monthly incident investigation reviews;
- hosted prime contractor safety coordination meeting with Project Contractors' safety representatives;
- reviewed site specific safety plans and high risk tasks;
- WTP Safety Manager and/or Construction Manager conducting regular site inspections at all active Project work sites with a focus on reviewing compliance with the BC Government's guidelines for construction sites to minimise the risks of COVID-19 transmission or illness;
- developed COVID-19 Project Sites Special Requirements Checklist for CRD staff, Compliance Inspectors and Guests;
- developed COVID 19 Prime Contractor Safety Challenge; and
- sent out safety notices: hand injuries in the workplace and wind warning.

Key safety activities conducted during May included:

- bi-weekly project update meetings with prime contractors: Kenaidan, Windley, Don Mann, HRP, Knappett, Jacob Bros and NAC;
- weekly project update meeting with prime contractor: HRMG;
- monthly Incident Investigation reviews;
- hosted Prime Contractor Safety Coordination Meeting with Project safety representatives;
- reviewed site specific safety plans and high risk tasks;
- WTP Safety Manager and/or Construction Manager conducting regular site inspections at all active Project work sites;
- compliance checks of COVID-19 Safe Work Plans of our Prime Contractors; and
- safety email sent out to inform Prime Contractors of high incidents "hand injuries" on the Project.

Key safety activities conducted during June included:

- bi-weekly project update meetings with prime contractors: Kenaidan, Windley, Don Mann, HRP, Knappett, Jacob Bros and NAC;
- weekly project update meetings with prime contractor: HRMG;
- monthly Incident Investigation reviews;
- reviewed site specific safety plans and high risk tasks;
- WTP Safety Manager and/or Construction Manager conducting regular site inspections at all active Project work sites; and
- prepare CAWTP office for Return to Work of employees working from home due to COVID-19.

Table 3: WTP Safety Information

	Reporting Period (Q2 2020)	Project Totals
Person Hours		
PMO	10,704	148,732
Project Contractor	299,843	1,972,599
Total Person Hours	310,547	2,121,331
PMO	30	
Project Contractors (& Project Consultants) working on Project Sites	580	
Total Number of Employees	610	
Near Miss Reports	1	46
High Potential Near Miss Reports	0	6
Report Only	23	165
First Aid	12	58
Medical Aid	5	10
Medical Aid (Modified Duty)	0	2
Lost Time	1	5
Total Recordable Incidents	6	17
		Project Frequency (from January 1, 2017)
First Aid Frequency		5.4
Medical Aid Frequency		1.1
Lost time Frequency		0.5
Total Recordable Incident Frequency		1.6

2.2 Environment and Regulatory Management

Environmental and regulatory activities continued over the reporting period relating to both the planning and permitting of upcoming work and the execution of current work.

2.2.1 Environment

Environmental work progressed as planned over the reporting period. The focus was on environmental monitoring of construction activities and planning for upcoming riparian work.

Key environmental management activities completed in April included:

- Kenaidan completed work at Clover Point Pump Station that required screened wastewater to be discharged out of the short outfall. As discharges from the short outfall may pose a health risk to people entering the waters along the affected shorelines (being those between Radcliffe Lane and Dock St including Gonzales Bay, Ross Bay, Clover Point, Holland Point and Ogden Point in Victoria and Harling Point, McNeill Bay and McMicking Point in Oak Bay), the CRD implemented its Overflow Response Procedure during the work. This involved posting public health advisory signs and closing nearby beaches to swimming and then completing water quality sampling prior to opening them up again. The work was completed

successfully and beaches were reopened following two rounds of sampling that showed water quality to be below the recreational limit.

Key environmental management activities completed in May included:

- The CRD, District of Saanich and Knappett met at the Colquitz River crossing site to discuss plans for riparian restoration and tree replacement; and
- The CRD, Parsons, Don Mann and their environmental consultant McElhanney met at the site of a culvert replacement on the Interurban Trail. The purpose of the visit was to discuss upcoming in-stream work to facilitate fish passage through the culvert.

Key environmental management activities completed in June included:

- Don Mann and their environmental consultant McElhanney completed in-stream work at the site of a culvert replacement on Interurban Trail. The in-stream work involved removing barriers to fish passage at the outlet of the culvert.

Over the reporting period, there were three minor environmental incidents:

- Overnight on May 6th, there was an unplanned discharge at Clover Point Pump Station when flows were diverted to the short outfall channel as a result of an electrical fault. The CRD's overflow response procedure was implemented: the CRD posted public health advisory signs and closed nearby beaches to swimming for approximately 36 hours.
- Overnight on May 29th, there was an unplanned discharge at Clover Point Pump Station when flows were diverted to the short outfall channel as a result of loss of power to the screens. The CRD's overflow response procedure was implemented: the CRD posted public health advisory signs and closed nearby beaches to swimming for approximately 5.5 days.
- On June 15th, Jacob Brothers experienced a minor spill of gasoline from a jerry can. The amount of the spill was less than one litre and was therefore not reportable. The spill was cleaned up with absorbent pads which were then disposed of at an appropriate facility. There was no environmental impact from the spill.

2.2.2 Regulatory Management

During the reporting period, the Project Team continued to monitor the advancement of the remaining construction-related regulatory approvals and supported or led the advancement of permit applications.

Key permitting activities for April included:

- On April 15th, the CRD placed an Environmental Protection Notice in two newspapers (the Times Colonist and Saanich News) providing a notice of intent regarding the issuance of an Operational Certificate for the Residuals Treatment Facility. In accordance with the Public Notification Regulation, the Environmental Protection Notice stated where on the CRD's website a copy of the draft Operational Certificate was posted, and how comments on the draft could be provided;
- The CRD and HRMG met with the BC Ministry of Environment and Climate Change Strategy (ENV) to review the draft Operational Certificate for the Residuals Treatment Facility;
- The CRD and HRP provided additional material to ENV in support of the MWR Registration;

- Kenaidan (as the Design-Build Contractor for the Macaulay Point Pump Station) applied to ENV for a Bypass Authorization to allow discharge from the short outfall at Macaulay Point Pump Station for a limited period during tie-in activities;
  HRP and their sub-consultants submitted an application for a Certificate of Compliance for the McLoughlin Point WWTP site. The Certificate of Compliance is a Provincial legal instrument that demonstrates that a contaminated site has been remediated to regulated standards; and
- Stantec (as the Trent Forcemain archaeological consultant) submitted an application to the Provincial Archaeology Branch to alter two recently discovered archaeological sites along Dallas Road and the adjacent seawall. The archaeological sites were discovered during pre-construction investigations.

Key permitting activities for May included:

- ENV issued an Operational Certificate to the CRD that authorizes air emissions from the Residuals Treatment Facility; and
- The CRD met with ENV to review and provide feedback on the draft MWR Registration letter.

Key permitting activities for June included:

- ENV issued the MWR Registration to the CRD, authorizing discharges from the McLoughlin Point WWTP outfall; and
- The CRD met with Environment and Climate Change Canada to discuss the federal process for registering the McLoughlin Point WWTP.

The status of key Project permits are summarized in Table 4. The table is not a list of all required Project permits, but rather a summary of the status of key Project permits. There were two changes made from the table presented in the Project's Q1 2020 Quarterly Report: receipt of the MWR Registration and Operational Certificate.

Table 4- Key Permits Status

Permit/Licence	*Anticipated Date*	*Status*	*Party Responsible for Obtaining Perming*
McLoughlin Point WWTP			
Municipal Wastewater Regulation ("MWR") Registration	Q2 2020	Received	CRD
McLoughlin Point Harbour Crossing			
Transport Canada Lease	Following completion of construction	On track	HRP
McLoughlin Point Outfall			
Transport Canada Lease	Following completion of construction	On track	HRP
Residuals Treatment Facility			
Operational Certificate	Prior to start of RTF operations	Received	HRMG

2.3 First Nations

First Nations communication and engagement was ongoing over the reporting period. Meetings with the Esquimalt and Songhees' liaisons continued, as did meetings with the W̱SÁNEĆ Leadership Council's (WLC) liaison. The meetings are a forum for covering both Project-related issues with the potential to impact First Nations, as well as an opportunity for broader discussion of CRD-related issues.

Key Activities in April included:

- the CRD shared information with the Songhees, Esquimalt and WLC liaisons about the Macaulay Point Pump Station Bypass Authorization and Trent Forcemain Site Alteration Permit applications (see Section 2.2) that will be referred by the Province to their respective Nations.

Key activities in May included:

- the CRD and the Esquimalt and Songhees liaisons continued to develop content for interpretive signs for installation at Clover Point, Macaulay Point and Mcloughlin Point.

Key activities in June included:

- the CRD and WLC liaison discussed the potential to organise an opportunity for archaeological artifacts recovered during construction to be reviewed with community members.

2.4 Stakeholder Engagement

The Project maintained its ongoing two-way Communications and Engagement Plan to provide Project information to stakeholders, communities and the public and to respond to public inquiries. The key focus of the communications and engagement activities over the period was to keep residents and stakeholders informed of Project plans, progress and construction information, and to receive and respond to questions and concerns raised by the community. A variety of communications tools and engagement activities were utilized to support the implementation of the plan, including stakeholder meetings, Project website updates and notifications of construction through notices and a public inquiry program, among other methods.

April Overview

Four construction notices were issued to stakeholders in the reporting period:

- Overnight Work: Fairfield Watermain Shut-off (April 3, 2020) (Appendix A);
- Trent Forcemain: Bushby and Eberts Streets (April 14, 2020) (Appendix B);
- Clover Point Pump Station Overnight Work (April 15, 2020) (Appendix C); and
- Temporary Overnight Work: Marigold Road (April 17, 2020) (Appendix D).

Construction notices were hand delivered in the community: the Overnight Work notice in Fairfield (distributed to 56 residences); Trent Forcemain notice (117 residences in the Fairfield area); Clover Point notice (57 residences near the Pump Station); and the Marigold Road construction notice (44 residences). In addition, as part of ongoing construction communications, residents affected by localized, temporary disruptions, such as driveway or water impacts, were notified by hand-delivery of notices. The Residual Solids Conveyance Line: Gorge Bridge construction notice (Appendix E) was reposted with updated construction dates.

Three public service announcements were distributed to local media and posted online as an alert.

- Core Area Wastewater Discharge Notice (April 14, 2020) (Appendix F);
- Update: Core Area Wastewater Discharge Notice (April 17, 2020) (Appendix G); and
- Beaches Reopen Following Core Area Wastewater Discharge (April 24, 2020) (Appendix H).

Over the month of April, the Project website, wastewaterproject.ca, was updated with information about the Project. Four construction notices were posted and the photo gallery section was updated with additional photos. A map showing the progress of construction along the Residual Solids Conveyance Line (Appendix I) was updated.

The CRD's Twitter account was used to provide Project information to the public, including notifications about the temporary pedestrian lane on the Gorge Bridge, closures on Interurban Road on the long weekend, and screened wastewater being discharged out of the short outfall at the Clover Point Pump Station.

Two alerts were added, and resolved once complete, to indicate the Interurban Road closure and the wastewater discharge at Clover Point.

Over the reporting period the Project Team held meetings with the following community groups and representatives, and municipality representatives:

- City of Victoria staff;
- City of Victoria Technical Working Group; and
- Township of Esquimalt Liaison Committee.

May Overview

One construction notice was issued to stakeholders in the reporting period:

- Trent Forcemain: Water Service Shutdown Notice Update (May 11, 2020) (Appendix J)

The Trent Forcemain notice was hand delivered to 190 residences in the Fairfield area. As well, as part of ongoing construction communications, residents affected by localized, temporary disruptions, such as driveway or water impacts, were notified by hand delivery of notices.
Two public service announcements were distributed to local media and posted online as an alert.

- Core Area Wastewater Discharge Notice (May 7, 2020) (Appendix K); and
- Core Area Wastewater Discharge Notice (May 30, 2020) (Appendix L).

Over the month of May, the Project website, wastewaterproject.ca, was updated with information about the Project. One construction notice and two public service announcements were posted. A map showing the progress of construction along the Residual Solids Conveyance Line (Appendix M) was updated.

The CRD's Twitter account was used to provide Project information to the public, including updates about wastewater discharge at the Clover Point Pump Station.

Two alerts were posted regarding the wastewater discharge at Clover Point following the CRD's response protocol.

Over the reporting period the Project Team held meetings with the following community groups and representatives, and municipality representatives:

- City of Victoria staff;
- City of Victoria Technical Working Group;
- District of Saanich Technical Working Group;
- PISCES (Portage Inlet Sanctuary Colquitz Estuary Society); and
- Township of Esquimalt Liaison Committee.

June Overview

One construction notice was issued to stakeholders in the reporting period:

- Trent Forcemain: Fairfield Road Closure (June 12, 2020) (Appendix N)

The notice was hand delivered to 75 residences along the closure and detour route.

Project Update #9 (Appendix O) was distributed in June. The update provided an overview of construction progress, work completed, activities underway, and what to expect for the rest of the year. This document was posted to the Project website, CRD Twitter and Facebook accounts, and distributed by email to more than 730 residents and stakeholders who have signed up to receive Project updates.

One public service announcement was distributed to local media and posted online as an alert:

- Core Area Wastewater Discharge Notice at Macaulay Point (June 22, 2020) (Appendix P)

Over the month of June, the Project website, wastewaterproject.ca, was updated with information about the Project. One construction notice and Project Update #9 were posted. A map showing the progress of construction along the Residual Solids Conveyance Line (Appendix Q) was updated.

The CRD's Twitter account was used to provide Project information to the public, including: updates about wastewater discharges at the Macaulay Point Pump Station; traffic advisories for the work on the Trent Forcemain; a notification that Project Update #9 was available; and to share a story that CHEK News aired about the Project. The CRD's Facebook account was also used to notify that Project Update #9 was available.

One alert was added and resolved for the wastewater discharge at Macaulay Point following the CRD's response protocol.

Over the reporting period, the Project Team held meetings with the following community groups and representatives, and municipality representatives:

- City of Victoria Technical Working Group;
- District of Saanich Technical Working Group;
- Greater Victoria Harbour Authority; and
- Township of Esquimalt Liaison Committee.

Public Inquiries

Public inquiry numbers from the Project email address and 24/7 information phone line (1 844 815-6132) are noted in Table 5.

Table 5 – Project Inquiries- Q2 2020

Inquiry Source	Contacts for Q2 2020
Information phone line inquiries	79
Email inquiries responded to	32

Key themes of the public inquiries were as follows:

- questions regarding overnight work for the Trent Forcemain;
- interest in finding out when the Project and restoration will be complete;
- questions regarding the wastewater discharge at the Clover Point Pump Station;
- interest in work on Grange Road;
- questions regarding water shut-off for the Trent Forcemain;
- questions regarding when specific construction pieces will take place; and
- interest in landscaping for various parts of the Project.

2.5 Resolutions from Other Governments

There were no resolutions related to the Project passed by other governments during the reporting period.

2.6 Schedule

Progress over the reporting period is summarized in Section 2.9.

Figure 1 shows the high-level Project schedule. This schedule has changed from that shown in the Q1 2020 Quarterly Report with updates made to reflect construction progress.

Over the reporting period the COVID-19 public health emergency continued to have impacts on the Project. Specifically, the COVID-19 public health emergency is impacting construction progress and may delay some interim project milestones, such as the transition to commissioning. However, construction is ongoing at all of the Project's sites, in accordance with provincial guidelines, and based on current progress the Wastewater Treatment Project remains on schedule to meet the provincial and federal regulations for treatment for the Core Area's wastewater by December 31, 2020.

Figure 1- High-Level Project Schedule



2.6.1 30 day look ahead

Key activities and milestones for the next 30 days (July) are outlined below by function.

Safety

- COVID-19 Safety Orientation for office employees returning to work;
- CRD corporate occupational health and safety coordination committee meeting;
- site safety tour with Corporate CRD OHS Manager;
- weekly and bi-weekly prime contractor progress meetings;
- host Prime Contractor Safety Coordination Meeting with Project safety representatives;
- review of any site specific safety plans or high risk tasks;
- send out any new Safety Notices or Incident Notifications to Prime Contractor;
- WTP Safety Manager and/or Construction Manager will conduct regular site inspections at all active Project work sites;
- incident reporting review with prime contractors at active work locations; and
- issue safety notices for trending observations or similar incidents occurring on project sites.

Environment and Regulatory Management

- CRD to register the McLoughlin Point WWTP under the federal Wastewater Systems Effluent Regulation;
- CRD Source Control department to issue a Waste Discharge Authorization to HRMG, allowing discharge of effluent to the return pipe; and
- CRD to submit application for Final Classification of the McLoughlin Point WWTP from the Environmental Operators Certification Program.

First Nations

- The CRD and First Nation liaisons to continue planning an opportunity for archaeological artifacts recovered during construction to be reviewed with the community members.

Stakeholder Engagement

- ongoing construction communications with stakeholders; and
- ongoing community liaison meetings.

Cost Management and Forecast

- prepare cost reports;
- monitor schedule;
- prepare CRD WTP annual budget; and
- submit funding claims to Infrastructure Canada (under the Building Canada Fund and Green Infrastructure Fund).

Construction

McLoughlin Point

- primary treatment and outfall ready for wastewater;
- complete backfill of tsunami and planter walls;
- construct road structure;
- commence landscaping;
- continue building envelope throughout;

- continue process mechanical and electrical throughout;
- install cabinetry and millwork in Operations &Maintenance (O&M) building;
- complete fire sprinkler system in O&M building;
- complete accessory installation in offices, control room and restrooms;
- complete system walk downs; and
- continue functional and wet testing.

Clover Point Pump Station

- complete construction of existing pumping station upgrades;
- continue landscaping;
- complete construction public washroom;
- install coating for floor, walls and ceilings in screen/degritter room, wet well access room and odour control screen room;
- complete electrical works;
- commence functional and operational testing of equipment; and
- install split stone to exterior retaining walls.

Macaulay Point Pump Station

- install slide gate;
- install fire stopping and smoke seals;
- install stainless steel door hardware;
- apply paint and sealants throughout;
- install washroom accessories and partitions; and
- install green roof system.

Residuals Treatment Facility

- continue functional start-up, wet testing and initial system verification;
- complete insulation at Digester #2;
- continue insulation at Digester #3;
- hydrotest Digested Solids Storage Tank;
- complete blower equipment installation at the Digester Building;
- installation of receiving bin at Other Municipal Solids Receiving Facility;
- continue testing and commissioning activities at the Residuals Handling Building;
- pour concrete deck at loadout assembly and commence testing and commissioning activities at the Dryer Building;
- complete Biogas Conditioning System;
- complete instrumentation work at Equalization Building;
- commence testing of fire pump at the Water Pump House;
- conduct testing of Odour Control System; and
- continue site grading and retention ponds.

Clover Forcemain

- form and pour new seawall;
- install new seawall railings;
- install new modified curbs;
- install new sidewalks;
- install new bollards; and
- complete Dallas Road surface works.

Residual Solids Pump Stations

- continue construction in pump stations, including completion of equipment installation, electrical and site works;
- conduct interim commissioning with water in pump stations;
- complete construction and start of commissioning in Marigold control valve chamber;
- complete Residual Solids Forcemain and Centrate Return Line tie-in, test and commissioning; and
- complete installation of Admiral Bridge pipe and pressure testing.

Arbutus Attenuation Tank (AAT)

- complete installation of rock anchors;
- form, rebar and install floor drains and piping in slab;
- commence installation of sumps and commence installation of fiberglass reinforced plastic (FRP) one sided walls;
- complete installation of temporary power for site in coordination with BC Hydro; and
- complete installation of water service for site in coordination with District of Saanich.

Trent Forcemain

- complete installation of forcemain in Fairfield Rd;
- install new forcemain in Memorial Crescent;
- install new sanitary sewer main in Bushby Street;
- install new forcemain in Brooke Street; and
- supply and install blowdown assembly with manhole frame & cover in Fairfield Road, Stannard Ave and Memorial Crescent.

2.6.2 60 day look ahead

Key activities and milestones for the next 60 days (August) are outlined below by function.

Safety

- CRD corporate occupational health and safety coordination committee meeting;
- host Prime Contractor Safety Coordination Meeting with Project safety representatives;
- weekly and bi-weekly prime contractor progress meetings;
- review of any site specific safety plans or high risk tasks;
- review prime contractor document submissions;
- issue safety notices for trending observations or similar incidents occurring on project sites;
- WTP Safety Manager and/or Construction Manager will conduct regular site inspections at all active Project work sites; and
- incident reporting review with prime contractors at active work locations.

First Nations

- CRD to continue meeting with First Nation liaisons.

Stakeholder Engagement

- ongoing construction communications with stakeholders; and
- ongoing community liaison meetings.

Cost Management and Forecast

- prepare cost reports;
- monitor schedule;
- finalize CRD WTP annual budget; and
- submit funding claims to Infrastructure Canada (under the Building Canada Fund and Green Infrastructure Fund).

Construction

McLoughlin Point

- construct site road structures;
- complete landscaping including green roof;
- install plumbing fixtures;
- install electrical finishes, fire sprinkler finishes and ceiling tiles O&M Level 1; and
- continue with functional, wet testing and commissioning.

Clover Point Pump Station

- form, pour and strip north retaining wall and buttresses;
- paint generator and fuel storage walls;
- install split stone to exterior retaining walls;
- form, pour and strip landscape retaining walls at public plaza lookout level;
- install doors and hardware to existing pump station; and
- touch-up and final painting.

Macaulay Point Pump Station

- install outdoor site furnishings;
- commence demolition of existing structure;
- install manhole and slide gate for 1350mm pipe replacement; and
- install green roof system.

Residuals Treatment Facility

- continue functional start-up, wet testing and initial system verification;
- commence process commissioning with residual solids;
- install membrane roof on Digested Solids Storage Tank;
- complete Digester Building construction;
- installation of weather cover at Other Municipal Solids Receiving Facility;
- continue testing and commissioning activities at the Residuals Handling Building;
- complete truck load-out assembly and continue testing and commissioning activities at the Dryer Building;
- complete Equalization Building construction;
- complete Water Pump House;
- complete testing of Odour Control System; and
- continue site grading, roads, and retention ponds.

Clover Forcemain

- complete road and cycle track from Lewis St to Dock St;
- complete installation of new railings along seawall; and
- commence paving of Dallas Road from Lewis St to Dock St.

Residual Solids Pipes

- Peers Creek Culvert and supporting utility replacement.

Residual Solids Pump Stations

- Pump Station 3, final grading; fence installation and landscaping; and
- Pump Station 2, final grading, fence installation and landscaping.

Arbutus Attenuation Tank (AAT)

- install valve chamber piping;
- install fibreglass reinforced plastic (FRP) slab and wall panels; and
- install floor drains and piping.

Trent Forcemain

- install sanitary sewer at Memorial Cres from Dallas Road to Thurlow Road; and
- restoration and paving at Memorial Cres.

2.7 Cost Management and Forecast

The monthly cost report for June and the quarterly cost report for the reporting period (April – June 2020) are shown in Appendices R and S. The cost report summarizes Project expenditures and commitments by Project Components and the major cost centres common to the Project Components.

The Project Team has been reporting budget pressures through its monthly reports to the Project Board (and CRD Board) since September 2017, primarily as a result of inflation in the Vancouver Island construction market. Other factors that have contributed to budget pressures include: design development to incorporate stakeholder input; geotechnical considerations including removal and disposal of contaminated material; and schedule constraints associated with the requirement to provide wastewater treatment by the regulatory deadline of December 31, 2020.

Based on the value of the contracts awarded to-date and the refreshed cost estimate for the scope remaining to be procured, the Project Team forecast the cost to complete the Project at $775M, or $10M (1.3%) over the Project's control budget. In May 2019 the CRD Board approved an increase in the Project's budget by $10M to $775M, and on August 14, 2019, the associated amendment to the 2019-2023 Financial Plan was approved.

Subsequent to May 2019 the Project Team have continued to manage risks and there have been two opposing budget drivers:

i) The Project's financing costs to-date have been lower than budgeted for two reasons: firstly as a result of low interest rates since the start of the Project, and secondly due to the receipt of funding from the provincial government earlier than forecast; and

ii) The Project's construction costs may be higher than budgeted as many contractors have advised that there are cost impacts from the COVID-19 public health emergency. Impacts include labour availability, work modifications to comply with provincial guidelines, and delays to the delivery of equipment and supplies.

It is too early to determine the cost impact to the Project, but if construction continues at the current pace the Project Team remain confident that the Project cost will be within the Project's $775M budget.

2.7.1 Commitments

Commitments were made over the reporting period in furtherance of delivering the Project. The net commitments made during the reporting period resulted in an increase in committed costs of $3.1 million. The significant commitments made in the reporting period comprised the approval of provisional items in construction contracts and contract change orders.

2.7.2 Expenses and Invoicing

The Project expenditures for the reporting period were as expected and were within the budget allocations for each of the budget areas. The main Project expenditures incurred over the reporting period were associated with construction activities and project management office-related costs.

2.7.3 Contingency and Program Reserves

Contingency draws totalling $1.2M were made over the reporting period, as summarised in Table 6. The draws to-date, remaining contingency and program reserve balances are summarized in Table 6.

Table 6- Contingency and Program Reserve Draw-Down Table

WTP Contingency and Program Reserve Draws and Reallocations	Draw Date		$ Amount
Contingency and Program Reserve (in Control Budget)		**$**	**69,318,051**
Net Contingency and Program Reserve draws to March 31, 2020		$	(53,307,121)
Contingency and Program Reserve balance as at March 31, 2020		**$**	**16,010,930**
Phone System for Mcloughlin Point WWTP	Apr-20	$	(92,000)
Radio Telemetry for Mcloughlin Point WWTP	Apr-20	$	(277,954)
Preparation of the application for a Certificate of Compliance for McLoughlin Point	May-20	$	(217,924)
Procurement and installation of equipment to allow for the continuous monitoring of odor control treatment System emissions via SCADA	May-20	$	(64,968)
WWTP Total Draw		$	(652,846)
RTF Total Draw		$	-
Saanich Infrastructure Improvement: Peers Creek Culvert Replacement	Jun-20	$	(520,000)
Conveyance Total Draw		$	(520,000)
PMO Total Draw		$	-
BC Hydro Total Draw		$	-
WTP Program Reserve Draw		$	-
Contingency and Program Reserve draws in the reporting period (April 1 - June 30, 2020)		$	(1,172,846)
Contingency and Program Reserve balance as at June 30, 2020		**$**	**14,838,084**

2.7.4 Project Funding

The federal and provincial governments are assisting the Capital Regional District in funding the Project.

The Government of British Columbia will provide $248 million towards the three components of the Project, while the Government of Canada is contributing:

- $120 million through the Building Canada Fund Major infrastructure Component towards the McLoughlin Point WWTP;
- $50 million through the Green Infrastructure Fund towards the conveyance system; and
- up to $41 million towards the RTF through the P3 Canada Fund.

The Project Team has applied to the Federation of Canadian Municipalities (FCM) for additional funding and has executed a grant agreement for the contribution of up to $346,900 towards the delineation of the contamination and remediation and risk assessment for the McLoughlin Point Wastewater Treatment Plant.

The status of funding claims is summarised in Table 7. Note that the timing for the provision of Government of British Columbia and Government of Canada's funding differs by funding source. The Project Team will submit claims to the funding partners in accordance with the relevant funding agreements. In accordance with the funding agreements, funding from the P3 Canada Fund and the remainder of the funding from the Government of British Columbia cannot be claimed until relevant Project components are substantially complete.

Table 7- Project Funding Status

Funding Source	Maximum Contribution	Funding Received in the Reporting Period	Funding Received to Date
Government of Canada (Building Canada Fund)	$120M	$2.5M	$103.3M
Government of Canada (Green Infrastructure Fund)	$50M	$3.6M	$44.3 M
Government of Canada (P3 Canada Fund)	$41M	-	-
Government of British Columbia	$248M	-	$186.0M
Federation of Canadian Municipalities	$0.3M	-	-
TOTAL	**$459.3M**	**$6.1M**	**$333.6M**

2.8 Key Risks and issues

The Project Team actively identified and managed Project risks over the reporting period. Table 8 summarizes the highest-level risks that were actively managed over the reporting period, as well as the mitigation steps identified and/or undertaken over the reporting period.

The following changes were made to the active risks summary over the reporting period:

- the risk of encountering unexpected contaminated soil conditions during excavation at the McLoughlin Point WWTP was closed because the excavation is complete and the application for a Certificate of Compliance has been submitted to the Province;
- The assessed risk level for a misalignment between First Nations' interests and the implementation of the Project was reduced (from medium to low) as a result of the regular, ongoing and productive liaison meetings;
- The assessed risk level for a misalignment between Project objectives/scope and stakeholder expectations was reduced (from medium to low) as a result of the Project's significant and ongoing communication and engagement activities;
- The risk that Municipal Wastewater Regulation (MWR) Registration was not achieved or was delayed was closed, as the MWR Registration was received over the reporting period;
- The assessed risk level for a change in law was increased (from medium to high) due to the potential for impacts from COVID-19;
- The assessed risk level for labour availability and/or cost escalation was reduced (from medium to low) as construction work has progressed to the point that the project is past the point of peak labour demand.

The COVID-19 public health emergency continued to have impacts on the Project over the reporting period. It is anticipated that these impacts may affect several of the Project's risks. The Project Team are currently evaluating the impact of the public health emergency on the Project's risks, and anticipates that changes may be made to several of the risks as the situation evolves. Those risks that the Project Team have identified as potentially impacted, and that are currently under review, are identified in Table 8.

Table 8- Project Active Risks Summary

Risk Event	Description of Risk Event	Risk mitigation activities undertaken or planned in the reporting period	Assessed risk level	Trend in risk level from previous reporting period
Project				
Misalignment between First Nations' interests and the implementation of the Project.	The assessed risk level reflects the Project Team's priority of establishing strong and effective relationships with First Nations interfacing with, or interested in, the Project.	First Nations engagement activities remained ongoing over the reporting period (see section 2.3 for further details).	**L**	Reduced (from medium to low) as a result of the regular, ongoing and productive liaison meetings.
Divergent interests between multiple parties and governance bodies whose co-operation is required to successfully deliver the Project.	The assessed risk level reflects the Project Team's priority of establishing strong and effective relationships with municipal, provincial and federal government departments.	The Project Team continued engagement with municipal, provincial and federal government departments throughout the reporting period.	L	No change
Misalignment between Project objectives/scope and stakeholder expectations.	The assessed risk level reflects the Project Team's priority of establishing strong and effective community stakeholder engagement.	Community engagement activities were ongoing over the reporting period (see section 2.4 for further details).	L	Reduced (from medium to low) as a result of the Project's significant and ongoing communication and engagement activities.
Lack of integration between Project Components.	Planning challenges and system integration between the McLoughlin point WWTP, RTF and Conveyance System components of the Project results in schedule delays and/or additional Project costs.	Physical and schedule interfaces are clearly delineated in all construction contracts along with the requirement for commissioning and control plans. The Project Team has used a single Owner's engineer (Stantec) to develop the indicative design for all critical project components with significant interfaces. Commissioning and control plans are under development	L	No change
Senior government funds issue delayed.	The assessed risk level reflects the Project Team's priority of ensuring Project funding commitments are honoured.	Responsibility for meeting funding commitments has been assigned and is being monitored.	L	No change

Risk Event	Description of Risk Event	Risk mitigation activities undertaken or planned in the reporting period	Assessed risk level	Trend in risk level from previous reporting period
Downstream works delays.	Delay to the commissioning of the conveyance projects delays commissioning of the WWTP and the RTF.	Schedule has sufficient time allowance to ensure conveyance elements complete prior to requirement. Contractor agreements will include terms that require the contractor to recover schedule delays and/or allow for CRD acceleration.	M	No change but this risk may be impacted by the COVID-19 public health emergency (assessment is currently underway)
Upstream works delays.	Delay to the commissioning of either the WWTP or the RTF impacts the commissioning of the other plant.	Contracts with HRP (as the Design-Build Contractor for the McLoughlin Point WWTP) and HRMG (as the Design-Build-Finance-Operate Maintain contractor for the RTF) include terms that require the contractor to recover schedule delays and/or allow for CRD acceleration. Liquidated damages for late delivery are included in both HRP and HRMG contracts.	L	No change but this risk may be impacted by the COVID-19 public health emergency (assessment is currently underway)
Municipal Wastewater Regulation (MWR) Registration is not achieved or is delayed.	A delay to achieving MWR Registration of the wastewater treatment system would mean that the CRD could not discharge treated effluent, and therefore would not be able to commission the WWTP or RTF.	The Project Team (with HRP and Stantec representatives) have been meeting regularly with Ministry of Environment representatives since September 2017 to review the MWR Registration application requirements and the Project's schedule, in order to mitigate the risk of an incomplete application and/or schedule delays in the registration. The MWR Registration application was submitted to the Ministry of Environment in September 2019. The Project Team, MOE and relevant contractors have continued to meet regularly to track progress and discuss issues.	**C**	Risk closed as MWR Registration was received over the reporting period.
Public directly contacting contractors at sites.	Direct contact between the public and contractors could expose both parties to worksite hazards and potential injuries.	Communications and engagement plan and coverage of communications in contractor orientations.	M	No change

Risk Event	Description of Risk Event	Risk mitigation activities undertaken or planned in the reporting period	Assessed risk level	Trend in risk level from previous reporting period
Change in law.	A change in law impacts the scope, cost or schedule of the Project.	Keep apprised of proposed modifications to relevant regulations so as to do the following as appropriate: submit comments on proposed modifications; and/or consider including anticipated modifications in contracts.	H	Increased (from medium to high) due to the potential for impacts from COVID-19
Labour - availability and/or cost escalation.	There is insufficient labour available to construct the Project, and/or there is significant labour cost.	The Project Team will, through the use of competitive selection processes for all construction contracts, ensure that all Project contractors have appropriate experience and therefore understand labour risk.	L	Reduced (from medium to low) as construction work has progressed to the point that the project is past the point of peak labour demand.
Disagreement on contractual obligations of the construction contractors.	There is a disagreement between the Project Team and a contractor regarding the performance of their contractual obligations.	The Project Team takes a proactive management approach to the resolution of any changes, claims and disputes that arise, working expeditiously to achieve resolution with the goal of minimizing any impacts to budget and schedule while ensuring adherence to the terms of the construction contracts.	M	No change but this risk may be impacted by the COVID-19 public health emergency (assessment is currently underway)
McLoughlin Point Wastewater Treatment Plant				
Unexpected contaminated soil conditions during excavation.	Site has more contaminated soils than initial assessment.	CRD and HRP (as the Design-Build Contractor for the McLoughlin Point WWTP) are working collaboratively to minimize the costs associated with remediating the McLoughlin Point site while ensuring that contaminated materials are removed and disposed of in accordance with all applicable legislation.	C	This risk has been closed because the excavation is complete and an application for a Certificate of Compliance has been submitted to the Province.

Risk Level Key - Assessed risk level (based on likelihood and potential impact			
Low	**Medium**	**High**	**Closed**
L	**M**	**H**	**C**

2.9 Status (Engineering, Procurement and Construction)

2.9.1 Wastewater Treatment Plant (McLoughlin Point WWTP)

The McLoughlin Point WWTP Project Component continued with Harbour Resource Partners ("HRP" as the Design-Build contractor for the McLoughlin Point WWTP) progressing construction and commissioning activities.

Key activities in progress or completed by HRP in April were as follows:

- Primary treatment area:
  - progressed Densadeg 1, 2 and 3 installation;
  - continued installation of primary odour control fiberglass reinforced plastic (FRP) pipe and equipment;
  - installation of plate settler 1 tank covers complete, and continued plate settler 2 installation;
  - installed north pump room equipment with progression of electrical work;
  - completed fine screen building roofing, cladding and drywall, protecting panelling is ongoing;
  - completed fine screen building stairwell steel; and
  - secondary odour control FRP piping installation is progressing.

- Secondary treatment area:
  - Moving Bed Bio Reactor (MBBR) #2 and #1 process equipment re-installation complete;
  - Biological Aerated Filter (BAF) nozzles and laterals are installed in all cells except 12 & 9;
  - BAF gravel and biolite is installed in all cells except 12 & 9;
  - main exterior electrical gear installation complete;
  - glanding and terminations well underway in the main electrical room;
  - progressing electrical work in the blower building;
  - completed heat recovery room drywall;
  - penthouse building envelopes nearing completion;
  - installed translucent panels in 2 buildings; and
  - BAF cell 12 scouring air header installation is in progress.

- Tertiary treatment area:
  - continued upper disk filter walls, including outfall shaft roof slab;
  - lower level 1 pumps and mechanical piping install nearing completion; and
  - cinder block masonry nearing complete.

- O&M building:
  - completed lower level interior stud build-out and drywall;
  - level 1 heating ventilation and air conditioning (HVAC), plumbing and fire suppression trades are complete;
  - electrical trade is beginning to close out rooms to allow for drywall installation on level 1;
  - level 2 HVAC, plumbing and fire suppression are nearing completion;
  - steel stud install on level 2 nearing completion, drywall mudding & taping well underway;
  - level 1 and 2 roof complete with the exception of the North canopy;
  - continued construction of north end tsunami and planter wall;

- glazing installation complete on level 1 and level 2;
- steel stairwells installed; and
- elevator installed.

- Site Works:
  - Pig receiving station foundations constructed; and
  - Demobilized north tower crane.

Key activities in progress or completed by HRP in May were as follows:

- Primary treatment area:
  - Densadeg 1, 2 and 3 are going through final walk downs prior to hand over to commissioning;
  - primary odour control fiberglass reinforced plastic (FRP) pipe and equipment nearing completion;
  - plate settler 1 & 2 are progressing through final walk downs prior to hand over to commissioning;
  - chemical distribution systems installation ongoing, PVC piping is progressing; and
  - roofing and envelopes are nearing completion across the primary area.

- Secondary treatment area:
  - moving bed bio reactor (MBBR) 1 & 2 are mechanically complete, covers are complete;
  - Biological Aerated Filter (BAF) cell 12 is complete;
  - electrical teams have transitioned to field terminations by system from the work in the main electrical room;
  - all motor control centres are now powered;
  - communication network is ongoing;
  - electrical work in the blower building is nearing completion;
  - heat recovery room is progressing;
  - penthouse building envelopes are nearing completion; and
  - BAF tank covers are progressing.

- Tertiary treatment area:
  - continued upper disk filter walls, including outfall shaft roof slab, concrete is complete;
  - installation of secondary effluent FRP baffles ongoing;
  - lower level 1 pumps and mechanical piping installation is nearing completion;
  - level 2 process pipe continued with installation of UV system and pumps; and
  - cinder block masonry is ongoing.

- O&M building:
  - lower level interior flooring and millwork in progress;
  - lower level drywall is complete;
  - lower level painting and suspended ceiling is progressing;
  - door installation is in progress;
  - level 2 heating ventilation and air conditioning (HVAC) plumbing and fire suppression are all nearing completion;
  - steel stud installation on level 2 is nearing completion and drywall, paint, drop ceilings, flooring and millwork are underway;

- roofing is complete, cladding on all levels is nearing completion, green roof installation is in progress; and
- glazing installation complete on level 1 and nearing completion on level 2.

- Site Works:
  - removed outfall blind and installed FRP baffles;
  - pig receiving station piping complete;
  - installation of main plant water service is ongoing; and
  - storm line no.2 installed and backfill progressed across site.

Key activities in progress or completed by HRP in June were as follows:

- Primary treatment area:
  - Densadeg 1, 2 and 3 ready for commissioning;
  - primary odour control system in final walk down period;
  - plate settler 1 & 2 ready for commissioning;
  - chemical distribution systems preparing for walk down period; and
  - roofing and building envelopes are nearing completion across the primary area.

- Secondary treatment area:
  - MBBR installation entering walk down period;
  - BAF cell 9 close-out in progress;
  - tower crane has been dismantled;
  - blower system piping is nearing completion;
  - Suez is on site progressing through their pre-commissioning tasks;
  - heat recovery room is progressing;
  - penthouse building envelopes nearing completion; and
  - BAF tank covers installation is nearing completion.

- Tertiary treatment area:
  - concrete is complete;
  - completed installation of secondary effluent FRP baffles;
  - completed installation of lower level 1 pumps and mechanical piping, electrical nearing completion;
  - progressed level 2 process pipe; and
  - completed installation of disk filter system piping and masonry.

- O&M building:
  - lower level interior flooring and millwork continues;
  - lower level plumbing and HVAC in final finishing stages;
  - lower level painting and suspended ceiling is progressing;
  - door installation continues;
  - level 2 HVAC, plumbing and fire suppression are all nearing completion;
  - steel stud install on level 2 effectively complete, drywall, paint, drop ceilings, flooring and millwork continue;
  - roofing complete, cladding on all levels nearing completion, green roof install continues; and
  - glazing installation complete on level 1 and nearing completion on level 2.

Photographs of construction progress over the month of June at McLoughlin Point WWTP are shown in Figures 2-5.



Figure 2– McLoughlin Point Wastewater Treatment Plant – Operations and Maintenance building level 2, flooring installation and glazing installed



Figure 3– McLoughlin Point Wastewater Treatment Plant- Dirty Backwash Room, primary odour control carbon filter preparing to load media.



Figure 4– McLoughlin Point Wastewater Treatment Plant- Roof of north pump room, parapet flashing preparation.



Figure 5– McLoughlin Point Wastewater Treatment Plant- Operations & Maintenance building level 1, south entrance façade insulation.

2.9.2 Residuals Treatment Facility

The RTF Project Component continued with Hartland Resource Management Group ("HRMG" as the Design-Build-Finance-Operate-Maintain contractor for the RTF) progressing construction and commissioning activities.

Key activities in progress or completed by HRMG in April were as follows:

- Digester Area:
  - Digester 1 external pipe connections;
  - Investigation and rectification plan under development as a result of digester 1 and 2 not passing the pneumatic test;
  - Digester 3 Pipe install and concrete supports;
  - Digested Solids Storage Tank instrumentation install; and
  - Digester Building mechanical and electrical is in progress.

- Other Municipal Solids Receiving Facility:
  - electrical cable install and terminations is in progress.

- Residuals Handling Building:
  - electrical work continued in all areas;
  - fiberglass reinforced plastic (FRP) grating installation is in progress;
  - commenced installation of FRP ducting;
  - windows installed; and
  - louvres installed.

- Residuals Drying Facility:
  - mechanical installation is in progress;
  - electrical terminations continued;
  - insulation install is in progress; and
  - generator room louvres completed.

- Residuals Storage & Odour Control:
  - mechanical and electrical work is in progress;
  - hydro test completed in effluent tank; and
  - chemical piping install commenced.

- Operations Building:
  - drywall completed;
  - ceiling tile and flooring completed;
  - painting in progress;
  - millwork in progress;
  - windows completed; and
  - door installation in progress.

Key activities in progress or completed by HRMG in May were as follows:

- Digester Area:
  - Digester 1 external pipe connections;
  - Digester 2 Pneumatic test;
  - Digester 3 Close up and make ready for hydro test;

    - Digested Solids Storage Tank external pipe connections; and
    - Digester Building mechanical and electrical is in progress.

- Other Municipal Solids Receiving Facility:
    - Electrical cable terminations are in progress.

- Residuals Handling Building:
    - electrical work continued in all areas;
    - FRP grating install is in progress;
    - FRP ducting install ongoing; and
    - overhead crane commissioning completed.

- Residuals Drying Facility:
    - mechanical installation is in progress;
    - electrical terminations continued;
    - insulation install is in progress; and
    - generator run and load test completed.

- Residuals Storage & Odour Control:
    - mechanical and electrical work is in progress;
    - FRP duct install is progressing;
    - hydro test of water storage tank was completed; and
    - chemical piping install commenced.

- Operations Building:
    - completed all architectural finishes; and
    - electrical and mechanical deficiency's being closed out.

Key activities in progress or completed by HRMG in June were as follows:

- Digester Area
    - Digester 2 insulation install;
    - Digester 3 Pneumatic test completed;
    - DSST external pipe connections; and
    - Digester Building commissioning systems.

- Other Municipal Solids Receiving Facility
    - Heat tracing of piping.

- Residuals Handling Building
    - completed FRP grating installation;
    - completed FRP ducting; and
    - commissioning of various systems.

- Residuals Drying Facility
    - progressing installation of external stairs;
    - completed electrical terminations;
    - completed installation of insulation on ductwork;
    - completed commissioning generator transfer switch; and
    - commenced commissioning of various systems.

- Residuals Storage & Odour Control
  - completed mechanical and electrical work.
  - progressing installation of FRP duct;
  - commenced chemical piping installation; and
  - commenced commissioning of various systems.

- Operations Building
  - Fire alarm verification commenced.

Photographs of construction progress over the month of June at the Residuals Treatment Facility are shown in Figures 6-8.



Figure 6– Residuals Treatment Facility- Product silo load out hopper.



Figure 7– Residuals Treatment Facility- air ducting from Residuals Solids Tanks.



Figure 8− Residuals Treatment Facility – Fit-out of laboratory in Operations Building.

2.9.3 Conveyance System

2.9.3.1 Clover Point Pump Station

The Clover Point Pump Station continued with Kenaidan Contracting Limited ("Kenaidan" as the Design-Build Contractor) progressing construction and commissioning activities over the reporting period.

Key activities in progress or completed by Kenaidan in April included:

- completed relocation of existing screens to new inlet storm channel;
- installation of new sanitary screens in the existing inlet sanitary channel;
- new exhaust plenum poured and stripped;
- completed existing pump room demolition;
- demolition of HVAC and electrical equipment on existing mezzanine floor ongoing;
- resumed work on gender neutral public washroom;
- 1500mm stub out completed;
- installed caisson for north retaining wall;
- completed commissioning of Storm Overflow components of the new facility;
- new pump station in operation under interim operating phase;
- forcemain successfully tested and backfilled; and
- moved bypass pumps back to complete diversion chamber tie in.

Key construction activities in progress or completed by Kenaidan in May included:

- progressed civil works (saw cut/demolition);
- completed pipe supports;
- progressed drag struts;
- completed bypass pumping for 1500mm tie-in at new inlet channel;
- installed fuel storage tank and exhaust fan for diesel generator;
- progressed work on fuelling system;
- progressed civil/concrete works at existing inlet sanitary channels;
- progressed de-gritter cone/head cell works;
- progressed demolition/concrete works at new inlet channel; and
- progressed works at the new public plaza and washroom.

Key construction activities in progress or completed by Kenaidan in June included:

- installation of seismic upgrades (cross braces, shotcrete, drag struts);
- installation of the fuelling system and diesel generator;
- progressed concrete and mechanical works in existing sanitary channel;
- continued grit separation equipment installation;
- continued works in the new wastewater channel;
- progressed electrical and mechanical works in the gender-neutral washroom at public plaza; and
- installation of landscape retaining walls and concrete seating.

Photographs of construction progress over the month of June at Clover Point are shown in Figures 9-11.



Figure 9−Clover Point Pump Station- New masonry walls in the generator room.



Figure 10−Clover Point Pump Station- Reclaim water system installed in the screening room.



Figure 11- Clover Point Pump Station – Public washroom roof formwork installation.

2.9.3.2 Macaulay Point Pump Station and Forcemain

The Macaulay Point Pump Station and Forcemain continued with Kenaidan Contracting Limited ("Kenaidan" as the Design-Build Contractor) progressing construction and commissioning activities over the reporting period.

Key construction activities in progress or completed by Kenaidan in April were as follows:

- installed unit heaters;
- HVAC fans installation is nearing completion;
- completed wet well concrete pour;
- commenced wood siding panel installation;
- install recycle water system;
- genset fuel tanks have been installed;
- stainless steel pipe to the pigging chamber has been delivered; and
- cable pulling and termination for the pumps is complete.

Key construction activities in progress or completed by Kenaidan in May were as follows:

- completed fiberglass reinforced plastic (FRP) platform in the wet well;
- ongoing installation of FRP platform and stairs in the pump room;
- completed installation of FRP ducting in the wet well;
- completed installation of wood siding on North side of the building;
- ongoing process piping installation in the pump room is ongoing;
- inlet fire damper in the genset room is installed;
- installation of louver on the west side of the building;
- ongoing installation of penthouse louver;
- ongoing commissioning of programmable logic control and motor control centres;
- pigging chamber outfall pipe has been received and fused;
- exposed Pigging chamber wall and cut pipe penetration opening; and
- ongoing installation of Weholite pipe to the drop structure.

Key construction activities in progress or completed by Kenaidan in June were as follows:

- completed pigging chamber tie-in;
- commenced turning vanes installation in wet well;
- ongoing FRP platform and stair installation in the pump room;
- commenced wood siding installation on East side of building;
- completed process piping installation in the pump room;
- completed interior door installation;
- completed odour control system testing and commissioning;
- completed commissioning of flow control valve;
- completed process pipe pressure testing;
- commenced screen system commissioning;
- completed HVAC functional test;
- completed reclaimed water system commissioning;
- commenced grit removal system commissioning; and
- completed sewage pumps commissioning.

Photographs of construction progress over the month of June at Macaulay Point Pump Station are shown in Figures 12-13.



Figure 12−Macaulay Point Pump Station- Grading and prep for concrete curbs.

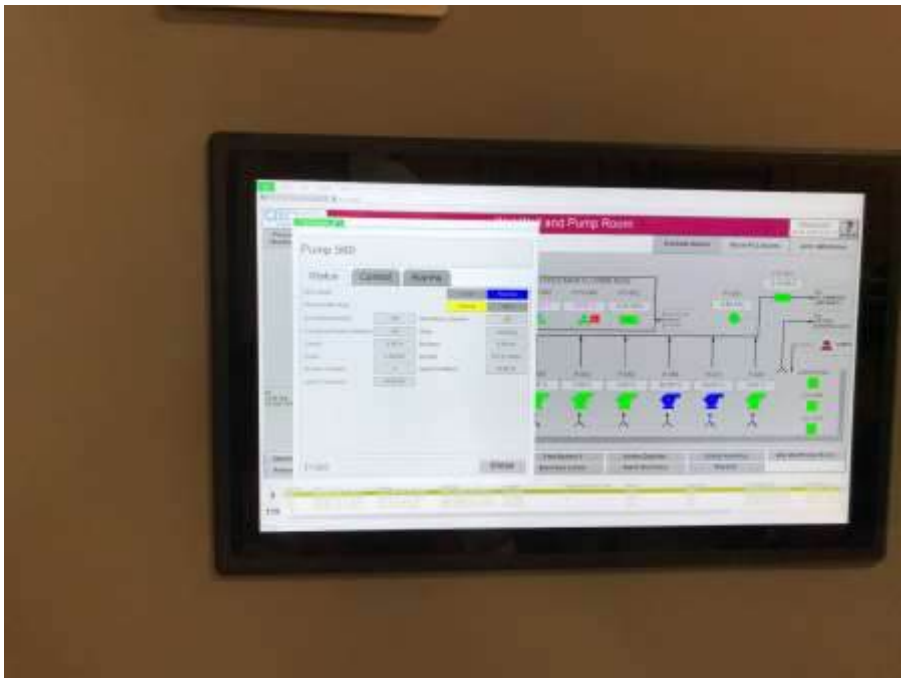


Figure 13−Macaulay Point Pump Station- Pump test runs.

2.9.3.3 Clover Forcemain (CFM)

Windley Contracting Ltd. ("Windley" as the Construction Contractor) continued construction activities over the reporting period.

Key construction activities in progress or completed by Windley in April included:

- commence seawall balustrade replacement construction;
- cycle track/road restoration between Government Street and Lewis Street;
- landscape restoration; and
- top lift paving Douglas Street to Lewis Street.

Key construction activities in progress or completed by Windley in May included:

- continued seawall balustrade replacement construction;
- commenced pouring new concrete wall; and
- commenced new sidewalk grading.

Key construction activities in progress or completed by Windley in June included:

- continued balustrade wall replacement construction;
- completed removal of existing wall;
- completed new concrete; and
- commenced new sidewalk pours.

Photographs of construction progress over the month of June on the Clover Forcemain are shown in Figures 14-15.



Figure 14−Clover Forcemain- New aluminium railing installed looking east from Oswego Street.



Figure 15−Clover Forcemain- New aluminium railing looking west from Oswego Street.

2.9.3.4 Residual Solids Conveyance Line

The RSCL is being delivered through two construction contracts:

- Residual Solids Pipes; and
- Residual Solids Pump Stations

Residual Solids Pipes: Don Mann Excavating Ltd. ("Don Mann" as the Construction Contractor for the Residual Solids Pipes) continued construction and commissioning activities over the reporting period.

Key construction activities in progress or completed by Don Mann in April were as follows:

- Segment #1
  - installation of the 250 mm main completed including valve Chamber installations;
  - final Paving in all areas of Segment 1;
  - line painting at various locations; and
  - successfully pressure tested pipe from south side of Tillicum bridge to Peters Street.

- Segment #2**:**
  - installation of the Air Valve chamber at Grange Road;
  - final asphalt reinstatement Grange Road at the Galloping Goose to Wilkinson Road and Interurban Road; and
  - commence Line Valve installation at the Galloping Goose Trail.

- Segment #3:
  - installation of the line valve and low point drain valve commenced at Interurban Rd north of Quayle Road;
  - curb/sidewalk replacement and final paving was completed at several locations, including boulevard restoration;
  - final surface restoration was completed on the remaining sections of the Interurban Trail within the Segment; and
  - final trail reinstatement.

- Segment #4
  - line painting was completed at the various road crossings within the segment;
  - extruded asphalt curbs were replaced within the Prospect Lake Rd/West Saanich Rd intersection;
  - final trail reinstatement was completed on the remaining section north of Pump Station 3; and
  - final Interurban Trail reinstatement from Goward Road north to Pump Station 3.

Key construction activities in progress or completed by Don Mann in May were as follows:

- Segment #1:
  - completed pipe installation and a pressure test was conducted from the north side of Tillicum Bridge to south side of Admirals Bridge (Pass).
- Segment #2**:**
  - completed air valve chamber on Grange Road; and
  - pipe leak was detected and repaired.

- Segment #3:
  - cleaned up and demobilized after base-paving around the low point drains at Interurban Road north of Quayle Road;
  - completed the installation of the relocated line valve on Interurban Road; and
  - final restoration (line painting, etc.) and deficiency repairs were completed along the Interurban Road and trail.

- Segment #4
  - final deficiencies were addressed, including sign and bollard reinstallation, soil and seed placement, etc.

Key construction activities in progress or completed by Don Mann in June were as follows:

- Segments #1 & 2: work is complete;
- Segment #3: final surface restoration was completed: paving deficiencies, line painting, stamped asphalt, etc.; and
- Segment #4: stamped asphalt restoration was completed at the Prospect Lake Rd intersection.

Photographs of construction progress over the month of June on the Residual Solids Pipes are shown in Figures 16-17.



Figure 16− Residual Solids Pipes- Grouting low point drain valve at Portage Road.



Figure 17−Residual Solids Pipes - Pre-paving meeting at Portage Road.

Residual Solids Pump Stations: Knappett Projects Inc. ("Knappett" as the Construction Contractor for the Residual Solids Pump Stations) continued construction activities including:

Key construction activities in progress or completed by Knappett in April included:

- Pump Station 1
  - pipe spools and electrical installations were both advanced;
  - genset was landed on the concrete pad and the lamp standard was installed; and
  - most of the chamber cores were grouted in.

- Pump Station 2
  - pigging chamber, flow meter and line valve were installed and backfilled;
  - pipe spool pieces were installed throughout all the chambers and are ongoing;
  - electrical work was advanced on the kiosk and the valve chamber; and
  - lamp standard was installed.

- Pump Station 3
  - Odour Control Unit underground piping was completed;
  - pipe spool piece installation was completed;
  - electrical works in the valve chamber was also completed; and
  - lamp standard was erected.

- Marigold Crossing:
  - Marigold Road crossing was completed and pipe was installed to the line valve on Violet Street.

- Tillicum Bridge:
  - pipe spool installation began after all the hangers were installed and epoxied in place with levelling shims.

Key construction activities in progress or completed by Knappett in May included:

- Pump Station 1
  - installed odour control unit underground vent and drain piping;
  - commenced the south pipe tie in;
  - electrical crews worked on the kiosk, installed conduit, and finished items in the wet well; and
  - general backfill took place across the site.

- Pump Station 2
  - BC Hydro line was installed;
  - pressure testing continued along with associated tie ins; and
  - The odour control slab was poured.

- Pump Station 3
  - surge tank line valve was installed and the line was trenched; and
  - pressure testing and finishing items continued within the wet well and valve chamber.

- Marigold Crossing:
  - Marigold crossing was completed, with asphalt paving left to complete.

- Tillicum Bridge:
  - Installation of pipe spools, associated deflection spools, and flexible couplings; and
  - Pipe completed and passed pressure testing.

- Admirals Bridge:
  - Commenced pipe hanger installation.

Key construction activities in progress or completed by Knappett in June included:

- Pump Station 1
  - commenced installation of odour control unit (OCU);
  - completed the connection to the silt trap lead;
  - BC Hydro duct bank crossing was completed and the pipe was installed.

- Pump Station 2
  - commenced installation of OCU;
  - completed installation of the surge tank on the concrete pedestals; and
  - commissioning activities were carried out.

- Pump Station 3
  - commenced installation of OCU equipment;
  - commissioning work was carried out; and
  - completed generator testing.

- Marigold Crossing
  - spool installation continued in the chamber; and
  - vent piping and trenching was completed from the manholes to the pump station.

- Admirals Bridge
  - Hangers and spools were installed.

- Return Chamber
  - 50mm threadolet was installed and the lid placed; and
  - RTF valve chamber lid was placed.

Photographs of construction progress over the month of June on the Residual Solids Pump Stations are shown in Figures 18-19.



Figure 18−Residual Solids Pump Stations– Admirals Bridge –Installing pipe under Admirals Bridge



Figure 19 −Residual Solids Pump Stations – Pump Station #1.

2.9.3.5 Arbutus Attenuation Tank

NAC Constructors Ltd. (as the Construction Contractor for the Arbutus Attenuation Tank) continued construction activities over the reporting period.

Key construction activities in progress or completed by NAC Constructors Ltd. in April include:

- completed installation of 232 secant piles;
- completed installation of diagonal and lateral struts atop the secant piles; and
- commenced formwork installation, rebar installation, and concrete pour for 3 of 4 sections for the ring beam.

Key construction activities in progress or completed by NAC Constructors Ltd. in May include:

- completed concrete pour #4 for the tie beam;
- installed ducting from BC Hydro pole to BC Hydro meter base;
- concrete equipment pad for BC Hydro meter base formed and poured; and
- commenced bulk excavation.

Key construction activities in progress or completed by NAC Constructors Ltd. in June include:

- completed bulk excavation of the tank;
- installed BC Hydro meter base wiring, and panel's set-up for hydro hook up;
- placed granular A subbase spanning the full tank area; and
- commenced the installation of rock anchors.

A photograph of construction progress during the month of June at the Arbutus Attenuation Tank is shown in Figure 20.



Figure 20−Arbutus Attenuation Tank- Inside the tank excavation looking north.

2.9.3.6 Trent Forcemain

Jacob Bros. Construction Inc. (as the Construction Contractor for the Trent Forcemain) progressed construction activities including:

Key construction activities in progress or completed by Jacob Bros. in April include:

- completed Fairfield Road Storm Main relocation work;
- completed Fairfield Road Sanitary Main relocation work;
- new line valve installed at Fairfield Road and Stannard Ave;
- completed seawall investigation works;
- completed Memorial Crescent watermain relocation works; and
- completed Fairfield Road watermain relocation works.

Key construction activities in progress or completed by Jacob Bros. in May include

- concrete flow through chamber stripped and backfilled;
- completed storm sewer relocation on Bushby Street;
- completed Memorial Cres and Fairfield Road watermain tie-in works; and
- commenced forcemain installation on Stannard Ave.

Key construction activities in progress or completed by Jacob Bros. in June include:

- completed Eberts Street gravity main;
- relocated conflicting Storm service on Eberts Street below proposed gravity main alignment;
- completed Stannard Avenue forcemain installation;
- installed bend and thrust block between Stannard Avenue and Fairfield Road during two-day road closure (June 15th – 17th);
- continued Fairfield Road forcemain installation; and
- installed blowdown assembly at Fairfield road.

A photograph of construction progress during the month of June at the Trent Forcemain is shown in Figure 21.



Figure 21- Trent Forcemain – Stannard Avenue – Realignment of sanitary service at Fairfield Road.

Appendix A− Overnight Work: Fairfield Watermain Shut-off (April 3, 2020)

Wastewater Treatment Project
Treated for a cleaner future

Construction Notice

April 3, 2020

Overnight Work: Fairfield Watermain Shut-off

On Monday, April 6, as part of construction for the Trent Forcemain there will be a temporary water service interruption on Fairfield Road between Memorial Crescent and Lillian Road. This includes water service disruption to your property.

The temporary water service interruption will be conducted at night to minimize the impact to residents. This work is necessary to facilitate construction of City of Victoria watermain and sanitary sewer on Memorial Crescent.

If you require the use of water during these hours, we ask that you prepare prior to the shut-off time of 9:00 p.m. on Monday, April 6. Service will be reinstated at 5:00 a.m. on Tuesday, April 7.

What to Expect

- Water supply will be shut-off from approximately 9:00 p.m. to 5:00 a.m.
- A trench will be excavated, a new pipe will be installed underneath the existing watermain, the trench will be backfilled, and the surface will be temporarily restored.
- Construction lights will be used to illuminate the work zone for safety and traffic control.
- Noise associated with this work includes excavation machinery and truck back-up beepers.
- Pipes and equipment will be temporarily stored in the area while this work is completed.

Traffic Impacts

- There will be single lane alternating traffic.
- Traffic control areas will be delineated by cones and signs and controlled by flaggers.

Thank you for your patience as this work is completed.

About the Wastewater Treatment Project
The Wastewater Treatment Project will provide tertiary treatment for wastewater from the core area municipalities of Victoria, Esquimalt, Saanich, Oak Bay, View Royal, Langford and Colwood, and the Esquimalt and Songhees Nations by the end of 2020.

Construction is ongoing at all of the Wastewater Treatment Project's sites in accordance with the guidelines established by the Provincial Health Officer.

Any questions about the work, please contact the Project Team.

24/7 Phone Line
1.844.815.6132

Email
wastewater@crd.bc.ca

Website
wastewaterproject.ca

Appendix B− Trent Forcemain: Bushby and Eberts Streets (April 14, 2020)

Wastewater Treatment Project
Treated for a cleaner future

Construction Notice

April 14, 2020

Trent Forcemain: Bushby and Eberts Streets

As part of the Wastewater Treatment Project, a concrete chamber will be constructed which requires a lane closure within the intersection of Bushby and Eberts Streets. This work is anticipated to begin by the end of this week and take approximately four weeks to complete.

What to Expect

- Barriers and fencing will be installed around the site.
- The area will be excavated, the concrete chamber installed, and the site restored.
- Rock encountered during excavation will be removed by blasting or mechanical means.
- Noise associated with this work includes excavation machinery and truck back-up beepers.
- Pipes and equipment will be temporarily stored in the area while this work is completed.
- Garbage and recycling services will be picked up as usual.

Traffic Impacts

- One lane within the intersection of Bushby and Eberts streets will be closed
- Traffic control areas will be delineated by cones and signs.
- Parking will be temporarily impacted around the intersection of Eberts and Bushby streets to facilitate traffic flow around the closure.
- BC Transit routes will be modified to accommodate the closure.

Access

- Local traffic access will be maintained on Eberts and Bushby streets.
- Vehicle access to residences will not be impacted.

Work Hours

- Monday to Friday from 7:00 a.m. to 7:00 p.m.
- Occasional Saturday work may be required from 10:00 a.m. to 7:00 p.m.

Thank you for your patience while this work is completed.

About the Wastewater Treatment Project
The Wastewater Treatment Project will provide tertiary treatment for wastewater from the core area municipalities of Victoria, Esquimalt, Saanich, Oak Bay, View Royal, Langford and Colwood, and the Esquimalt and Songhees Nations by the end of 2020.

Any questions about the work, please contact the Project Team.

24/7 Phone Line
1.844.815.6132

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Website
wastewaterproject.ca

Appendix C− Clover Point Pump Station Overnight Work (April 15, 2020)

Wastewater Treatment Project
Treated for a cleaner future

Construction Notice

April 15, 2020

Clover Point Pump Station: Overnight Work

Construction of the upgrades to the Clover Point Pump Station requires bypass pumping to the short outfall for approximately four days. This work will begin today and includes diesel-powered pumps running overnight. This work is required to allow the upgraded Clover Point Pump Station to pump wastewater to the new treatment plant at McLoughlin Point.

What to Expect

- The majority of work will take place inside the pump station.
- Noise and lights associated with construction equipment.
- Diesel-powered pumping units will be in operation and are equipped with acoustic enclosures to reduce noise.
- Wastewater will be screened and discharged out of the short outfall during this work and residents are advised to avoid entering the water along the shoreline on Dallas Road between St Charles Street and Dock Street, including at Ross Bay, Clover Point, Holland Point and Ogden Point.
- Public health advisory signs will be posted until sample results are below the health guidelines.

Work Hours

- The diesel-powered pumping units will be running continuously until this work is complete with crews onsite for the duration of this work.

Traffic Impacts

- There will be no traffic impacts.
- The Dallas Road Waterfront Trail between the Clover Point Pump Station and the crosswalk at Memorial Crescent remains closed.

Construction at Clover Point is anticipated to be complete by summer 2020.

Thank you for your patience as this work is completed.

About the Wastewater Treatment Project
The Wastewater Treatment Project will provide tertiary treatment for wastewater from the core area municipalities of Victoria, Esquimalt, Saanich, Oak Bay, View Royal, Langford and Colwood, and the Esquimalt and Songhees Nations by the end of 2020

Any questions about the work, please contact the Project Team.

24/7 Phone Line
1.844.815.6132

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wastewater@crd.bc.ca

Website
wastewaterproject.ca

Appendix D− Temporary Overnight Work: Marigold Road (April 17, 2020)

Wastewater Treatment Project
Treated for a cleaner future

Construction Notice

April 17, 2020

Temporary Overnight Work: Marigold Road

As part of the Wastewater Treatment Project, construction of the Residual Solids Conveyance Line will be crossing Marigold Road at Violet Avenue during the week of April 20th. Part of this work will require the closure of Marigold Road between Interurban Road and Daisy Avenue. This closure will be done at night from 7:00 p.m. to 7:00 a.m. to limit traffic impacts. The overnight work is expected to take place Wednesday night and be completed within one night, but it is weather dependent so the timing may change.

What to Expect

- A trench will be excavated, the new pipe will be installed, the trench will be backfilled, and the surface will be temporarily restored.
- Final restoration will take place after the section has been tested and completed.
- Noise associated with this work includes excavation machinery and truck back-up beepers.
- Pipes and equipment will be temporarily stored in the area while this work is completed.
- During night work, construction lights will be used to illuminate the work zone for safety and traffic control.

Traffic Impacts

- Marigold Road will be open to single lane alternating traffic from 7:00 a.m. to 7:00 p.m.
- Traffic control areas will be delineated by cones and signs and controlled by flaggers.
- Marigold Road will be closed from 7:00 p.m. Wednesday to 7:00 a.m. Thursday.

Work Hours

- Monday to Friday from 7:00 a.m. to 7:00 p.m.
- Overnight work on Wednesday from 7:00 p.m. to 7:00 a.m. Thursday

Thank you for your patience as this work is completed

About the Wastewater Treatment Project
The Wastewater Treatment Project will provide tertiary treatment for wastewater from the core area municipalities of Victoria, Esquimalt, Saanich, Oak Bay, View Royal, Langford and Colwood, and the Esquimalt and Songhees Nations by the end of 2020.

Any questions about the work, please contact the Project Team.

24/7 Phone Line
1.844.815.6132

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wastewaterproject.ca

Appendix E− Residual Solids Conveyance Line: Gorge Bridge Construction Update

Wastewater Treatment Project
Treated for a cleaner future

Construction Notice

UPDATE

April 23, 2020

Residual Solids Conveyance Line: Gorge Bridge Construction

As part of the Wastewater Treatment Project, a pipe is being installed under the Gorge Bridge on Tillicum Road. This work is anticipated to be complete mid-May.

What to Expect

- Scaffolding has been erected on the side of the bridge and a pipe will be installed under the bridge.
- Noise associated with this work includes construction machinery and truck back-up beepers.

Traffic Impacts

- Southbound traffic has been reduced to one lane to provide a pedestrian walkway that supports social distancing.
- Northbound traffic will retain two lanes.
- Pedestrian access will be maintained on the east side of Gorge Bridge.

Work Hours

- Monday to Friday from 7:00 a.m. to 7:00 p.m.

About the Wastewater Treatment Project

The Wastewater Treatment Project will provide tertiary treatment for wastewater from the core area municipalities of Victoria, Esquimalt, Saanich, Oak Bay, View Royal, Langford and Colwood, and the Esquimalt and Songhees Nations by the end of 2020.

Any questions about the work, please contact the Project Team.

24/7 Phone Line
1.844.815.6132

Email
wastewater@crd.bc.ca

Website
wastewaterproject.ca

Appendix F− Core Area Wastewater Discharge Notice (April 14, 2020)

Making a difference...together

Public Service Announcement

For Immediate Release
April 14, 2020

Core Area Wastewater Discharge Notice

Victoria, BC- Construction for the Wastewater Treatment Project at the Clover Point Pump Station requires screened wastewater to be discharged out of the short outfall at Clover Point beginning the evening of April 14, 2020 for approximately four days. The shorelines that will be affected are:

- Dallas Road between St Charles St and Dock St including Ross Bay, Clover Point, Holland Point and Ogden Point in Victoria.

As a result of the discharge, residents are advised to avoid entering the waters along the affected shorelines, as the wastewater may pose a health risk to people entering the water.

As a precaution and in consultation with Island Health and the local municipalities, beaches within the affected areas will be posted with public health advisory signs until sample results indicate enterococci levels are below the 70CFU/100mL recreational limit.

For updates, please visit www.crd.bc.ca and follow us on Twitter @crd_bc

The CRD delivers regional, sub-regional and local services to 13 municipalities and three electoral areas on southern Vancouver Island and the Gulf Islands. Governed by a 24-member Board of Directors, the CRD works collaboratively with First Nations and all levels of government to enable sustainable growth, foster community well-being, and develop cost-effective infrastructure while continuing to provide core services to residents throughout the region. Visit us online at www.crd.bc.ca.

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For media inquiries, please contact:
Andy Orr, Senior Manager
CRD Corporate Communications
Tel: 250.360.3229
Cell: 250.216.5492

Appendix G− Update: Core Area Wastewater Discharge Notice (April 17, 2020)

Making a difference...together

Public Service Announcement

For Immediate Release
April 17, 2020

UPDATE: Core Area Wastewater Discharge Notice

Victoria, BC- Construction for the Wastewater Treatment Project at the Clover Point Pump Station requires screened wastewater to be discharged out of the short outfall at Clover Point. The shorelines affected are:

- Between Radcliffe Lane and Dock St including Gonzales Bay ***NEW***, Ross Bay, Clover Point, Holland Point and Ogden Point in Victoria
- Harling Point, McNeill Bay and McMicking Point in Oak Bay ***NEW***

As a result of the discharge, residents are advised to avoid entering the waters along the affected shorelines, as the wastewater may pose a health risk to people entering the water.

As a precaution and in consultation with Island Health and the local municipalities, beaches within the affected areas will be posted with public health advisory signs until sample results indicate enterococci levels are below the 70CFU/100mL recreational limit.

For updates, please visit www.crd.bc.ca and follow us on Twitter @crd_bc

For questions or more information on this advisory, please call 1.844.815.6132.

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CRD Corporate Communications
Tel: 250.360.3229
Cell: 250.216.5492

Appendix H− Beaches Reopen Following Core Area Wastewater Discharge (April 24, 2020)

Making a difference...together

Public Service Announcement

For Immediate Release
April 24, 2020

Beaches Reopen Following Core Area Wastewater Discharge

Victoria, BC- Following the successful completion of construction activities at Clover Point Pump Station that required screened wastewater to be discharged out of the short outfall, all of the affected beaches have been reopened. Testing of samples was completed this week and results indicate enterococci levels are below the 70CFU/100mL recreational level.

In consultation with Island Health, public health advisory signs have been removed from all of the affected shorelines:

- Between Radcliffe Lane and Dock St including Gonzales Bay, Ross Bay, Clover Point, Holland Point and Ogden Point in Victoria and Harling Point, McNeill Bay and McMicking Point in Oak Bay

Thank you for your patience while this work was completed.

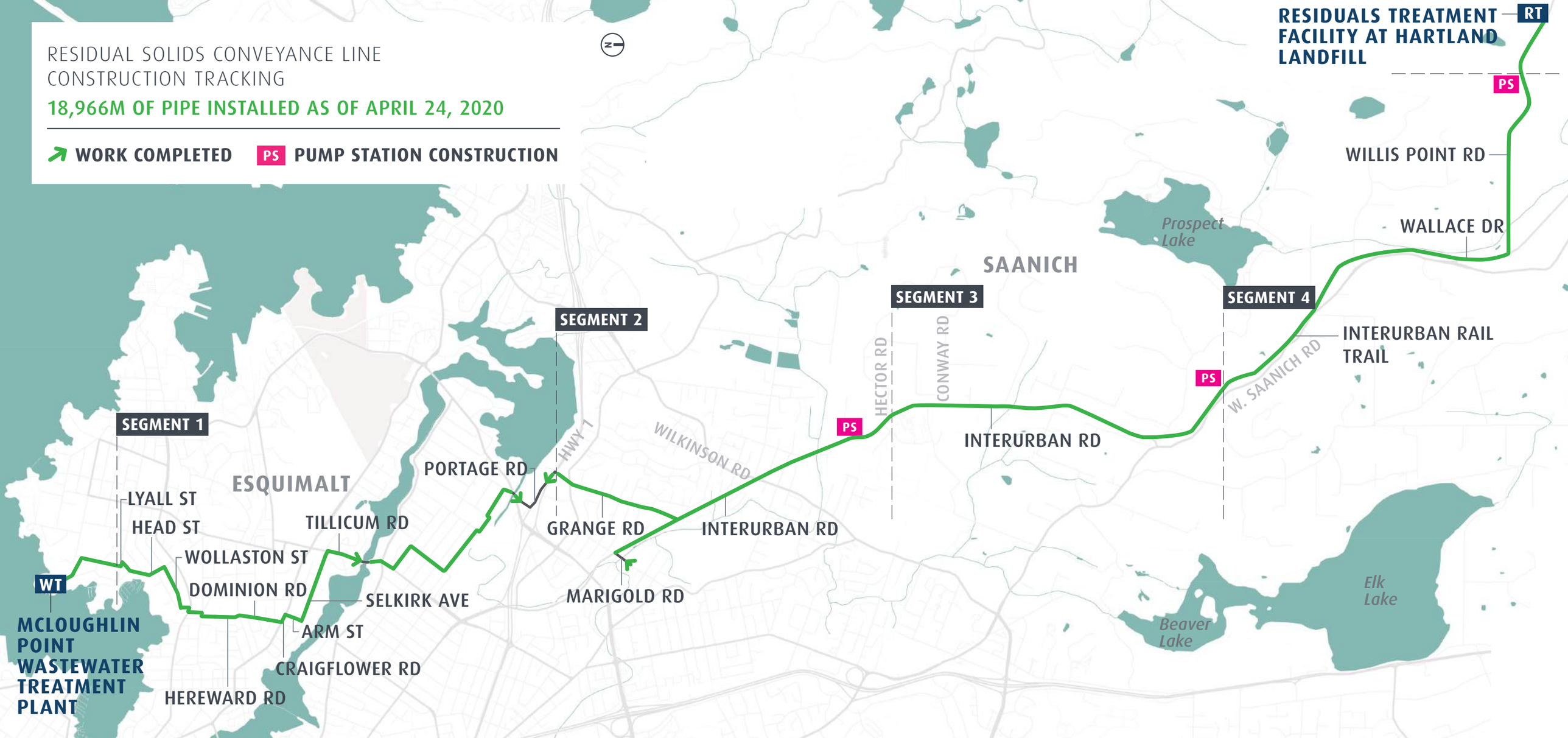
For updates, please visit www.crd.bc.ca and follow us on Twitter @crd_bc

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For media inquiries, please contact:
Andy Orr, Senior Manager
CRD Corporate Communications
Tel: 250.360.3229
Cell: 250.216.5492

Appendix I– Residual Solids Conveyance Line Map (April 24, 2020)


RESIDUAL SOLIDS CONVEYANCE LINE CONSTRUCTION TRACKING
18,966M OF PIPE INSTALLED AS OF APRIL 24, 2020
WORK COMPLETED
PS PUMP STATION CONSTRUCTION
RESIDUALS TREATMENT FACILITY AT HARTLAND LANDFILL
RT
PS
WILLIS POINT RD
WALLACE DR
Prospect Lake
SAANICH
SEGMENT 3
SEGMENT 4
SEGMENT 2
SEGMENT 1
INTERURBAN RAIL TRAIL
W. SAANICH RD
HECTOR RD
CONWAY RD
INTERURBAN RD
WILKINSON RD
HWY 1
PORTAGE RD
GRANGE RD
MARIGOLD RD
ESQUIMALT
LYALL ST
HEAD ST
TILLICUM RD
WOLLASTON ST
DOMINION RD
SELKIRK AVE
ARM ST
CRAIGFLOWER RD
HEREWARD RD
WT
MCLOUGHLIN POINT WASTEWATER TREATMENT PLANT
Beaver Lake
Elk Lake

Appendix J− Trent Forcemain: Water Service Shutdown Notice Update (May 11, 2020)

Wastewater Treatment Project
Treated for a cleaner future

Construction Notice

UPDATE

May 11, 2020

Trent Forcemain: Water Service Shutdown Notice

As part of construction for the Trent Forcemain, a water main is being relocated along Fairfield Road and Memorial Crescent. Connecting the new water main to the existing system requires a temporary interruption of water service between the hours of 10:00 a.m. and 2:00 p.m. on the following dates:

- Wednesday, May 13
- Thursday, May 14

If you require the use of water during these hours, we ask that you prepare prior to the shut-off time of 10:00 a.m. each day.

What to Expect

- Water service will be temporarily shut off each day from approximately 10:00 a.m. to 2:00 p.m.
- The actual duration of the shut-off will depend on the conditions encountered.
- The water may be discoloured after the water service is restored. While the water is safe for consumption, we encourage you to run the tap on cold in the tub or shower until the water runs clear.

Traffic Impacts

- Fairfield Road will have single lane alternating traffic on Wednesday, May 13.
- Memorial Crescent will have single lane alternating traffic on Thursday, May 14.
- Traffic control areas will be delineated by cones and signs and controlled by flaggers.

Work Hours

- Monday to Friday from 7:00 a.m. to 7:00 p.m.

If you have any further questions about the water disruption, please contact the Project Team at our 24/7 phone line 1-844-815-6132.

Thank you for your patience as this work is completed. We apologize for any inconvenience this may cause.

About the Wastewater Treatment Project
The Wastewater Treatment Project will provide tertiary treatment for wastewater from the core area municipalities of Victoria, Esquimalt, Saanich, Oak Bay, View Royal, Langford and Colwood, and the Esquimalt and Songhees Nations by the end of 2020.

Any questions about the work, please contact the Project Team.

24/7 Phone Line
1.844.815.6132

Email
wastewater@crd.bc.ca

Website
wastewaterproject.ca

Appendix K− Core Area Wastewater Discharge Notice (May 7, 2020)

Making a difference...together

Public Service Announcement

For Immediate Release
May 7 2020

Core Area Wastewater Discharge Notice

Victoria, BC- Construction at the Clover Point Pump Station resulted in an unplanned wastewater discharge out the short outfall the morning of May 7, 2020. The areas affected are in the vicinity of Clover Point Park, between Cook Street and Hollywood Place. This pump station is currently undergoing upgrades related to the Wastewater Treatment Project.

As a result of this discharge, residents are advised to avoid entering the waters along the affected shorelines, as the wastewater may pose a health risk.

As a precaution and in consultation with Island Health, beaches within the affected areas will be posted with public health advisory signs for one day. Due to the small amount of discharge, the advisory signs are anticipated to be removed tomorrow afternoon.

For updates, please visit www.crd.bc.ca and follow us on Twitter @crd_bc

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For media inquiries, please contact:
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CRD Corporate Communications
Office 250.360.3229
Cell 250.216.5492

Appendix L− Core Area Wastewater Discharge Notice (May 30, 2020)

Making a difference...together

Public Service Announcement

For Immediate Release
May 30 2020

Core Area Wastewater Discharge Notice

Victoria, BC- Construction at the Clover Point Pump Station resulted in an unplanned wastewater discharge out the short outfall the night of May 29, 2020. The areas affected are in the vicinity of Clover Point Park, between Cook Street and Hollywood Place. This pump station is currently undergoing upgrades related to the Wastewater Treatment Project.

As a result of this discharge, residents are advised to avoid entering the waters along the affected shorelines, as the wastewater may pose a health risk.

As a precaution and in consultation with Island Health and the local municipalities, beaches within the affected areas will be posted with public health advisory signs until sample results indicate enterococci levels are below the 70CFU/100mL recreational limit.

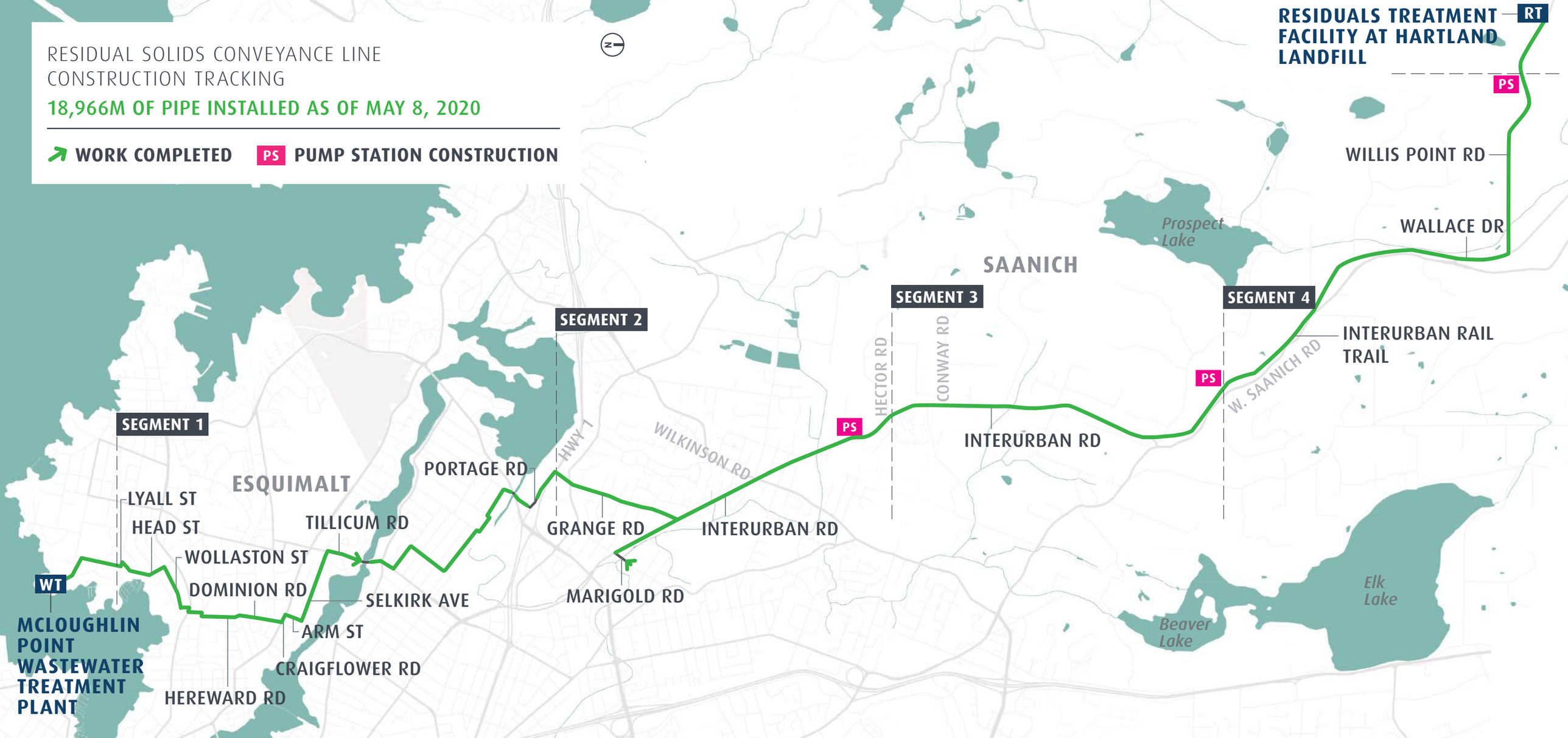
For updates, please visit www.crd.bc.ca and follow us on Twitter @crd_bc

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For media inquiries, please contact:
Andy Orr, CRD, Senior Manager, Corporate Communications
Office 250.360.3229 Cell 250.216.5492

Appendix M− Residual Solids Conveyance Line Map (May 8, 2020)


RESIDUAL SOLIDS CONVEYANCE LINE CONSTRUCTION TRACKING
18,966M OF PIPE INSTALLED AS OF MAY 8, 2020
WORK COMPLETED
PS PUMP STATION CONSTRUCTION
RESIDUALS TREATMENT FACILITY AT HARTLAND LANDFILL
RT
PS
WILLIS POINT RD
WALLACE DR
Prospect Lake
SAANICH
SEGMENT 3
SEGMENT 4
SEGMENT 2
SEGMENT 1
HECTOR RD
CONWAY RD
INTERURBAN RAIL TRAIL
W. SAANICH RD
INTERURBAN RD
WILKINSON RD
HWY 1
PORTAGE RD
ESQUIMALT
LYALL ST
HEAD ST
TILLICUM RD
WOLLASTON ST
DOMINION RD
SELKIRK AVE
ARM ST
CRAIGFLOWER RD
HEREWARD RD
GRANGE RD
MARIGOLD RD
WT
MCLOUGHLIN POINT WASTEWATER TREATMENT PLANT
Elk Lake
Beaver Lake

Appendix N− Trent Forcemain: Fairfield Road Closure (June 12, 2020)

Wastewater Treatment Project
Treated for a cleaner future

Construction Notice

June 12, 2020

Trent Forcemain: Fairfield Road Closure

As part of the Wastewater Treatment Project, construction of the Trent Forcemain will be crossing Fairfield Road at Stannard Avenue. This work will require the closure of Fairfield Road between the Fairfield Shopping Centre and Arnold Avenue. The closure is expected to take place during work hours starting on Monday, June 15 and be complete within approximately three days. A detour will be in place (see map on reverse).

What to Expect

- A trench will be excavated, the new pipe will be installed, the trench will be backfilled, and the surface will be temporarily restored.
- Final restoration will take place after the section has been tested and completed.
- Noise associated with this work includes excavation machinery and truck back-up beepers.
- Pipes and equipment will be temporarily stored in the area while this work is completed.

Traffic Impacts

- A signed detour will be in place during work hours.
- On-street parking along Memorial Crescent and St Charles Street will be removed to allow for detour traffic.
- Traffic control areas will be delineated by cones and signs and controlled by flaggers.

Access

- Vehicle access to residences will not be impacted.
- Emergency services will have access at all times.
- Garbage and recycling services will be picked up as usual.

Work Hours

- Monday to Friday from 7:00 a.m. to 7:00 p.m.
- Saturday from 10:00 a.m. to 7:00 p.m.

Thank you for your patience while this work is completed.

About the Wastewater Treatment Project
The Wastewater Treatment Project will provide tertiary treatment for wastewater from the core area municipalities of Victoria, Esquimalt, Saanich, Oak Bay, View Royal, Langford and Colwood, and the Esquimalt and Songhees Nations by the end of 2020.

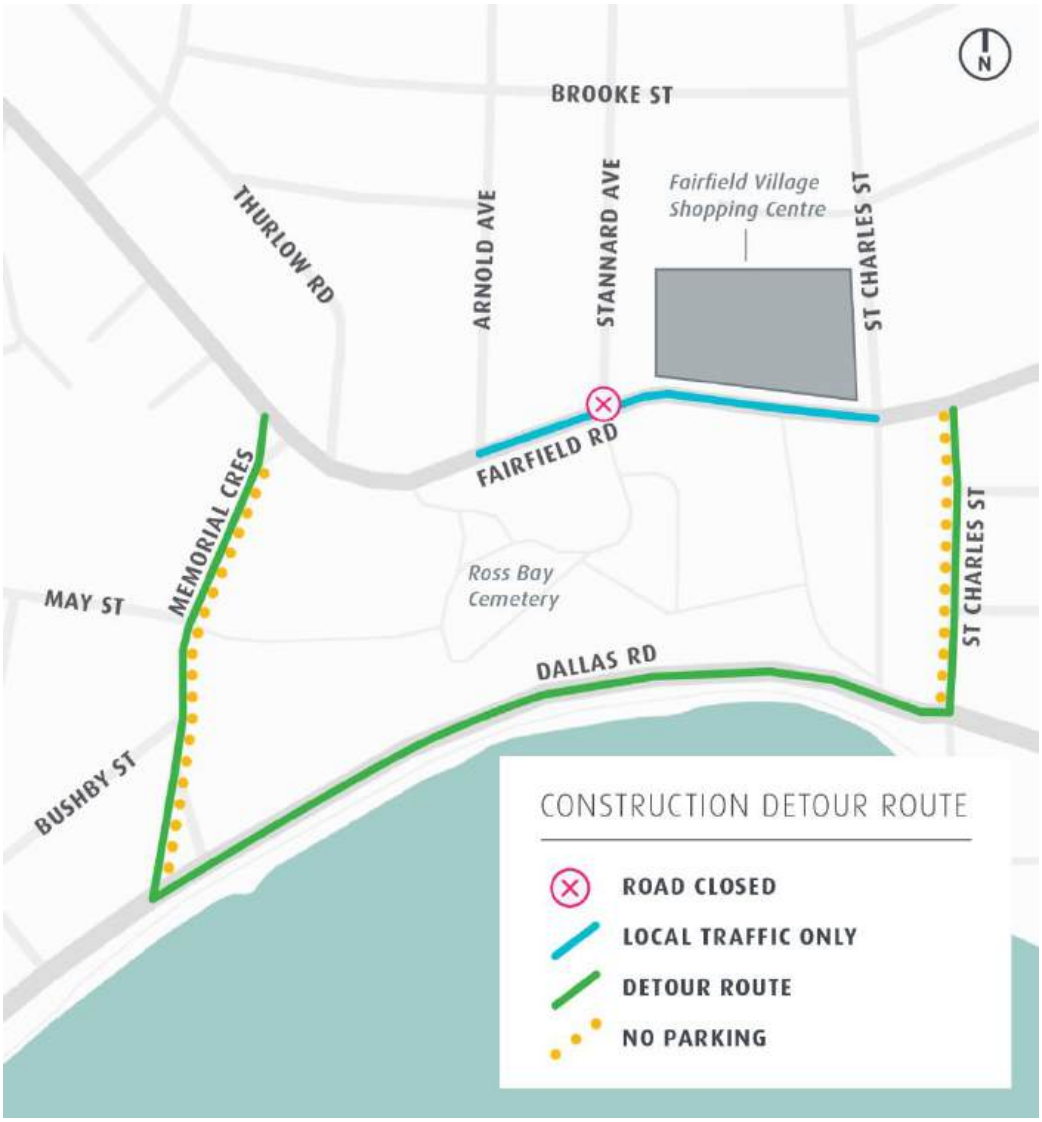
Any questions about the work, please contact the Project Team.

24/7 Phone Line
1.844.815.6132

Email
wastewater@crd.bc.ca

Website
wastewaterproject.ca

Detour Route



Appendix O− Project Update #9 (June 2020)

Wastewater Treatment Project

The Wastewater Treatment Project is in its final year of construction and all the pieces are starting to come together. We are in the final push and the majority of the construction will conclude over the summer. The Project will then enter the next phase which is commissioning the new infrastructure. The Project still has many active construction sites throughout Victoria, Esquimalt and Saanich and we want to thank residents for their patience while we complete this work. The Project remains on schedule to meet the regulatory deadline of December 31, 2020. Construction progress is highlighted for each section of the Project with photos.

Construction Updates

MCLOUGHLIN POINT WASTEWATER TREATMENT PLANT

The view of McLoughlin Point changed this spring with the demobilization of both of the tower cranes on site. The majority of construction on site will be complete this summer. The exterior finishing of the building is nearing completion and the inside of the operations and maintenance building is being painted. The multi-level green roof is being installed and the areas around the plant are being backfilled. Wastewater will begin flowing through the plant later this summer as testing of the system commences.



Aerial view of McLoughlin Point Wastewater Treatment Plant.

RESIDUALS TREATMENT FACILITY

Construction on the Residuals Treatment Facility located at the Hartland Landfill has made excellent progress with all major equipment now installed. All the buildings have been built on site and the exterior work is complete. Work is focused on finishing the interior of the buildings.



Construction progress at the Residuals Treatment Facility.

CLOVER POINT PUMP STATION

In April, the Clover Point Pump Station achieved a significant milestone with relocating and installing new screens. This was an important step to begin modifying the existing pump station and to allow the upgraded pump station to pump wastewater to the new McLoughlin Point Wastewater Treatment Plant.



New pumps at the Clover Point Pump Station.

MACAULAY POINT PUMP STATION

At Macaulay Point, the building has been erected and siding is being installed. All major equipment has been installed and mechanical and electrical work continues on site. The tower crane has also been demobilized at Macaulay Point. The Macaulay Forcemain work is complete with all the pipe installed and tested and the roads surrounding the area have been paved and reopened.



Siding being installed on the new Macaulay Point Pump Station.

CLOVER FORCEMAIN

Construction on Dallas Road has been focusing on restoration work since the forcemain installation was finished last summer. All the restoration work has been completed on Dallas Road except for the final section between Dock Street and Lewis Street. A new balustrade along the seawall is being installed for the City of Victoria which is anticipated to be complete in the fall.



New crosswalk at Government Street on the newly paved Dallas Road.

ARBUTUS ATTENUATION TANK

In Saanich, the Arbutus Attenuation Tank is being built on CRD property in Haro Woods. All the secant piles have been installed around the perimeter of the tank footprint. These are reinforced concrete piles that are required to minimize the footprint of the excavation. Now that this stage is complete, excavation is taking place for the 5,000m^3 attenuation tank.



Excavation at the Arbutus Attenuation Tank.

RESIDUAL SOLIDS CONVEYANCE LINE

Over 99% of the Residual Solids Conveyance Line is installed. Work has been focusing on installing valves and chambers, completing tie-ins, and paving. Construction at the three small pump stations along the Residual Solids Conveyance Line is progressing well. Pipes have been installed on the Gorge Bridge and the last section of pipe is being installed on the Admirals Bridge.



Pipe installation on Portage Road in Saanich.



The pipe has been installed under the Gorge Bridge on Tillicum Road.

Wastewater Treatment Project
Treated for a cleaner future

Project Update #9
June 2020

TRENT FORCEMAIN

In January, Jacob Bros Construction started work on the Project's final construction contract, to build the Trent Forcemain, 1.9km of pipe being installed in the Fairfield neighbourhood of Victoria. Construction has started with relocating an existing water main and chamber. Forcemain installation started in May.



A section of pipe being installed for the Trent Forcemain.

COVID-19

Construction has been designated an essential service and the Project is continuing with all contractors implementing additional precautions to ensure the health and safety of their workers and the public. These measures include emphasizing the importance of maintaining social distance, increasing handwashing stations, reducing in-person meetings and increasing cleaning of common areas.



All contractors have implemented additional safety protocols on their sites.

CONSTRUCTION SUMMARY

14
active construction sites

600
construction workers

23,412m
pipes laid

For More Information

Website: wastewaterproject.ca
Email: wastewater@crd.bc.ca
24-7 Project Information Line: 1.844.815.6132

Appendix P− Core Area Wastewater Discharge Notice at Macaulay Point (June 22, 2020)

Making a difference...together

Public Service Announcement

For Immediate Release
June 22 2020

Core Area Wastewater Discharge Notice

Esquimalt, BC- Construction of the Macaulay Point Pump Station requires screened wastewater to be discharged out the short outfall overnight on June 22, 2020. The shorelines that will be affected are:

- Between Fraser Street and Victoria View Road including Saxe Point, Macaulay Point and McLoughlin Point in Esquimalt; and
- Along Dallas Road between Dock Street and Government Street in Victoria.

As a result of this discharge, residents are advised to avoid entering the waters along the affected shorelines, as the wastewater may pose a health risk.

As a precaution and in consultation with Island Health and the local municipalities, beaches within the affected areas will be posted with public health advisory signs until sample results indicate enterococci levels are below the 70CFU/100mL recreational limit.

A new Macaulay Point Pump Station is being built as part of the Wastewater Treatment Project and will pump wastewater from the western core area municipalities and the Esquimalt and Songhees Nations to the new McLoughlin Point Wastewater Treatment Plant for tertiary treatment.

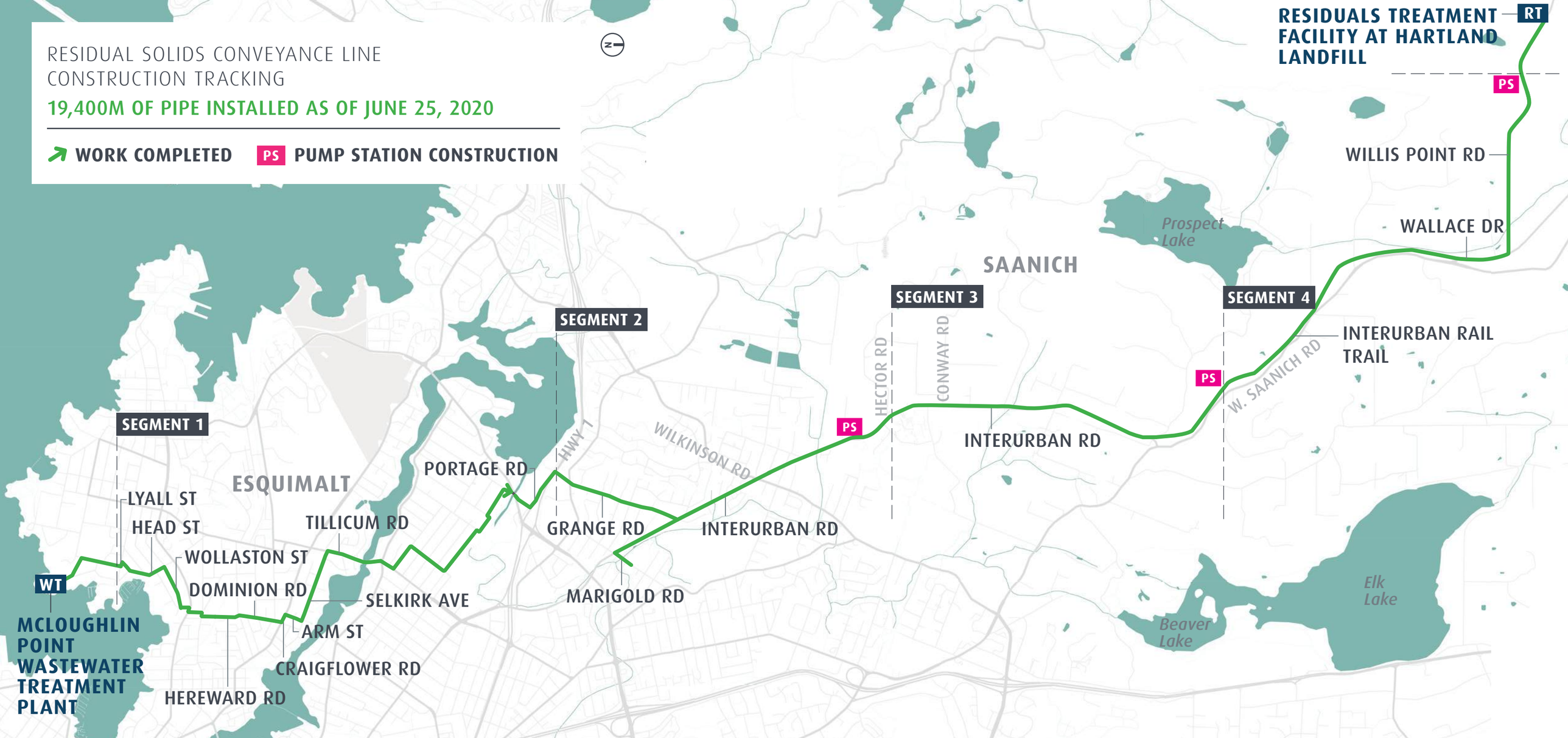
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For media inquiries, please contact:
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Tel: 250.360.3229

Appendix Q− Residual Solids Conveyance Line Map (June 25, 2020)


RESIDUAL SOLIDS CONVEYANCE LINE CONSTRUCTION TRACKING
19,400M OF PIPE INSTALLED AS OF JUNE 25, 2020
WORK COMPLETED
PS PUMP STATION CONSTRUCTION
RESIDUALS TREATMENT FACILITY AT HARTLAND LANDFILL
RT
PS
WILLIS POINT RD
WALLACE DR
Prospect Lake
SAANICH
SEGMENT 2
SEGMENT 3
SEGMENT 4
HECTOR RD
CONWAY RD
INTERURBAN RAIL TRAIL
W. SAANICH RD
INTERURBAN RD
HWY 1
WILKINSON RD
PORTAGE RD
GRANGE RD
MARIGOLD RD
SEGMENT 1
ESQUIMALT
LYALL ST
HEAD ST
TILLICUM RD
WOLLASTON ST
DOMINION RD
SELKIRK AVE
ARM ST
CRAIGFLOWER RD
HEREWARD RD
WT
MCLOUGHLIN POINT WASTEWATER TREATMENT PLANT
Elk Lake
Beaver Lake

Appendix R− Monthly Cost Report (June)

MONTHLY COST REPORT
as at June 30, 2020

Description	BUDGET		COST EXPENDED					COMMITMENTS			FORECAST		VARIANCE	
	Control Budget	Allocated Budget	Expended to May 31, 2020	Expended over reporting period (June 2020)	Expended to June 30, 2020	Expended to June 30, 2020 as a % of Allocated Budget	Remaining (Unexpended) Allocated Budget at June 30, 2020	Total Committment at June 30, 2020	Unexpended Commitment at June 30, 2020	Uncommitted Allocated Budget at June 30, 2020	Forecast to Complete	Forecast at Completion	Variance at Completion $	Variance at Completion as a % of Allocated Budget
McLoughlin Point Wastewater Treatment Plant	**331.4**	**328.1**	**293.8**	**5.0**	**298.8**	**91%**	**29.3**	**321.2**	**22.4**	**6.9**	**29.3**	**328.1**	**-**	**0%**
Construction	306.7	321.0	293.3	5.0	298.2	93%	22.7	320.5	22.3	0.5	22.7	321.0	-	0%
Contingency	14.9	0.2	-	-	-	0%	0.2	-	-	0.2	0.2	0.2	-	0%
Financing	9.8	6.9	0.6	-	0.5	7%	6.4	0.7	0.1	6.2	6.4	6.9	-	0%
Residuals Treatment Facility	**159.4**	**140.0**	**10.9**	**0.4**	**11.3**	**8%**	**128.7**	**139.0**	**127.7**	**1.0**	**128.7**	**140.0**	**-**	**0%**
Construction	145.4	138.9	10.9	0.4	11.3	8%	127.7	138.9	127.7	0.0	127.7	138.9	-	0%
Contingency	12.3	0.2	-	-	-	0%	0.2	-	-	0.2	0.2	0.2	-	0%
Financing	1.7	0.8	0.0	-	0.0	2%	0.8	0.0	0.0	0.8	0.8	0.8	-	0%
Conveyance System	**158.0**	**215.7**	**160.9**	**5.4**	**166.3**	**77%**	**49.4**	**195.4**	**29.1**	**20.3**	**49.4**	**215.7**	**-**	**0%**
Macaulay Point Pump Station	25.4	30.8	26.9	0.8	27.7	90%	3.1	30.8	3.1	0.0	3.1	30.8	-	0%
Macaulay Forcemain	5.6	7.4	7.4	0.1	7.4	100%	-	7.4	-	-	-	7.4	-	0%
Craigflower Pump Station	12.5	12.4	12.4	-	12.4	100%	-	12.4	-	-	-	12.4	-	0%
Clover Point Pump Station	23.7	27.3	24.7	-	24.7	91%	2.6	27.2	2.5	0.1	2.6	27.3	-	0%
Currie Pump Station^	2.8	0.1	0.1	-	0.1	100%	-	0.1	-	-	-	0.1	-	0%
Arbutus Attenuation Tank	14.2	24.6	12.2	1.2	13.5	55%	11.1	23.1	9.7	1.4	11.1	24.6	-	0%
Clover Forcemain	14.6	32.5	29.2	0.8	30.0	92%	2.5	31.9	1.9	0.6	2.5	32.5	-	0%
Currie Forcemain^	3.3	0.2	0.2	-	0.2	100%	-	0.2	-	-	-	0.2	-	0%
Trent Forcemain	9.5	11.3	1.7	0.9	2.6	23%	8.7	8.1	5.5	3.2	8.7	11.3	-	0%
Residual Solids Conveyance Line	19.1	36.6	33.8	0.4	34.3	94%	2.3	36.5	2.2	0.1	2.3	36.6	-	0%
Residual Solids Pump Stations & Bridge Crossings	4.6	18.1	11.7	1.2	13.0	71%	5.2	16.9	4.0	1.2	5.2	18.1	-	0%
Residual Solids Conveyance Line – Highway Crossing	-	0.4	0.3	0.0	0.3	76%	0.1	0.4	0.0	0.1	0.1	0.4	-	0%
Contingency	16.8	9.9	-	-	-	0%	9.9	-	-	9.9	9.9	9.9	-	0%
Financing	5.8	4.1	0.2	-	0.2	5%	3.9	0.3	0.1	3.7	3.9	4.1	-	0%
Project Management Office ("PMO")	**75.8**	**77.9**	**55.8**	**1.0**	**56.8**	**73%**	**21.1**	**69.7**	**12.9**	**8.2**	**21.1**	**77.9**	**-**	**0%**
Project costs Aug 2016-Dec 2016	2.2	2.2	2.2	-	2.2	100%	-	2.2	-	-	-	2.2	-	0%
Owner's Engineering	17.2	17.5	14.1	0.4	14.5	83%	3.0	17.5	3.0	-	3.0	17.5	-	0%
Conveyance Design	5.0	9.5	7.6	0.1	7.6	80%	1.9	8.5	0.9	1.0	1.9	9.5	-	0%
Advisors & Professional Support	7.0	15.0	10.2	0.1	10.3	69%	4.7	11.5	1.2	3.5	4.7	15.0	-	0%
Project Board	2.0	1.3	0.9	0.0	0.9	73%	0.3	0.9	-	0.3	0.3	1.3	-	0%
Project Board Expenses	0.3	0.1	0.1	-	0.1	64%	0.0	0.1	-	0.0	0.0	0.1	-	0%
Project Team	29.1	23.1	15.9	0.3	16.3	70%	6.9	22.9	6.7	0.2	6.9	23.1	-	0%
Project Team Expenses	1.2	0.5	0.3	0.0	0.3	62%	0.2	0.3	-	0.2	0.2	0.5	-	0%
CRD Financial Services	1.5	1.4	0.9	0.0	0.9	66%	0.5	1.4	0.5	-	0.5	1.4	-	0%
CRD Human Resources	0.3	0.3	0.2	0.0	0.2	88%	0.0	0.3	0.0	-	0.0	0.3	-	0%
CRD Corporate Communications	0.2	0.2	0.2	-	0.2	86%	0.0	0.2	0.0	-	0.0	0.2	-	0%
CRD Real Estate	0.3	0.3	0.2	-	0.2	88%	0.0	0.3	0.0	-	0.0	0.3	-	0%
CRD Information Technology	0.4	0.4	0.3	0.0	0.3	68%	0.1	0.4	0.1	-	0.1	0.4	-	0%
CRD Insurance	0.1	0.0	0.0	-	0.0	100%	-	0.0	-	-	-	0.0	-	0%
CRD Operations	0.6	0.6	0.5	0.0	0.5	82%	0.1	0.6	0.1	-	0.1	0.6	-	0%
CRD Legislative Services	0.1	0.1	0.1	-	0.1	100%	-	0.1	-	-	-	0.1	-	0%
CRD Corporate Safety	0.2	0.2	0.2	-	0.2	100%	-	0.2	-	-	-	0.2	-	0%
CRD Executive Services	-	0.1	0.1	-	0.1	71%	0.0	0.1	0.0	-	0.0	0.1	-	0%
Office Lease	1.5	1.3	0.8	0.0	0.9	67%	0.4	1.2	0.4	0.1	0.4	1.3	-	0%
Office Supplies, Communications & Vehicles	1.2	0.7	0.5	0.0	0.5	79%	0.1	0.5	0.0	0.1	0.1	0.7	-	0%
Computer Hardware, Software & Training	1.0	1.1	0.6	-	0.6	60%	0.4	0.6	-	0.4	0.4	1.1	-	0%
Contingency	4.8	2.3	-	-	-	0%	2.3	-	-	2.3	2.3	2.3	-	0%
BC Hydro	**12.9**	**4.3**	**2.0**	**-**	**2.0**	**48%**	**2.3**	**2.1**	**0.0**	**2.2**	**2.3**	**4.3**	**-**	**0%**
Third Party Commitments	**8.1**	**8.1**	**3.9**	**0.1**	**4.0**	**49%**	**4.1**	**6.8**	**2.8**	**1.3**	**4.1**	**8.1**	**-**	**0%**
Program Reserves	**19.2**	**0.9**	**-**	**-**	**-**	**0%**	**0.9**	**-**	**-**	**0.9**	**0.9**	**0.9**	**-**	**0%**
Core Area Wastewater Treatment Project	**765.0**	**775.0**	**527.3**	**11.9**	**539.2**	**70%**	**235.7**	**734.1**	**194.9**	**40.8**	**235.7**	**775.0**	**-**	**0%**

* Values presented in $millions, results in minor rounding differences
** Cost report presents approved expenditures
^ Component no longer required, and would not provide any value therefore removed from Project Scope; Costs include Seaterra initiation, planning and design

Appendix S− Quarterly Cost Report

QUARTERLY COST REPORT
as at June 30, 2020

Description	BUDGET			COST EXPENDED					COMMITMENTS			FORECAST		VARIANCE	
	Control Budget	Allocated Budget		Expended to March 31, 2020	Expended over reporting period (Q2 2020 Apr-Jun)	Expended to June 30, 2020	Expended to June 30, 2020 as a % of Allocated Budget	Remaining (Unexpended) Allocated Budget at June 30, 2020	Total Committment at June 30, 2020	Unexpended Commitment at June 30, 2020	Uncommitted Allocated Budget at June 30, 2020	Forecast to Complete	Forecast at Completion	Variance at Completion $	Variance at Completion as a % of Allocated Budget
McLoughlin Point Wastewater Treatment Plant	**331.4**	**328.1**	-	**282.5**	**16.3**	**298.8**	**91%**	**29.3**	**321.2**	**22.4**	**6.9**	**29.3**	**328.1**	**-**	**0%**
Construction	306.7	321.0		281.8	16.4	298.2	93%	22.7	320.5	22.3	0.5	22.7	321.0	-	0%
Contingency	14.9	0.2		-	-	-	0%	0.2	-	-	0.2	0.2	0.2	-	0%
Financing	9.8	6.9		0.7	(0.1)	0.5	7%	6.4	0.7	0.1	6.2	6.4	6.9	-	0%
Residuals Treatment Facility	**159.4**	**140.0**		**10.6**	**0.7**	**11.3**	**8%**	**128.7**	**139.0**	**127.7**	**1.0**	**128.7**	**140.0**	**-**	**0%**
Construction	145.4	138.9		10.6	0.7	11.3	8%	127.7	138.9	127.7	0.0	127.7	138.9	-	0%
Contingency	12.3	0.2		-	-	-	0%	0.2	-	-	0.2	0.2	0.2	-	0%
Financing	1.7	0.8		0.0	-	0.0	2%	0.8	0.0	0.0	0.8	0.8	0.8	-	0%
Conveyance System	**158.1**	**215.7**		**152.3**	**14.0**	**166.3**	**77%**	**49.4**	**195.4**	**29.1**	**20.3**	**49.4**	**215.7**	**-**	**0%**
Macaulay Point Pump Station	25.4	30.8		25.3	2.3	27.7	90%	3.1	30.8	3.1	0.0	3.1	30.8	-	0%
Macaulay Forcemain	5.6	7.4		6.6	0.9	7.4	100%	-	7.4	-	-	-	7.4	-	0%
Craigflower Pump Station	12.5	12.4		12.4	-	12.4	100%	-	12.4	-	-	-	12.4	-	0%
Clover Point Pump Station	23.7	27.3		24.6	0.1	24.7	91%	2.6	27.2	2.5	0.1	2.6	27.3	-	0%
Currie Pump Station^	2.8	0.1		0.1	-	0.1	100%	-	0.1	-	-	-	0.1	-	0%
Arbutus Attenuation Tank	14.2	24.6		11.5	2.0	13.5	55%	11.1	23.1	9.7	1.4	11.1	24.6	-	0%
Clover Forcemain	14.6	32.5		28.0	1.9	30.0	92%	2.5	31.9	1.9	0.6	2.5	32.5	-	0%
Currie Forcemain^	3.3	0.2		0.2	-	0.2	100%	-	0.2	-	-	-	0.2	-	0%
Trent Forcemain	9.5	11.3		0.7	1.9	2.6	23%	8.7	8.1	5.5	3.2	8.7	11.3	-	0%
Residual Solids Conveyance Line	19.1	36.6		31.7	2.5	34.3	94%	2.3	36.5	2.2	0.1	2.3	36.6	-	0%
Residual Solids Pump Stations & Bridge Crossings	4.6	18.1		10.5	2.4	13.0	71%	5.2	16.9	4.0	1.2	5.2	18.1	-	0%
Residual Solids Conveyance Line – Highway Crossing	-	0.4		0.3	0.0	0.3	76%	0.1	0.4	0.0	0.1	0.1	0.4	-	0%
Contingency	16.8	9.9		-	-	-	0%	9.9	-	-	9.9	9.9	9.9	-	0%
Financing	5.8	4.1		0.3	(0.1)	0.2	5%	3.9	0.3	0.1	3.7	3.9	4.1	-	0%
Project Management Office ("PMO")	**75.8**	**77.9**		**53.8**	**3.0**	**56.8**	**73%**	**21.1**	**69.7**	**12.9**	**8.2**	**21.1**	**77.9**	**-**	**0%**
Project costs Aug 2016-Dec 2016	2.2	2.2		2.2	0.0	2.2	100%	-	2.2	-	-	-	2.2	-	0%
Owner's Engineering	17.2	17.5		13.4	1.1	14.5	83%	3.0	17.5	3.0	0.0	3.0	17.5	-	0%
Conveyance Design	5.0	9.5		7.4	0.2	7.6	80%	1.9	8.5	0.9	1.0	1.9	9.5	-	0%
Advisors & Professional Support	7.0	15.0		10.0	0.3	10.3	69%	4.7	11.5	1.2	3.5	4.7	15.0	-	0%
Project Board	2.0	1.3		1.0	(0.1)	0.9	73%	0.3	0.9	-	0.3	0.3	1.3	-	0%
Project Board Expenses	0.3	0.1		0.1	(0.0)	0.1	64%	0.0	0.1	-	0.0	0.0	0.1	-	0%
Project Team	29.1	23.1		15.3	0.9	16.3	70%	6.9	22.9	6.7	0.2	6.9	23.1	-	0%
Project Team Expenses	1.2	0.5		0.3	0.0	0.3	62%	0.2	0.3	-	0.2	0.2	0.5	-	0%
CRD Financial Services	1.5	1.4		0.8	0.1	0.9	66%	0.5	1.4	0.5	-	0.5	1.4	-	0%
CRD Human Resources	0.3	0.3		0.2	0.0	0.2	88%	0.0	0.3	0.0	-	0.0	0.3	-	0%
CRD Corporate Communications	0.2	0.2		0.2	(0.0)	0.2	86%	0.0	0.2	0.0	-	0.0	0.2	-	0%
CRD Real Estate	0.3	0.3		0.2	0.0	0.2	88%	0.0	0.3	0.0	-	0.0	0.3	-	0%
CRD Information Technology	0.4	0.4		0.2	0.1	0.3	68%	0.1	0.4	0.1	-	0.1	0.4	-	0%
CRD Insurance	0.1	0.0		-	0.0	0.0	100%	-	0.0	-	-	-	0.0	-	0%
CRD Operations	0.6	0.6		0.4	0.1	0.5	82%	0.1	0.6	0.1	-	0.1	0.6	-	0%
CRD Legislative Services	0.1	0.1		0.1	-	0.1	100%	-	0.1	-	-	-	0.1	-	0%
CRD Corporate Safety	0.2	0.2		0.1	0.1	0.2	100%	-	0.2	-	-	-	0.2	-	0%
CRD Executive Services	-	0.1		-	0.1	0.1	71%	0.0	0.1	0.0	-	0.0	0.1	-	0%
Office Lease	1.5	1.3		0.8	0.1	0.9	67%	0.4	1.2	0.4	0.1	0.4	1.3	-	0%
Office Supplies, Communications & Vehicles	1.2	0.7		0.5	0.0	0.5	79%	0.1	0.5	0.0	0.1	0.1	0.7	-	0%
Computer Hardware, Software & Training	1.0	1.1		0.6	0.0	0.6	60%	0.4	0.6	-	0.4	0.4	1.1	-	0%
Contingency	4.8	2.3		-	-	-	0%	2.3	-	-	2.3	2.3	2.3	-	0%
BC Hydro	**12.9**	**4.3**		**2.0**	**0.0**	**2.0**	**48%**	**2.3**	**2.1**	**0.0**	**2.2**	**2.3**	**4.3**	**-**	**0%**
Third Party Commitments	**8.1**	**8.1**		**3.7**	**0.3**	**4.0**	**49%**	**4.1**	**6.8**	**2.8**	**1.3**	**4.1**	**8.1**	**-**	**0%**
Program Reserves	**19.2**	**0.9**		**-**	**-**	**-**	**0%**	**0.9**	**-**	**-**	**0.9**	**0.9**	**0.9**	**-**	**0%**
Core Area Wastewater Treatment Project	**765.0**	**775.0**		**505.0**	**34.3**	**539.2**	**70%**	**235.7**	**734.1**	**194.9**	**40.8**	**235.7**	**775.0**	**-**	**0%**

* Values presented in $millions, results in minor rounding differences
** Cost report presents approved expenditures
^ Component no longer required, and would not provide any value therefore removed from Project Scope; Costs include Seaterra initiation, planning and design

Item 7.1

REPORT TO CORE AREA WASTEWATER TREATMENT PROJECT BOARD
MEETING OF THURSDAY, SEPTEMBER 24, 2020

SUBJECT **Wastewater Treatment Project July 2020 Monthly Report**

ISSUE

To provide the Core Area Wastewater Treatment Project Board with the Wastewater Treatment Project July 2020 Monthly Report.

BACKGROUND

On May 25, 2016 the Regional Board of the CRD:

i) Adopted by resolution the Core Area Wastewater Treatment Project Board Terms of Reference (Project Board Terms of Reference) for the purposes of establishing principles governing the Core Area Wastewater Treatment Project (the Wastewater Treatment Project or the WTP);
ii) Established the Core Area Wastewater Treatment Project Board (Project Board) under Bylaw 4109 (the CRD Core Area Wastewater Treatment Board Bylaw No. 1, 2016) for the purposes of administering the Core Area Wastewater Treatment Project; and
iii) Delegated certain of its powers, duties and functions to the Project Board under Bylaw 4110 (the CRD Core Area Wastewater Treatment Project Board Delegation Bylaw No. 1, 2016).

On September 14, 2016 the Regional Board of the CRD:

i) Received the final report of the Project Board with respect to its recommendation for the CAWTP, dated September 7, 2016 (the Final Report); and
ii) Approved the business case attached as Appendix 1 (the Business Case) to the Final Report.

DISCUSSION

The Core Area Wastewater Treatment Project Board (the Project Board) Terms of Reference requires, amongst other things: that the Project Board provide the CRD Board with monthly progress reports and a comprehensive quarterly report on the Project.

The Monthly report for the period of July 2020 is attached as Appendix A.

RECOMMENDATION

That the Core Area Wastewater Treatment Project Board approve the following resolution:

RESOLVED that:

The Staff Report, 'Wastewater Treatment Project July 2020 Monthly Report', be received for information and forwarded to the Core Area Liquid Waste Management Committee and CRD Board for information.



Elizabeth Scott, Deputy Project Director
Wastewater Treatment Project



Dave Clancy, Project Director
Wastewater Treatment Project
Concurrence

Attachments: 1

Appendix A: Wastewater Treatment Project July 2020 Monthly Report

ES:er

Wastewater Treatment Project
Treated for a cleaner future

CRD Wastewater Treatment Project

Monthly Report

Reporting Period: July 2020

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1 Executive Summary

1.1 Introduction

This Monthly Report covers the reporting period of July 2020 and outlines the progress made on the Wastewater Treatment Project over this time.

The Wastewater Treatment Project (the "Project") includes three main Project Components (the "Project Components"): the McLoughlin Point Wastewater Treatment Plant (the "McLoughlin Point WWTP"), the Residuals Treatment Facility (the "RTF") and the Conveyance System (which includes upgrades to the conveyance network including the construction of pump stations and pipes). The Project scope is being delivered through a number of contracts with a variety of contracting strategies.

Over the reporting period the COVID-19 public health emergency continued to have impacts on the Project. The Project Team and Project contractors are actively monitoring the status of the COVID-19 public health emergency and are taking additional precautions to protect our staff, contractors, and the public. Construction is ongoing at all of the Project's sites in accordance with guidelines established by the Provincial Health Officer.

While construction is ongoing, the public health emergency is impacting construction progress and may delay some interim project milestones, such as the transition to commissioning. However, based on current progress the Wastewater Treatment Project remains on schedule to meet the regulatory deadline for treatment by the end of 2020.

The McLoughlin Point WWTP Project Component is continuing with Harbour Resource Partners ("HRP" as the Design-Build contractor for the McLoughlin Point WWTP) progressing: wet commissioning at Densadegs 1, 2 and 3; primary odour control system, plate settler one and two, sludge tank, plant drain tank and valve vault; biological aerated filter (BAF) cell nine; wet commissioning on the blower; installation of disk filter system piping and equipment; lower level interior, second level interior and building envelope are all nearing completion in the Operations and Maintenance building; progressed final north planter and tsunami walls; and the Fortis gas tie-in and the BC Hydro inspection of the generator start-up were completed.

The RTF Project Component is continuing with Hartland Resource Management Group ("HRMG" as the Design-Build-Finance-Operate-Maintain contractor for the RTF) progressing construction activities including: erection of scaffolding for gas membrane installation in the Digester area; insulating piping and installation of receiving hopper in the Other Municipal Solids Receiving Facility; insulation of hot water piping and commissioning of various systems in the Residuals Handling Building; completed installation of external stairs in the Residuals Drying Facility; completion of fiberglass reinforced plastic (FRP) duct installation, and chemical piping installation; and commissioning of various system in the Residuals Storage and Odour Control area.

The Conveyance System is being delivered through seven construction contracts: two design-build contracts and five design-bid-build contracts.

The two design-build Conveyance System contracts progressed over the reporting period as follows:

- Clover Point Pump Station: Kenaidan Contracting Limited ("Kenaidan" as the Design-Build Contractor) progressed construction activities over the reporting period including: electro-mechanical works in the public plaza washroom; completing seismic upgrades, installation of new diesel generator exhaust, fuelling system, diesel generator, and grit separation equipment; and functional and operational tests for upgrades at the existing pump station.

- Macaulay Point Pump Station: Kenaidan Contracting Limited ("Kenaidan" as the Design-Build Contractor) progressed construction activities over the reporting period including: installation of flow splitters in the wet well; commenced grout around the slide gate; ongoing installation of FRP platform and stairs in the pump room and FRP installation in the Bin Room; and completion of the wood siding installation, installation of doors and grout for the flow splitter.

The design-bid-build Conveyance System contracts progressed over the reporting period, as follows:

- Clover Forcemain: Windley Contracting Ltd. ("Windley" as the Construction Contractor) continued construction activities including: cycle track and road restoration; seawall balustrade replacement construction; installing new aluminium fence and progressed installation of new bollards.

- Residual Solids Conveyance Line ("RSCL"): the RSCL is being delivered through two construction contracts, with work progressing as follows:

    - Residual Solids Pipes: Don Mann Excavating Ltd. ("Don Mann" as the Construction Contractor) continued construction activities over the reporting period, including: completing all pipe work, and commencing utility locates and survey layout along with equipment mobilization in preparation for undertaking Saanich infrastructure improvements at Peers Creek.

    - Residual Solids Pump Stations: Knappett Projects Inc. ("Knappett" as the Construction Contractor) continued construction activities including: installation of curbing at Pump Station 1, Hartland Reservoir underground pipe work; completed commissioning of pipes, and pump stations including pigging of the lines; and completed Admirals Bridge installation including pressure testing.

- Arbutus Attenuation Tank ("AAT"): NAC Constructors Ltd. (as the Construction Contractor) continued construction activities including: commencing drilling/grouting and installation of rock anchors; completed final excavation within the tank; and installation of the mud mat base at base of the tank.

- Trent Forcemain: Jacob Bros. Construction Inc. (as the Construction Contractor) progressed construction activities including: installation of 269 m of forcemain along

Fairfield Road and Memorial Crescent; and installation of air release valve chamber at Fairfield Road and Stannard Avenue.

1.2 Dashboard

Table 1 indicates the high level status of the Project and each Project Component with regards to the six Key Performance Indicators ("KPI") that were defined within the Project Charter.

There were no changes made to the KPIs over the reporting period.

The safety KPI for the Project and the conveyance system remains yellow. Over the reporting period no recordable safety incidents occurred and the total recordable incident frequency decreased from 1.6 (at the end of the June 2020) to 1.5.

The Project Team continues to work with and ensure that all of the prime contractor partners maintain safety as their number one priority. The Project Team is also actively monitoring the status of the COVID-19 public health emergency and is taking additional precautions to protect our staff, contractors, and the public. The BC Government has designated construction as an essential service, and issued guidelines for construction sites to minimize the risks of COVID-19 transmission or illness. All Project contractors have implemented additional precautions to ensure the health and safety of their workers. These measures follow the direction set by the BC Government, including emphasizing the importance of maintaining social distance, increasing handwashing stations, reducing in-person meetings and increasing cleaning of common areas. The Project Team will continue to monitor contractors' compliance with the direction of the government as the situation evolves.

The schedule KPI for the Project overall and the Project components remains green. The COVID-19 public health emergency is impacting construction progress and may delay some interim project milestones, such as the transition to commissioning. However, construction is ongoing at all of the Project's sites, in accordance with provincial guidelines, and based on current progress the Wastewater Treatment Project remains on schedule to meet the regulatory deadline for treatment by the end of 2020.

The cost KPI for the Project overall and the conveyance system remained red over the reporting period, and are expected to remain red for the duration of the Project, primarily as a result of inflation in the Vancouver Island construction market. Other factors that have contributed to budget pressures include: design development to incorporate stakeholder input; geotechnical considerations including removal and disposal of contaminated material; and schedule constraints associated with the requirement to provide wastewater treatment by the regulatory deadline of December 31, 2020.

Based on the value of the contracts awarded to-date and the refreshed cost estimate for the scope remaining to be procured, the Project Team forecast the cost to complete the Project at $775M, or $10M over the Project's control budget. In May 2019 the CRD Board approved an increase in the Project's budget by $10M to $775M.

Subsequent to May 2019 the Project Team have continued to manage risks and there have been two main opposing budget drivers:

i) The Project's financing costs to-date have been lower than budgeted for two reasons: firstly as a result of low interest rates since the start of the Project, and

secondly due to the receipt of funding from the provincial government earlier than forecast; and

ii) The Project's construction costs may be higher than budgeted as many contractors have advised that there are cost impacts from the COVID-19 public health emergency. Impacts include labour availability, work modifications to comply with provincial guidelines, and delays to the delivery of equipment and supplies.

It is too early to determine the cost impact to the Project, but given the ability to offset the unforeseen costs of COVID-19 through the finance cost savings, the Project Team remain confident that, if construction continues at the current pace, the Project cost will be within the Project's $775M budget.

Table 1- Executive Summary Dashboard

Key Performance Indicators		Project Overall	WWTP	RTF	Conveyance System	Comments
Safety	Deliver the Project safely with zero fatalities and a total recordable incident frequency (TRIF) of no more than 1*.					No recordable incidents occurred over the period. Site inspections are ongoing. The Project Team is actively monitoring the status of the COVID-19 public health emergency and is taking additional precautions to protect our staff, contractors, and the public. All Project contractors have implemented additional precautions to ensure the health and safety of their workers. The Project Team will continue to monitor and follow the direction of the government during this evolving situation.
Environment	Protect the environment by meeting all legislated environmental requirements and optimizing opportunities for resource recovery and greenhouse gas reduction.					Two minor environmental incident occurred over the reporting period: flows at the Clover Point Pump Station were temporarily diverted from the long outfall to the short outfall, and there was a small fuel leak from a compressor at the Arbutus Attenuation Tank site.
Regulatory Requirements	Deliver the Project such that the Core Area complies with provincial and federal wastewater regulations.					No regulatory issues.
Stakeholders	Continue to build and maintain positive relationships with First Nations, local governments, communities, and other stakeholders.					Engagement activities were ongoing over the reporting period. Significant efforts were made to provide accurate and timely information to stakeholders.
Schedule	Deliver the Project by December 31, 2020.					The COVID-19 public health emergency is impacting construction progress and may delay some interim project milestones, such as the transition to commissioning. The Wastewater Treatment Project has made significant progress and currently remains on schedule to meet the regulatory deadline for treatment by the end of 2020.
Cost	Deliver the Project within the Control Budget ($765 million).					Based on the value of the contracts awarded to-date and a refreshed cost estimate for the scope remaining to be procured, the Project Team has forecast the cost to complete the Project at $775M, or $10M over the Project's Control Budget. This is primarily as a result of inflation in the Vancouver Island construction market. Other factors that have contributed to budget pressures include: design development to incorporate stakeholder input; geotechnical considerations including removal and disposal of contaminated material; and schedule constraints associated with the requirement to provide wastewater treatment by the regulatory deadline of December 31, 2020. The CRD Board have approved an increase in the Project's budget by $10M, to $775M. Many contractors have advised that there are cost impacts from the COVID-19 public health emergency. It is too early to determine the cost impact to the Project, but given the ability to offset the unforeseen costs of COVID-19 through the finance cost savings, the Project Team remain confident that, if construction continues at the current pace, the Project cost will be within the Project's $775M budget.

* A TRIF of no more than 1 means that there is 1 or fewer recordable incidents (being a work-related injury or illness that requires medical treatment beyond first aid or causes death, days away from work, restricted work or transfer to another job, or loss of consciousness) for every 200,000 person-hours of work	
Status	Description
	KPI unlikely to be met
	KPI at risk unless correction action is taken
	KPI at risk but corrective action has been identified/is being implemented
	Good progress against KPI

2 Wastewater Treatment Project Progress

2.1 Safety

Safety information for the reporting period and cumulative for the Project from January 1, 2017 is summarized in Table 3.

The Project Team is actively monitoring the status of the COVID-19 public health emergency and is taking additional precautions to protect our staff, contractors, and the public. The BC Government has designated construction as an essential service, and issued guidelines for construction sites to minimize the risks of COVID-19 transmission or illness.

All Project contractors have implemented additional precautions to ensure the health and safety of their workers. These measures follow the direction set by the BC Government, including emphasizing the importance of maintaining social distance, increasing handwashing stations, reducing in-person meetings and increasing cleaning of common areas. The Project Team will continue to monitor contractors' compliance with the direction of the government during this evolving situation.

Site safety tours and weekly safety inspections were carried out by Project Management Office ("PMO") construction and safety personnel over the reporting period at all active worksites: McLoughlin Point WWTP, RTF, Macaulay Point Pump Station, Clover Point Pump Station, Clover Forcemain, Residual Solids Pump Stations; Arbutus Attenuation Tank and Trent Forcemain.

Over the reporting period (July 2020) 12 safety incidents occurred, comprising: seven first-aid, and five report-only incidents, as summarized in Table 2.

Table 2: Safety Incidents over the Reporting Period

Date	Work Site	Incident Type	Description	Outcome	Corrective Action Taken
July 3, 2020	RTF	Report Only	Minor damage caused by telehandler to parked vehicle.	Scratches to the paint on the driver's side rear quarter panel occurred. Contractor will cover cost of repairs. No one was injured or required first aid.	Tool-box talk with crews to remind them to use spotters when backing equipment or working in restricted areas.
July 7, 2020	Residual Solids Pump Stations	Report Only	Access by public to a construction site.	Members of the public on bikes entered a restricted construction site. When asked to leave a verbal confrontation ensued.	Signage to be placed in a more visible area so the public is aware of the site closure. Site security was enhanced to prevent unauthorized entry by the public.

Date	Work Site	Incident Type	Description	Outcome	Corrective Action Taken
July 8, 2020	McLoughlin Pt WWTP	Report Only	Lifting equipment shut-off while in use.	Unit was not loaded at the time. No injuries to any workers reported.	Tags placed on controls and a worker was placed in the area to prevent accidental shut-down of equipment.
July 10, 2020	McLoughlin Pt WWTP	First Aid	Worker lowering equipment into a tank.	Worker felt pain in lower back. Reported to first aid for evaluation. No follow up actions were required.	Tool-box talk to remind workers of the correct way to lift and lower materials and equipment.
July 10, 2020	McLoughlin Pt WWTP	First Aid	Worker was kneeling for a prolonged duration.	Worker felt pain in lower back. Reported to first aid for evaluation. No follow up actions were required.	Workers reminded of proper ergonomics and stretching prior to task in the event they may be in a fixed position for a period of time.
July 13, 2020	McLoughlin Pt WWTP	First Aid	Worker tripped on a fitting that was left under a pipe stand.	Worker sustained a minor injury to their foot. Reported to first aid for evaluation. No follow up actions were required.	Tool-box talk reviewing the importance of always being aware of your work space and ensuring housekeeping practices are followed.
July 13, 2020	Trent Forcemain	Report Only	Minor damage caused by excavator to parked vehicle.	An excavator reversed and contacted a City of Victoria garbage truck which was parked behind the equipment, causing minor damage to the truck.	Tool-box talk conducted to remind workers that spotters are required prior to backing up any equipment.
July 14, 2020	McLoughlin Pt WWTP	First Aid	Worker sustained a hand injury when pinched between scissor lift and steel trough.	Worker reported to first aid where a small cut to their hand was attended to. No follow up was required.	Tool-box talk to remind workers to be aware of their work area at all times.
July 15, 2020	McLoughlin Pt WWTP	Report Only	Worker bumped a ventilation duct while working overhead.	Falling object damaged equipment below.	Workers reminded to perform a risk assessment and identify any potential hazards that may be associated with task. Loose items to be secured with extra caution used when working around them if there is potential for them to fall if bumped.
July 17, 2020	McLoughlin Pt WWTP	First Aid	Worker sustained a hand injury while working in a panel.	Worker reported to first aid to have a small cut on their finger attended to. Worker was wearing gloves at time of incident which limited the injury. No further follow up was required.	Workers reminded to be more aware of hand positioning when opening and closing panel doors.
July 22, 2020	Arbutus Attenuation Tank	First Aid	Worker sustained an ankle injury while crossing site.	Worker stepped on a rock causing the foot to twist. Worker reported to first aid for evaluation. No follow up was required.	Workers reminded to be aware of their surroundings when walking on uneven ground and to ensure that traffic areas are kept free and clear of tripping hazards.

Date	Work Site	Incident Type	Description	Outcome	Corrective Action Taken
July 27, 2020	McLoughlin Pt WWTP	First Aid	Worker experienced a strain.	While attempting to adjust a louver installed in a wall the worker felt pain in forearm. They reported to first aid and no follow up was required.	Tool box talk conducted on the proper techniques for lifting and working overhead.

Key safety activities conducted during July included:

- bi-weekly project update meetings with prime contractors: HRMG, Kenaidan, Windley, Don Mann, HRP, Knappett, Jacob Bros and NAC;
- monthly Incident Investigation reviews;
- reviewed site specific safety plans and high risk tasks;
- WTP Safety Manager and/or Construction Manager conducting regular site inspections at all active Project work sites;
- office safety orientation for all WTP staff as they returned to working in the office, with a focus on COVID-19 protocols;
- host Prime Contractor Safety Coordination Meeting with Project safety representatives;
- heat stress safety notice issued to Prime Contractors;
- review of Prime Contractor Training Safe Work Practice protocols to be used on site; and
- site tour at Macaulay, McLoughlin and Clover Point for CRD Corporate Safety Manager and Emergency Response Coordinator.

Table 3: WTP Safety Information

	Reporting Period (July 2020)	Project Totals
Person Hours		
PMO	3,345	152,077
Project Contractor	89,362	2,061,961
Total Person Hours	92,707	2,214,038
PMO	29	
Project Contractors (& Project Consultants) working on Project Sites	478	
Total Number of Employees	507	
Near Miss Reports	0	46
High Potential Near Miss Reports	0	6
Report Only	5	170
First Aid	7	65
Medical Aid	0	10
Medical Aid (Modified Duty)	0	2
Lost Time	0	5
Total Recordable Incidents	0	17
		Project Frequency (from January 1, 2017)
First Aid Frequency		5.9
Medical Aid Frequency		1.1
Lost time Frequency		0.5
Total Recordable Incident Frequency		1.5

2.2 Environment and Regulatory Management

Environmental and regulatory activities continued over the reporting period relating to both the planning of upcoming work and the execution of current work.

2.2.1 Environment

Environmental work progressed as planned over the reporting period. The focus was on environmental monitoring of construction activities and planning for upcoming riparian work.

Key environmental management activities completed in July included:

- The CRD, Parsons (as Design Consultant), Don Mann (as Construction Contractor) and McElhanney (as the Construction Contractor's environmental consultant) met at the site of a culvert at Peers Creek on Interurban Road, that is being replaced as a Saanich infrastructure improvement. The purpose of the meeting was to discuss the environmental protection measures that would be implemented during the work.
- The CRD, District of Saanich and Don Mann (as Construction Contractor) visited the site adjacent to the Admirals Bridge to assess the restoration completed by Don Mann. The CRD and District of Saanich were satisfied with the restoration, with plans to revisit the site later in the fall, once the rains return and the seeding begins to germinate.

Over the reporting period, there were two minor environmental incidents:

- Overnight on July 23rd flows at Clover Point Pump Station where diverted from the long outfall to the short outfall as a result of loss of power to the screens. The CRD's overflow response procedure was implemented: the CRD posted public health advisory signs and closed nearby beaches to swimming for approximately 6 days.
- NAC Constructors Ltd. (NAC) experienced a minor fuel leak from a compressor at the Arbutus Attenuation Tank site. The amount was less than a litre, and was therefore not reportable. A spill kit was used to clean-up the spilled material and the used components of the spill kit were disposed of at an appropriate facility. The compressor was placed on a drip tray and crews were reminded of that requirement for all small equipment.

2.2.2 Regulatory Management

During the reporting period, the Project Team continued to monitor the advancement of the remaining construction-related regulatory approvals and supported or led the advancement of remaining permit applications.

Key permitting activities for July included:

- The CRD and Transport Canada met to discuss the Harbour Crossing Licence Agreement; and
- A similar meeting to discuss the Mcloughlin Point outfall will take place in September.

The status of key Project permits are summarized in Table 4. The table is not a list of all required Project permits, but rather a summary of the status of key Project permits.

Table 4- Key Permits Status

Permit/Licence	*Anticipated Date*	*Status*	*Party Responsible for Obtaining Perming*
McLoughlin Point Harbour Crossing			
Transport Canada Lease	Following completion of construction	On track	HRP
McLoughlin Point Outfall			
Transport Canada Lease	Following completion of construction	On track	HRP

2.3 First Nations

First Nations communication and engagement was ongoing over the reporting period. Meetings with the Esquimalt and Songhees' liaisons continued, as did meetings with the W̱SÁNEĆ Leadership Council's (WLC) liaison. The meetings are a forum for covering both Project-related issues with the potential to impact First Nations, as well as an opportunity for broader discussion of CRD-related issues.

Key activities in July included:

- The CRD, Knappett (as Construction Contractor), Millennia Research (CRD's archaeological consultant) and members of the WLC met to discuss the screening of archaeological material that was excavated from the site of one of the Residual Solids Pump Stations. The purpose of the meeting was discuss methods and schedule.

2.4 Stakeholder Engagement

The Project maintained its ongoing two-way Communications and Engagement Plan to provide Project information to stakeholders, communities and the public and to respond to public inquiries. The key focus of the communications and engagement activities over the period was to keep residents and stakeholders informed of Project plans, progress and construction information, and to receive and respond to questions and concerns raised by the community. A variety of communications tools and engagement activities were utilized to support the implementation of the plan, including stakeholder meetings, Project website updates and notifications of construction through notices and a public inquiry program, among other methods.

Construction Communications

Two construction notices were issued to stakeholders in the reporting period:

- Trent Forcemain: Road Closure at Fairfield and Stannard (July 15, 2020) (Appendix A); and
- Macaulay Point Pump Station: Transition to New Pump Station (July 13, 2020) (Appendix B)

The construction notices were hand delivered in the community. The Trent Forcemain notice was delivered to 75 residences along the closure and detour route and the Macaulay Point Pump Station notice was delivered to 46 residences near the pump station. In addition, as part of ongoing construction communications, residents affected by localized, temporary disruptions, such as driveway impacts, were notified by hand delivery of notices.

One public service announcement was distributed to local media and posted online as an alert:

- Core Area Wastewater Discharge Notice (July 24, 2020) (Appendix C)

Project Website

Over the reporting period the Project website, wastewaterproject.ca, was updated with information about the Project. Two construction notices were posted. A map showing the progress of construction along the Residual Solids Conveyance Line (Appendix D) was updated to show that pipe installation is complete. One alert was added and resolved for the wastewater discharge out of the short outfall at Clover Point, in accordance with the CRD's response protocol.

The CRD's Twitter and Facebook account were used to provide Project information to the public, including updates about the wastewater discharge at the Clover Point Pump Station and traffic advisories for the work on the Trent Forcemain.

Community Meetings

Over the reporting period, the Project Team held meetings with the following community groups and representatives, and municipality representatives:

- James Bay Neighbourhood Association;
- City of Victoria Technical Working Group;

- City of Victoria staff;
- District of Saanich Technical Working Group; and
- Township of Esquimalt Liaison Committee.

Public Inquiries

Public inquiry numbers from the Project email address and 24/7 information phone line (1 844 815-6132) are noted in Table 5.

Table 5 – Project Inquiries- July 2020

Inquiry Source	Contacts for July 2020
Information phone line inquiries	22
Email inquiries responded to	37

Key themes of the public inquiries were as follows:

- interest in restoration, landscaping and public amenities;
- questions regarding work hours and noise associated with construction; and
- interest in when specific construction areas will be finished.

2.5 Resolutions from Other Governments

There were no resolutions related to the Project passed by other governments during the reporting period.

2.6 Schedule

Progress over the reporting period is summarized in Section 2.9.

Figure 1 shows the high-level Project schedule. This schedule is unchanged from that shown in the Project's Q2 2020 Quarterly Report.

Over the reporting period the COVID-19 public health emergency continued to have impacts on the Project. Specifically, the COVID-19 public health emergency is impacting construction progress and may delay some interim project milestones, such as the transition to commissioning. However, construction is ongoing at all of the Project's sites, in accordance with provincial guidelines, and based on current progress the Wastewater Treatment Project remains on schedule to meet the provincial and federal regulations for treatment for the Core Area's wastewater by December 31, 2020.

Figure 1- High-Level Project Schedule



2.6.1 30 day look ahead

Key activities and milestones for the next 30 days (August) are outlined below by function.

Safety

- CRD corporate occupational health and safety coordination committee meeting;
- site safety tour with Corporate CRD OHS Manager;
- weekly and bi-weekly prime contractor progress meetings;
- host Prime Contractor Safety Coordination Meeting with Project safety representatives;
- review of any site specific safety plans or high risk tasks;
- send out any new Safety Notices or Incident Notifications to Prime Contractor
- review any new COVID-19 document submissions;
- WTP Safety Manager and/or Construction Manager will conduct regular site inspections at all active Project work sites;
- incident reporting review with prime contractors at active work locations; and
- issue Safety Notices for trending observations or any similar incidents occurring on project sites.

Environment and Regulatory Management

- McElhanney (Don Mann qualified environmental professional) to complete stream isolation work at Peers Creek and if fish are present, salvage and relocate them.

First Nations

- CRD to continue meeting with First Nation liaisons.

Stakeholder Engagement

- ongoing construction communications with stakeholders;
- ongoing community liaison meetings; and
- distribution of Dallas Road Update.

Cost Management and Forecast

- prepare cost reports;
- monitor schedule;
- finalize CRD WTP annual budget; and
- submit funding claims to Infrastructure Canada (under the Building Canada Fund and Green Infrastructure Fund).

Construction

McLoughlin Point

- construct site road structures;
- complete landscaping including green roof;
- install plumbing fixtures;
- install electrical finishes, fire sprinkler finishes and ceiling tiles O&M Level 1; and
- continue with functional testing, wet testing and commissioning.

Clover Point Pump Station

- form, pour and strip north retaining wall and buttresses;
- paint generator and fuel storage walls;
- install split stone to exterior retaining walls;
- form, pour and strip landscape retaining walls at public plaza lookout level;
- install doors and hardware to existing pump station; and
- touch-up and final painting.

Macaulay Point Pump Station

- install outdoor site furnishings;
- commence demolition of existing structure;
- install manhole and slide gate for 1350mm pipe replacement; and
- install green roof system.

Residuals Treatment Facility

- continue functional start-up, wet testing and initial system verification;
- tie-in to Residuals Solids Conveyance Line;
- prepare for installation of membrane roof on Digested Solids Storage Tank;
- complete Digester Building construction;
- installation of receiving hopper and weather cover at Other Municipal Solids Receiving Facility;
- continue testing and commissioning activities at the Residuals Handling Building;
- complete truck load-out assembly, complete final mechanical tie-ins, complete insulation; and continue testing and commissioning activities at the Dryer Building;
- complete biogas piping;
- complete Equalization Building construction;
- complete piping insulation at Water Pump House;
- complete testing of Odour Control System; and
- continue site grading, road paving, and retention ponds.

Clover Forcemain

- complete road and cycle track from Lewis Street to Dock Street;
- complete installation of new railings along seawall; and
- commence paving of Dallas Road from Lewis Street to Dock Street.

Residual Solids Pipes

- Peers Creek Culvert replacement.

Residual Solids Pump Stations

- Pump Station 3, final grading; fence installation and landscaping
- Pump Station 2, final grading; fence installation and landscaping; and
- Pump Station 1, final grading, fence installation and landscaping.

Arbutus Attenuation Tank (AAT)

- commence excavation for valve chamber;
- complete mud slab within attenuation tank excavation;
- complete rock anchor installation; and
- commence installation of reinforcing steel, formwork, and concrete pour (staged) for attenuation tank base slab.

Trent Forcemain

- install pipe at Memorial Crescent from Dallas Road to Thurlow Road; and
- restoration and paving at Memorial Crescent.

2.6.2 60 day look ahead

Key activities and milestones for the next 60 days (September) are outlined below by function.

Safety

- CRD corporate occupational health and safety coordination committee meeting;
- host Prime Contractor Safety Coordination Meeting with Project safety representatives;
- weekly and bi-weekly prime contractor progress meetings;
- review of any site specific safety plans or high risk tasks;
- review prime contractor document submissions;
- issue safety notices for trending observations or similar incidents occurring on project sites;
- WTP Safety Manager and/or Construction Manager will conduct regular site inspections at all active Project work sites; and
- incident reporting review with prime contractors at active work locations.

Environment and Regulatory Management

- finalizing the Licence Agreements for the Harbour Crossing and McLoughlin Point Outfall with Transport Canada.

First Nations

- continue meeting with First Nation liaisons.

Stakeholder Engagement

- ongoing construction communications with stakeholders; and
- ongoing community liaison meetings.

Cost Management and Forecast

- prepare cost reports;
- monitor schedule;
- prepare for Quarter 3 close; and
- submit funding claims to Infrastructure Canada (under the Building Canada Fund and Green Infrastructure Fund).

Construction

McLoughlin Point

- commission security systems, mechanical systems, fire systems, and plumbing systems;
- building systems integration; and
- biological growth and process optimization.

Clover Point Pump Station

- install split stone to exterior walls;
- install firestop and smoke seals;
- plant trees and shrubs;

- complete final painting and touch ups;
- spray foam insulation; and
- backfill north retaining wall.

Macaulay Point Pump Station

- install outdoor site furnishings;
- commence demolition of existing structure;
- remove and salvage existing equipment; and
- plant trees and shrubs, and install green roof system.

Residuals Treatment Facility

- continue functional start-up, wet testing and initial system verification;
- install membrane roof on Digested Solids Storage Tank;
- testing in Digester Building construction;
- complete installation of receiving hopper and weather cover at Other Municipal Solids Receiving Facility;
- continue testing and commissioning activities at the Residuals Handling Building;
- continue testing and commissioning activities at the Dryer Building;
- testing biogas piping;
- testing in Equalization Building;
- testing in Water Pump House;
- commission Odour Control System; and
- continue site grading, road paving, and retention ponds.

Clover Forcemain

- final paving of Dallas Rd from Lewis Street to Dock Street; and
- clean-up and demobilize.

Residual Solids Pipes

- complete Peers Creek culvert replacement.

Residual Solids Pump Stations

- final grading, trail restoration; and installation of fence and landscaping at Pump Station #2;
- final grading and install fence at Pump Station #3; and
- remove scaffolding from Admirals and Tillicum bridges.

Arbutus Attenuation Tank (AAT)

- install valve chamber piping;
- commence construction of concrete walls, columns, stairs within the attenuation tank; and
- install manhole and associated piping.

Trent Forcemain

- commence installation of pipe on Dallas Road;
- install pipe and valve chamber at Memorial Crescent from Dallas Road to Thurlow Road; and
- restoration and paving at Memorial Crescent.

2.7 Cost Management and Forecast

The monthly cost report for July is shown in Appendix E. The cost report summarizes Project expenditures and commitments by Project Components and the major cost centres common to the Project Components.

The Project Team has been reporting budget pressures through its monthly reports to the Project Board (and CRD Board) since September 2017, primarily as a result of inflation in the Vancouver Island construction market. Other factors that have contributed to budget pressures include: design development to incorporate stakeholder input; geotechnical considerations including removal and disposal of contaminated material; and schedule constraints associated with the requirement to provide wastewater treatment by the regulatory deadline of December 31, 2020.

Based on the value of the contracts awarded to-date and the refreshed cost estimate for the scope remaining to be procured, the Project Team forecast the cost to complete the Project at $775M, or $10M (1.3%) over the Project's control budget. In May 2019 the CRD Board approved an increase in the Project's budget by $10M to $775M, and on August 14, 2019, the associated amendment to the 2019-2023 Financial Plan was approved.

Subsequent to May 2019 the Project Team have continued to manage risks and there have been two opposing budget drivers:

i) The Project's financing costs to-date have been lower than budgeted for two reasons: firstly as a result of low interest rates since the start of the Project, and secondly due to the receipt of funding from the provincial government earlier than forecast; and

ii) The Project's construction costs may be higher than budgeted as many contractors have advised that there are cost impacts from the COVID-19 public health emergency. Impacts include labour availability, work modifications to comply with provincial guidelines, and delays to the delivery of equipment and supplies.

It is too early to determine the cost impact to the Project, but given the ability to offset the unforeseen costs of COVID-19 through the finance cost savings, the Project Team remain confident that, if construction continues at the current pace, the Project cost will be within the Project's $775M budget.

2.7.1 Commitments

Commitments were made over the reporting period in furtherance of delivering the Project. The net commitments made during the reporting period resulted in an increase in committed costs of $0.5 million. The significant commitments made in the reporting period comprised the approval of provisional items in construction contracts and contract change orders.

2.7.2 Expenses and Invoicing

The Project expenditures for the reporting period were as expected and were within the budget allocations for each of the budget areas. The main Project expenditures incurred over the reporting period were associated with construction activities and project management office-related costs.

2.7.3 Contingency and Program Reserves

Contingency credits totalling $0.2M were received over the reporting period, as summarised in Table 6. The draws to-date, remaining contingency and program reserve balances are summarized in Table 6.

Table 6- Contingency and Program Reserve Draw-Down Table

WTP Contingency and Program Reserve Draws and Reallocations	Draw Date	$ Amount
Contingency and Program Reserve (in Control Budget)		**$ 69,318,051**
Net Contingency and Program Reserve draws to June 30, 2020		$ (54,479,967)
Contingency and Program Reserve balance as at June 30, 2020		**$ 14,838,084**
Control and Instrumentation OSI Pi Initial Deployment Credit	Jul-20	$ 199,327
WWTP Total Draw		$ -
RTF Total Draw		$ -
Conveyance Total Increase		$ -
PMO Total Draw		$ -
BC Hydro Total Draw		$ -
WTP Program Reserve Draw		$ -
Contingency and Program Reserve credits in the reporting period		$ 199,327
Contingency and Program Reserve balance as at July 31, 2020		**$ 15,037,411**

2.7.4 Project Funding

The federal and provincial governments are assisting the Capital Regional District in funding the Project.

The Government of British Columbia will provide $248 million towards the three components of the Project, while the Government of Canada is contributing:

- $120 million through the Building Canada Fund Major infrastructure Component towards the McLoughlin Point WWTP;
- $50 million through the Green Infrastructure Fund towards the conveyance system; and
- up to $41 million towards the RTF through the P3 Canada Fund.

The Project Team has applied to the Federation of Canadian Municipalities (FCM) for additional funding and has executed a grant agreement for the contribution of up to $346,900 towards the delineation of the contamination and remediation and risk assessment for the McLoughlin Point Wastewater Treatment Plant.

The status of funding claims is summarised in Table 7. Note that the timing for the provision of Government of British Columbia and Government of Canada's funding differs by funding source. The Project Team will submit claims to the funding partners in accordance with the relevant funding agreements. In accordance with the funding agreements, funding from the P3 Canada Fund and the remainder of the funding from the Government of British Columbia cannot be claimed until relevant Project components are substantially complete.

Table 7- Project Funding Status

Funding Source	Maximum Contribution	Funding Received in the Reporting Period	Funding Received to Date
Government of Canada (Building Canada Fund)	$120M	$4.7M	$108M
Government of Canada (Green Infrastructure Fund)	$50M	$0.7M	$45M
Government of Canada (P3 Canada Fund)	$41M	-	-
Government of British Columbia	$248M	-	$186M
Federation of Canadian Municipalities	$0.3M	-	-
TOTAL	**$459.3M**	**$5.4M**	**$339M**

2.8 Key Risks and issues

The Project Team actively identified and managed Project risks over the reporting period. Table 8 summarizes the highest-level risks that were actively managed over the reporting period, as well as the mitigation steps identified and/or undertaken over the reporting period.

No changes were made to the active risks summary over the reporting period:

The COVID-19 public health emergency continued to have impacts on the Project over the reporting period. It is anticipated that these impacts may affect several of the Project's risks. The Project Team are currently evaluating the impact of the public health emergency on the Project's risks, and anticipates that changes may be made to several of the risks as the situation evolves. Those risks that the Project Team have identified as potentially impacted, and that are currently under review, are identified in Table 8.

Table 8- Project Active Risks Summary

Risk Event	Description of Risk Event	Risk mitigation activities undertaken or planned in the reporting period	Assessed risk level	Trend in risk level from previous reporting period
Project				
Misalignment between First Nations' interests and the implementation of the Project.	The assessed risk level reflects the Project Team's priority of establishing strong and effective relationships with First Nations interfacing with, or interested in, the Project.	First Nations engagement activities remained ongoing over the reporting period (see section 2.3 for further details).	L	No change
Divergent interests between multiple parties and governance bodies whose co-operation is required to successfully deliver the Project.	The assessed risk level reflects the Project Team's priority of establishing strong and effective relationships with municipal, provincial and federal government departments.	The Project Team continued engagement with municipal, provincial and federal government departments throughout the reporting period.	L	No change
Misalignment between Project objectives/scope and stakeholder expectations.	The assessed risk level reflects the Project Team's priority of establishing strong and effective community stakeholder engagement.	Community engagement activities were ongoing over the reporting period (see section 2.4 for further details).	L	No change
Lack of integration between Project Components.	Planning challenges and system integration between the McLoughlin point WWTP, RTF and Conveyance System components of the Project results in schedule delays and/or additional Project costs.	Physical and schedule interfaces are clearly delineated in all construction contracts along with the requirement for commissioning and control plans. The Project Team has used a single Owner's engineer (Stantec) to develop the indicative design for all critical project components with significant interfaces. Commissioning and control plans are under development	L	No change
Senior government funds issue delayed.	The assessed risk level reflects the Project Team's priority of ensuring Project funding commitments are honoured.	Responsibility for meeting funding commitments has been assigned and is being monitored.	L	No change

Risk Event	Description of Risk Event	Risk mitigation activities undertaken or planned in the reporting period	Assessed risk level	Trend in risk level from previous reporting period
Downstream works delays.	Delay to the commissioning of the conveyance projects delays commissioning of the WWTP and the RTF.	Schedule has sufficient time allowance to ensure conveyance elements complete prior to requirement. Contractor agreements will include terms that require the contractor to recover schedule delays and/or allow for CRD acceleration.	M	No change but this risk may be impacted by the COVID-19 public health emergency (assessment is currently underway)
Upstream works delays.	Delay to the commissioning of either the WWTP or the RTF impacts the commissioning of the other plant.	Contracts with HRP (as the Design-Build Contractor for the McLoughlin Point WWTP) and HRMG (as the Design-Build-Finance-Operate Maintain contractor for the RTF) include terms that require the contractor to recover schedule delays and/or allow for CRD acceleration. Liquidated damages for late delivery are included in both HRP and HRMG contracts.	L	No change but this risk may be impacted by the COVID-19 public health emergency (assessment is currently underway)
Public directly contacting contractors at sites.	Direct contact between the public and contractors could expose both parties to worksite hazards and potential injuries.	Communications and engagement plan and coverage of communications in contractor orientations.	M	No change
Change in law.	A change in law impacts the scope, cost or schedule of the Project.	Keep apprised of proposed modifications to relevant regulations so as to do the following as appropriate: submit comments on proposed modifications; and/or consider including anticipated modifications in contracts.	H	No change
Labour - availability and/or cost escalation.	There is insufficient labour available to construct the Project, and/or there is significant labour cost.	The Project Team will, through the use of competitive selection processes for all construction contracts, ensure that all Project contractors have appropriate experience and therefore understand labour risk.	L	No change

Risk Event	Description of Risk Event	Risk mitigation activities undertaken or planned in the reporting period	Assessed risk level	Trend in risk level from previous reporting period
Disagreement on contractual obligations of the construction contractors.	There is a disagreement between the Project Team and a contractor regarding the performance of their contractual obligations.	The Project Team takes a proactive management approach to the resolution of any changes, claims and disputes that arise, working expeditiously to achieve resolution with the goal of minimizing any impacts to budget and schedule while ensuring adherence to the terms of the construction contracts.	M	No change but this risk may be impacted by the COVID-19 public health emergency (assessment is currently underway)

Risk Level Key - Assessed risk level (based on likelihood and potential impact			
Low	Medium	High	Closed
L	M	H	C

2.9 Status (Engineering, Procurement and Construction)

2.9.1 Wastewater Treatment Plant (McLoughlin Point WWTP)

The McLoughlin Point WWTP Project Component continued with Harbour Resource Partners ("HRP" as the Design-Build contractor for the McLoughlin Point WWTP) progressing construction and commissioning activities.

Key activities in progress or completed by HRP in July were as follows:

- Primary treatment area:
  - dry commissioned, and commencing wet commissioning at Densadegs 1, 2, & 3;
  - primary odour control system ready for influent;
  - plate settler 1 & 2 ready for influent;
  - sludge tank, plant drain tank and valve vault ready for influent;
  - untreated wash down water system ready for influent;
  - fine screens ready for influent; and
  - treated wash down water system progressed.

- Secondary treatment area:
  - moving bed bio reactor ready for influent;
  - biological aerated filter cell 9 progressed;
  - blower dry commissioning complete, ready for wet commissioning; and
  - heat recovery room steady progression, nearing construction completion.

- Tertiary treatment area:
  - outfall and clean water tank ready for influent;
  - backwash and clean water pumping systems dry commissioned and ready for wet commissioning;
  - progressed installation of disk filter system piping and disk filter equipment;
  - untreated wash down water system ready for influent; and
  - progressed treated wash down water system.

- O&M building:
  - lower level interior south of the workshop approaching completion;
  - building envelope is nearing completion; and
  - green roofing continued.

- Site Works:
  - progressed final north planter and tsunami walls;
  - continued backfill on site;
  - completed Fortis gas tie-in; and
  - completed BC Hydro inspection of generator start-up.

Photographs of construction progress over the month of July at McLoughlin Point WWTP are shown in Figures 2-5.



Figure 2− McLoughlin Point Wastewater Treatment Plant – Installation of cabinets in the Laboratory.



Figure 3− McLoughlin Point Wastewater Treatment Plant- operations and maintenance building north façade cladding and observation deck green roof membrane inspection.



Figure 4– McLoughlin Point Wastewater Treatment Plant- Tertiary building stairway cladding installation.

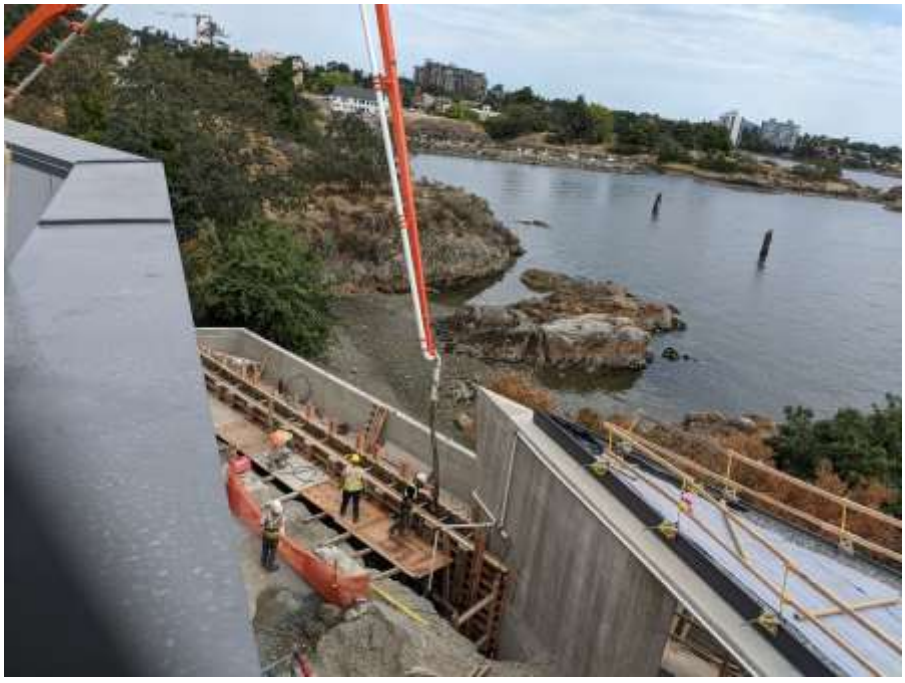


Figure 5– McLoughlin Point Wastewater Treatment Plant- North tsunami wall concrete pour.

2.9.2 Residuals Treatment Facility

The RTF Project Component continued with Hartland Resource Management Group ("HRMG" as the Design-Build-Finance-Operate-Maintain contractor for the RTF) progressing construction and commissioning activities.

Key activities in progress or completed by HRMG in July were as follows:

- Digester Area
  - erect scaffolding for gas membrane installation; and
  - commissioning systems and install of biogas piping on roof of Digester Building.

- Other Municipal Solids Receiving Facility
  - insulation of piping; and
  - installation of receiving hopper.

- Residuals Handling Building
  - commissioning of various systems; and
  - insulation of hot water piping.

- Residuals Drying Facility
  - completed installation of external stairs; and
  - commissioning of various systems in progress.

- Residuals Storage & Odour Control
  - completed installation of fiberglass reinforced plastic (FPR) duct installation; and
  - chemical piping installation complete.

- Operations Building
  - commenced fire alarm verification.

Photographs of construction progress over the month of July at the Residuals Treatment Facility are shown in Figures 6-8.



Figure 6− Residuals Treatment Facility- Ongoing placement and compaction of road base.



Figure 7− Residuals Treatment Facility- Filtrate self-priming pumps commissioning complete.



Figure 8− Residuals Treatment Facility – Wet testing and commissioning of Bio trickling Filter at Odour Control Facility.

2.9.3 Conveyance System

2.9.3.1 Clover Point Pump Station

The Clover Point Pump Station continued with Kenaidan Contracting Limited ("Kenaidan" as the Design-Build Contractor) progressing construction and commissioning activities over the reporting period.

Key construction activities in progress or completed by Kenaidan in July included:

- completed seismic upgrades;
- completed installation of new diesel generator exhaust, fuelling system, and diesel generator;
- completed installation of grit separation equipment;
- completed works in the new wastewater channel;
- progressed electro-mechanical works in the public plaza washroom; and
- completed functional and operational test for upgrades at existing pump station.

Photographs of construction progress over the month of July at Clover Point are shown in Figures 9-10.



Figure 9−Clover Point Pump Station- Stone siding being installed on the public washroom.



Figure 10- Clover Point Pump Station – Curved landscape retaining wall formwork.

2.9.3.2 Macaulay Point Pump Station and Forcemain

The Macaulay Point Pump Station and Forcemain continued with Kenaidan Contracting Limited ("Kenaidan" as the Design-Build Contractor) progressing construction and commissioning activities over the reporting period.

Key construction activities in progress or completed by Kenaidan in July were as follows:

- Diversion Chamber
  - completed concrete work around the slide gate;
  - commenced grout around the slide gate; and
  - installed slide gate.

- Pump Station
  - completed installation of turning vanes in wet well;
  - ongoing installation of fiberglass reinforced plastic (FRP) platform and stair in the pump room;
  - completed wood siding installation;
  - completed installation of all doors;
  - installed flow splitters in the wet well;
  - completed grout for the flow splitter; and
  - commenced FRP grating installation in the bin room.

Photographs of construction progress over the month of July at Macaulay Point Pump Station are shown in Figures 11-12.



Figure 11–Macaulay Point Pump Station- Final section of pipe being installed.



Figure 12−Macaulay Point Pump Station- Exterior finishes.

2.9.3.3 Clover Forcemain (CFM)

Windley Contracting Ltd. (“Windley” as the Construction Contractor) continued construction activities over the reporting period.

Key construction activities in progress or completed by Windley in July included:

- continued seawall balustrade replacement construction;
- removed old wall;
- completed new concrete wall;
- completed new sidewalk;
- installed new aluminium fence; and
- progressed bollard installation.

Photographs of construction progress over the month of July on the Clover Forcemain are shown in Figures 13-14.



Figure 13−Clover Forcemain- Installing parking bollards along Dallas Road



Figure 14−Clover Forcemain- New aluminium fence installed along Dallas Road.

2.9.3.4 Residual Solids Conveyance Line

The RSCL is being delivered through two construction contracts:

- Residual Solids Pipes; and
- Residual Solids Pump Stations

Residual Solids Pipes: Don Mann Excavating Ltd. (“Don Mann” as the Construction Contractor for the Residual Solids Pipes) continued construction and commissioning activities over the reporting period.

Key construction activities in progress or completed by Don Mann in July were as follows:

- All pipe work was completed.

- Peers Creek: utility locates and survey layout were conducted along with equipment mobilization in preparation for construction activity to replace a culvert as part of a Saanich infrastructure improvement.

Photographs of construction progress over the month of July on the Residual Solids Pipes are shown in Figures 15-16.



Figure 15− Residual Solids Pipes- Pressure washing manhole at Lyall Street and Peters Street.



Figure 16−Residual Solids Pipes - Building layers of geobag wall at Admirals Bridge.

Residual Solids Pump Stations: Knappett Projects Inc. ("Knappett" as the Construction Contractor for the Residual Solids Pump Stations) continued construction activities over the reporting period. Key construction activities in progress or completed by Knappett in July included:

- completed commissioning of the pipes and pump stations;
- completed pigging of the lines;
- at the pump stations, the odour control unit (OCU) installation was completed and stainless steel stacks were erected;
- OCU advanced start up began;
- completed and pressure tested pig receiver piping at Marigold Pump Station;
- completed Admirals Bridge installation;
- completed final paving and line painting on Willis Point Road;
- installed curbing at Pump Station1; and
- Hartland Reservoir underground pipe work.

Photographs of construction progress over the month of July on the Residual Solids Pump Stations are shown in Figures 17-18.



Figure 17−Residual Solids Pump Stations– Pump Station 1 –Installing bollard sleeves on the Odour Control pad.



Figure 18 −Residual Solids Pump Stations – Pump Station # 1: Excavating to install curbs.

2.9.3.5 Arbutus Attenuation Tank

NAC Constructors Ltd. (as the Construction Contractor for the Arbutus Attenuation Tank) continued construction activities over the reporting period. Key construction activities in progress or completed by NAC Constructors Ltd. in July included:

- completed final excavation within attenuation tank;
- commence drilling / grouting / installation of rock anchors; and
- complete installation of mud matt at base of attenuation tank.

Photographs of construction progress during the month of July at the Arbutus Attenuation Tank is shown in Figures 19 and 20.



Figure 19−Arbutus Attenuation Tank- Base Slab Steel Installation Progress.



Figure 20−Arbutus Attenuation Tank- Installed Rock Anchors and Granular Material Compaction.

2.9.3.6 Trent Forcemain

Jacob Bros. Construction Inc. (as the Construction Contractor for the Trent Forcemain) progressed construction activities over the reporting period. Key construction activities in progress or completed by Jacob Bros. in July included:

- installed 202m on Bushby Street including concrete cap running the entire length;
- installed 59m pipe at Fairfield Road, including the installation of three bends and corresponding thrust blocks;
- installed 210m of pipe along Memorial Crescent;
- installed air release valve chamber at the intersection of Fairfield Road and Stannard Avenue; and
- completed Fortis BC gas main relocation at Brooke Street.

A photograph of construction progress during the month of July at the Trent Forcemain is shown in Figure 21.



Figure 21−Trent Forcemain- Fairfield Road curb and sidewalk subgrade preparation.

Appendix A− Trent Forcemain: Road Closure at Fairfield and Stannard (July 15, 2020)

Wastewater Treatment Project
Treated for a cleaner future

Construction Notice

July 15, 2020

Trent Forcemain: Road Closure at Fairfield and Stannard

As part of the Wastewater Treatment Project, an air valve chamber is being constructed at Stannard Avenue and Fairfield Road. This work will require the closure of Fairfield Road between the Fairfield Shopping Centre and Arnold Avenue. The closure is expected to take place during work hours starting on Thursday, July 16 and be complete within approximately two days. A detour will be in place (see map on reverse).

What to Expect

- The area will be excavated, the chamber installed, and the site will be temporarily restored.
- Final restoration will take place after the section of forcemain along Fairfield Road has been tested and completed.
- Noise associated with this work includes excavation machinery and truck back-up beepers.
- Pipes and equipment will be temporarily stored in the area while this work is completed.

Traffic Impacts

- A signed detour will be in place during work hours.
- On-street parking along Memorial Crescent and St Charles Street will be removed to allow for detour traffic.
- Traffic control areas will be delineated by cones and signs and controlled by flaggers.

Access

- Vehicle access to residences will not be impacted.
- Emergency services will have access at all times.
- Garbage and recycling services will be picked up as usual.

Work Hours

- Monday to Friday from 7:00 a.m. to 7:00 p.m.
- Saturday from 10:00 a.m. to 7:00 p.m.

Thank you for your patience as this work is completed.

About the Wastewater Treatment Project
The Wastewater Treatment Project will provide tertiary treatment for wastewater from the core area municipalities of Victoria, Esquimalt, Saanich, Oak Bay, View Royal, Langford and Colwood, and the Esquimalt and Songhees Nations by the end of 2020.

Any questions about the work, please contact the Project Team.

24/7 Phone Line
1.844.815.6132

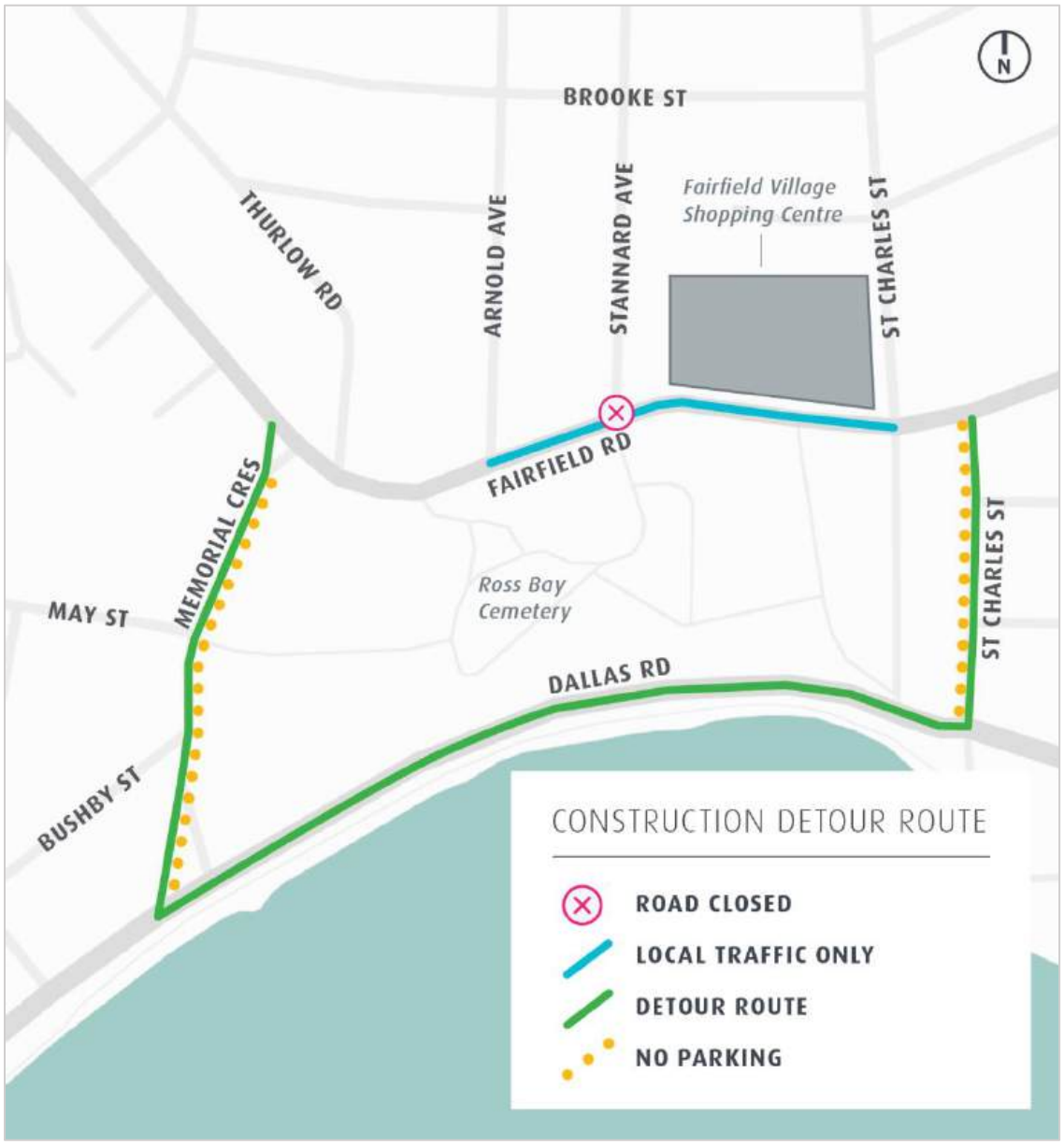
Email
wastewater@crd.bc.ca

Website
wastewaterproject.ca

Wastewater Treatment Project
Treated for a cleaner future

Construction Notice

Detour Route



Any questions about the work, please contact the Project Team.

24/7 Phone Line
1.844.815.6132

Email
wastewater@crd.bc.ca

Website
wastewaterproject.ca

Appendix B− Macaulay Point Pump Station: Transition to New Pump Station (July 13, 2020)

Wastewater Treatment Project
Treated for a cleaner future

Construction Notice

July 13, 2020

Macaulay Point Pump Station: Transition to New Pump Station

The Macaulay Point Pump Station is starting commissioning and wastewater will soon be diverted from the existing pump station to the new pump station. Diesel-powered pumps outside the pump station will be operating during the day beginning July 14 for one week, and will then operate continuously for an anticipated three weeks. Some overnight work, anticipated to begin the week of July 20, will also be required.

What to Expect

- Diesel-powered pumping units will operate outside the Macaulay Point Pump Station.
  - Beginning July 14, the pumps will operate during the day.
  - Beginning the week of July 20, the pumps will operate 24 hours a day until the work is complete (anticipated to be by the end of the first week of August)
- The pumps are equipped with acoustic enclosures to reduce noise.
- For overnight work, construction equipment will be in operation, including lights and truck back-up beepers.
- Increased short-term odour may occur intermittently during this work.

Work Hours

- Monday to Friday from 7:00 a.m. to 7:00 p.m.
- Saturday from 7:00 a.m. to 5:00 p.m.
- Some overnight work will be required for short periods the week of July 20.

Traffic Impacts

- No traffic impacts are expected.

About the Wastewater Treatment Project

The Wastewater Treatment Project will provide tertiary treatment for wastewater from the core area municipalities of Victoria, Esquimalt, Saanich, Oak Bay, View Royal, Langford and Colwood, and the Esquimalt and Songhees Nations by the end of 2020.

Any questions about the work, please contact the Project Team.

24/7 Phone Line
1.844.815.6132

Email
wastewater@crd.bc.ca

Website
wastewaterproject.ca

Appendix C− Core Area Wastewater Discharge Notice (July 24, 2020)

Making a difference...together

Public Service Announcement

For Immediate Release
July 24 2020

Core Area Wastewater Discharge Notice

Victoria, BC- Construction at the Clover Point Pump Station resulted in an unplanned wastewater discharge out the short outfall for intermittent periods overnight on July 23, 2020, and into the morning of July 24, 2020. The shorelines affected are along Dallas Road between Government Street and Crescent Road including Holland Point, Clover Point, Ross Bay and Gonzales Bay. This pump station is currently undergoing upgrades related to the Wastewater Treatment Project.

As a result of this discharge, residents are advised to avoid entering the waters along the affected shorelines, as the wastewater may pose a health risk.

As a precaution and in consultation with Island Health and the local municipalities, beaches within the affected areas will be posted with public health advisory signs until sample results indicate enterococci levels are below the 70CFU/100mL recreational limit.

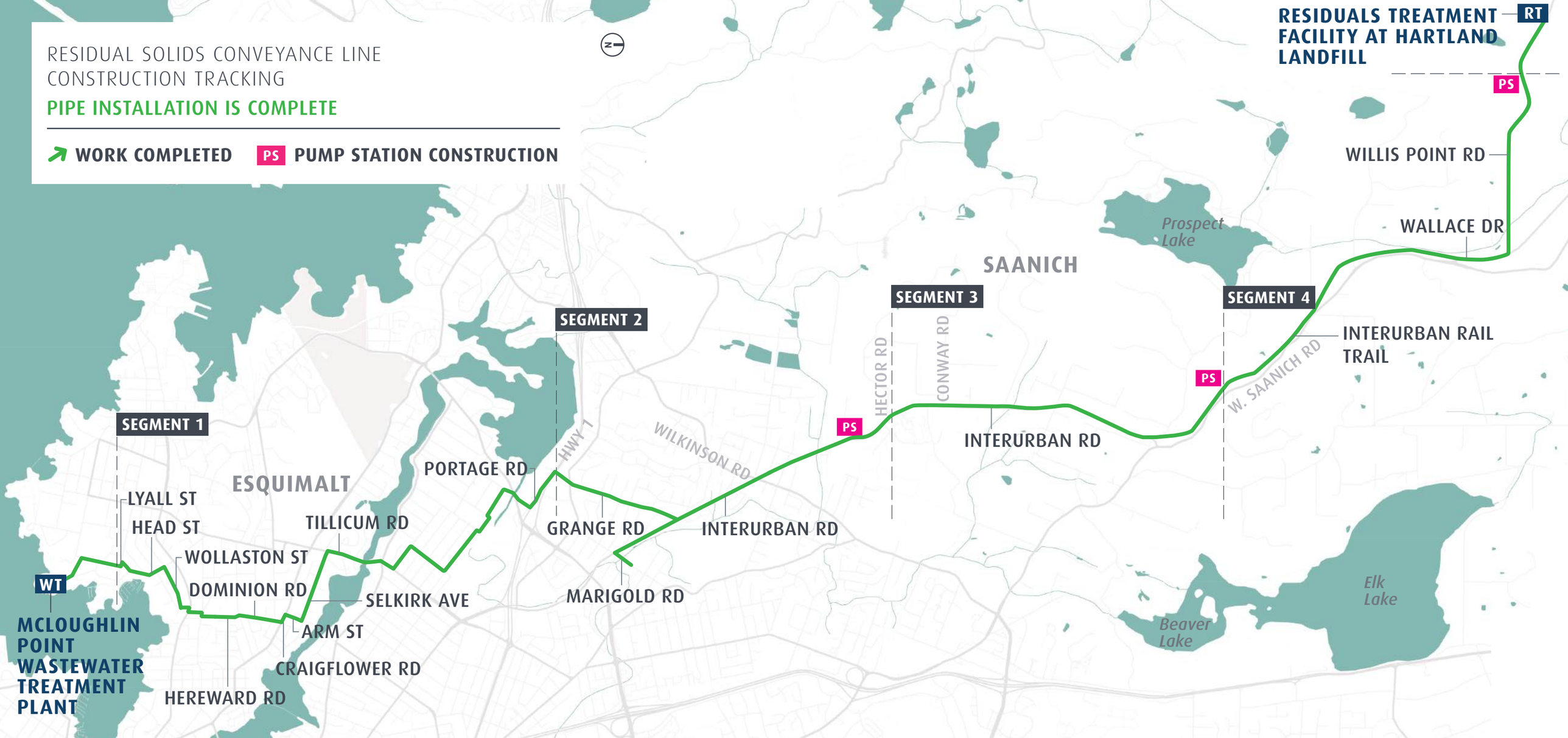
For updates, please visit www.crd.bc.ca and follow us on Twitter @crd_bc

The CRD delivers regional, sub-regional and local services to 13 municipalities and three electoral areas on southern Vancouver Island and the Gulf Islands. Governed by a 24-member Board of Directors, the CRD works collaboratively with First Nations and all levels of government to enable sustainable growth, foster community well-being, and develop cost-effective infrastructure while continuing to provide core services to residents throughout the region. Visit us online at www.crd.bc.ca.

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For media inquiries, please contact:
Andy Orr, Senior Manager
CRD Corporate Communications
Office 250.360.3229
Cell 250.216.5492

Appendix D− Residual Solids Conveyance Line Map (July 20, 2020)


RESIDUAL SOLIDS CONVEYANCE LINE CONSTRUCTION TRACKING
PIPE INSTALLATION IS COMPLETE
WORK COMPLETED
PS PUMP STATION CONSTRUCTION
RESIDUALS TREATMENT FACILITY AT HARTLAND LANDFILL
RT
PS
WILLIS POINT RD
WALLACE DR
Prospect Lake
SAANICH
SEGMENT 4
SEGMENT 3
SEGMENT 2
SEGMENT 1
INTERURBAN RAIL TRAIL
W. SAANICH RD
HECTOR RD
CONWAY RD
INTERURBAN RD
WILKINSON RD
HWY 1
PORTAGE RD
GRANGE RD
INTERURBAN RD
MARIGOLD RD
ESQUIMALT
LYALL ST
HEAD ST
TILLICUM RD
WOLLASTON ST
DOMINION RD
SELKIRK AVE
ARM ST
CRAIGFLOWER RD
HEREWARD RD
WT
MCLOUGHLIN POINT WASTEWATER TREATMENT PLANT
Elk Lake
Beaver Lake

Appendix E− Monthly Cost Report (July)

MONTHLY COST REPORT
as at July 31, 2020

	BUDGET		COST EXPENDED					COMMITMENTS			FORECAST		VARIANCE	
Description	Control Budget	Allocated Budget	Expended to June 30, 2020	Expended over reporting period (July 2020)	Expended to July 31, 2020	Expended to July 31, 2020 as a % of Allocated Budget	Remaining (Unexpended) Allocated Budget at July 31, 2020	Total Committment at July 31, 2020	Unexpended Commitment at July 31, 2020	Uncommitted Allocated Budget at July 31, 2020	Forecast to Complete	Forecast at Completion	Variance at Completion $	Variance at Completion as a % of Allocated Budget
McLoughlin Point Wastewater Treatment Plant	**331.4**	**328.1**	**298.8**	**4.3**	**303.0**	**92%**	**25.1**	**321.0**	**17.9**	**7.1**	**25.1**	**328.1**	**-**	**0%**
Construction	306.7	320.8	298.2	4.3	302.6	94%	18.2	320.3	17.7	0.5	18.2	320.8	-	0%
Contingency	14.9	0.4	-	-	-	0%	0.4	-	-	0.4	0.4	0.4	-	0%
Financing	9.8	6.9	0.5	-	0.5	7%	6.4	0.7	0.2	6.2	6.4	6.9	-	0%
Residuals Treatment Facility	**159.4**	**140.0**	**11.3**	**0.1**	**11.4**	**8%**	**128.6**	**139.0**	**127.6**	**1.0**	**128.6**	**140.0**	**-**	**0%**
Construction	145.4	139.0	11.3	0.1	11.4	8%	127.6	139.0	127.6	0.0	127.6	139.0	-	0%
Contingency	12.3	0.2	-	-	-	0%	0.2	-	-	0.2	0.2	0.2	-	0%
Financing	1.7	0.8	0.0	-	0.0	2%	0.8	0.0	0.0	0.8	0.8	0.8	-	0%
Conveyance System	**158.0**	**215.7**	**166.3**	**4.2**	**170.4**	**79%**	**45.3**	**195.7**	**25.3**	**19.9**	**45.3**	**215.7**	**-**	**0%**
Macaulay Point Pump Station	25.4	30.9	27.7	0.0	27.7	90%	3.2	30.9	3.2	0.0	3.2	30.9	-	0%
Macaulay Forcemain	5.6	7.4	7.4	-	7.4	100%	-	7.4	-	-	-	7.4	-	0%
Craigflower Pump Station	12.5	12.4	12.4	-	12.4	100%	-	12.4	-	-	-	12.4	-	0%
Clover Point Pump Station	23.7	27.3	24.7	-	24.7	91%	2.5	27.3	2.5	0.0	2.5	27.3	-	0%
Currie Pump Station^	2.8	0.1	0.1	-	0.1	100%	-	0.1	-	-	-	0.1	-	0%
Arbutus Attenuation Tank	14.2	24.6	13.5	1.2	14.7	60%	9.9	23.3	8.6	1.3	9.9	24.6	-	0%
Clover Forcemain	14.6	32.5	30.0	0.3	30.3	93%	2.2	31.9	1.6	0.6	2.2	32.5	-	0%
Currie Forcemain^	3.3	0.2	0.2	-	0.2	100%	-	0.2	-	-	-	0.2	-	0%
Trent Forcemain	9.5	11.3	2.6	1.3	3.9	34%	7.4	8.1	4.2	3.2	7.4	11.3	-	0%
Residual Solids Conveyance Line	19.1	36.6	34.3	0.1	34.4	94%	2.2	36.5	2.1	0.1	2.2	36.6	-	0%
Residual Solids Pump Stations & Bridge Crossings	4.6	18.1	13.0	1.2	14.1	78%	4.0	17.0	2.8	1.1	4.0	18.1	-	0%
Residual Solids Conveyance Line – Highway Crossing	-	0.4	0.3	-	0.3	76%	0.1	0.4	0.0	0.1	0.1	0.4	-	0%
Contingency	16.8	9.9	-	-	-	0%	9.9	-	-	9.9	9.9	9.9	-	0%
Financing	5.8	4.1	0.2	-	0.2	4%	3.9	0.3	0.2	3.7	3.9	4.1	-	0%
Project Management Office ("PMO")	**75.8**	**77.9**	**56.8**	**0.6**	**57.4**	**74%**	**20.4**	**70.0**	**12.6**	**7.8**	**20.4**	**77.9**	**-**	**0%**
Project costs Aug 2016-Dec 2016	2.2	2.2	2.2	-	2.2	100%	-	2.2	-	-	-	2.2	-	0%
Owner's Engineering	17.2	17.5	14.5	-	14.5	83%	3.0	17.5	3.0	-	3.0	17.5	-	0%
Conveyance Design	5.0	9.5	7.6	0.2	7.8	82%	1.7	8.8	1.0	0.7	1.7	9.5	-	0%
Advisors & Professional Support	7.0	15.0	10.3	0.0	10.3	69%	4.7	11.5	1.1	3.5	4.7	15.0	-	0%
Project Board	2.0	1.3	0.9	0.0	0.9	74%	0.3	0.9	-	0.3	0.3	1.3	-	0%
Project Board Expenses	0.3	0.1	0.1	-	0.1	64%	0.0	0.1	-	0.0	0.0	0.1	-	0%
Project Team	29.1	23.1	16.3	0.3	16.5	71%	6.6	22.9	6.4	0.2	6.6	23.1	-	0%
Project Leadership Team Expenses	0.7	0.4	0.2	-	0.2	59%	0.2	0.2	-	0.2	0.2	0.4	-	0%
Project Support Team Expenses	0.5	0.2	0.1	-	0.1	67%	0.1	0.1	-	0.0	0.1	0.2	-	0%
CRD Financial Services	1.5	1.4	0.9	0.0	0.9	67%	0.5	1.4	0.5	-	0.5	1.4	-	0%
CRD Human Resources	0.3	0.3	0.2	0.0	0.2	88%	0.0	0.3	0.0	-	0.0	0.3	-	0%
CRD Corporate Communications	0.2	0.2	0.2	-	0.2	86%	0.0	0.2	0.0	-	0.0	0.2	-	0%
CRD Real Estate	0.3	0.3	0.2	-	0.2	92%	0.0	0.3	0.0	-	0.0	0.3	-	0%
CRD Information Technology	0.4	0.4	0.3	0.0	0.3	71%	0.1	0.4	0.1	-	0.1	0.4	-	0%
CRD Insurance	0.1	0.0	0.0	-	0.0	100%	-	0.0	-	-	-	0.0	-	0%
CRD Operations	0.6	0.6	0.5	0.0	0.5	86%	0.1	0.6	0.1	-	0.1	0.6	-	0%
CRD Legislative Services	0.1	0.1	0.1	-	0.1	100%	-	0.1	-	-	-	0.1	-	0%
CRD Corporate Safety	0.2	0.2	0.2	-	0.2	100%	-	0.2	-	-	-	0.2	-	0%
CRD Executive Services	-	0.1	0.1	-	0.1	86%	0.0	0.1	0.0	-	0.0	0.1	-	0%
Office Lease	1.9	1.3	0.9	0.0	0.9	69%	0.4	1.2	0.3	0.1	0.4	1.3	-	0%
Office Supplies	0.1	0.2	0.2	-	0.2	88%	0.0	0.2	-	0.0	0.0	0.2	-	0%
Vehicles	0.2	0.2	0.2	-	0.2	89%	0.0	0.2	0.0	-	0.0	0.2	-	0%
Connections Call Center	-	0.0	0.0	-	0.0	100%	-	0.0	-	-	-	0.0	-	0%
Communication support materials	0.5	0.2	0.1	-	0.1	61%	0.1	0.1	-	0.1	0.1	0.2	-	0%
Computer Hardware, Software & Training	1.0	1.1	0.6	-	0.7	61%	0.4	0.7	-	0.4	0.4	1.1	-	0%
Contingency	4.8	2.3	-	-	-	0%	2.3	-	-	2.3	2.3	2.3	-	0%
BC Hydro	**12.9**	**4.3**	**2.0**	**-**	**2.0**	**48%**	**2.3**	**2.1**	**0.0**	**2.2**	**2.3**	**4.3**	**-**	**0%**
Third Party Commitments	**8.1**	**8.1**	**4.0**	**0.1**	**4.1**	**50%**	**4.1**	**6.8**	**2.8**	**1.3**	**4.1**	**8.1**	**-**	**0%**
Program Reserves	**19.2**	**0.9**	**-**	**-**	**-**	**0%**	**0.9**	**-**	**-**	**0.9**	**0.9**	**0.9**	**-**	**0%**
Core Area Wastewater Treatment Project	**765.0**	**775.0**	**539.2**	**9.2**	**548.4**	**71%**	**226.5**	**734.6**	**186.2**	**40.3**	**226.5**	**775.0**	**-**	**0%**

* Values presented in $millions, results in minor rounding differences
** Cost report presents approved expenditures
^ Component no longer required, and would not provide any value therefore removed from Project Scope; Costs include Seaterra initiation, planning and design

REPORT TO CORE AREA WASTEWATER TREATMENT PROJECT BOARD
MEETING OF THURSDAY, SEPTEMBER 24, 2020

SUBJECT **Wastewater Treatment Project August 2020 Monthly Report**

ISSUE

To provide the Core Area Wastewater Treatment Project Board with the Wastewater Treatment Project August 2020 Monthly Report.

BACKGROUND

On May 25, 2016 the Regional Board of the CRD:

i) Adopted by resolution the Core Area Wastewater Treatment Project Board Terms of Reference (Project Board Terms of Reference) for the purposes of establishing principles governing the Core Area Wastewater Treatment Project (the Wastewater Treatment Project or the WTP);
ii) Established the Core Area Wastewater Treatment Project Board (Project Board) under Bylaw 4109 (the CRD Core Area Wastewater Treatment Board Bylaw No. 1, 2016) for the purposes of administering the Core Area Wastewater Treatment Project; and
iii) Delegated certain of its powers, duties and functions to the Project Board under Bylaw 4110 (the CRD Core Area Wastewater Treatment Project Board Delegation Bylaw No. 1, 2016).

On September 14, 2016 the Regional Board of the CRD:

i) Received the final report of the Project Board with respect to its recommendation for the CAWTP, dated September 7, 2016 (the Final Report); and
ii) Approved the business case attached as Appendix 1 (the Business Case) to the Final Report.

DISCUSSION

The Core Area Wastewater Treatment Project Board (the Project Board) Terms of Reference requires, amongst other things: that the Project Board provide the CRD Board with monthly progress reports and a comprehensive quarterly report on the Project.

The Monthly report for the period of August 2020 is attached as Appendix A.

RECOMMENDATION

That the Core Area Wastewater Treatment Project Board approve the following resolution:

RESOLVED that:

The Staff Report, 'Wastewater Treatment Project August 2020 Monthly Report', be received for information and forwarded to the Core Area Liquid Waste Management Committee and CRD Board for information.



Elizabeth Scott, Deputy Project Director
Wastewater Treatment Project



Dave Clancy, Project Director
Wastewater Treatment Project
Concurrence

Attachments: 1

Appendix A: Wastewater Treatment Project August 2020 Monthly Report

ES:er

Wastewater Treatment Project
Treated for a cleaner future

CRD Wastewater Treatment Project

Monthly Report

Reporting Period: August 2020

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1 Executive Summary

1.1 Introduction

This Monthly Report covers the reporting period of August 2020 and outlines the progress made on the Wastewater Treatment Project over this time.

The Wastewater Treatment Project (the "Project") includes three main Project Components (the "Project Components"): the McLoughlin Point Wastewater Treatment Plant (the "McLoughlin Point WWTP"), the Residuals Treatment Facility (the "RTF") and the Conveyance System (which includes upgrades to the conveyance network including the construction of pump stations and pipes). The Project scope is being delivered through a number of contracts with a variety of contracting strategies.

Over the reporting period the COVID-19 public health emergency continued to have impacts on the Project. The Project Team and Project contractors are actively monitoring the status of the COVID-19 public health emergency and are taking additional precautions to protect our staff, contractors, and the public. Construction is ongoing at all of the Project's sites in accordance with guidelines established by the Provincial Health Officer.

While construction is ongoing, the public health emergency is impacting construction progress and may delay some interim project milestones, such as the transition to commissioning. However, based on current progress the Wastewater Treatment Project remains on schedule to meet the regulatory deadline for treatment by the end of 2020, and over the reporting period an important step was taken towards meeting the deadline: wastewater was pumped from Clover Point Pump Station and Macaulay Point Pump Station to McLoughlin Point WWTP for the first time, allowing commissioning of the treatment system to commence.

The McLoughlin Point WWTP Project Component is continuing with Harbour Resource Partners ("HRP" as the Design-Build contractor for the McLoughlin Point WWTP) commencing commissioning with wastewater and progressing: commissioning of the sludge tank, plant drain tank, plate settler 1 and 2 and fine screen processes in the primary treatment area; commissioning of moving bed bio reactor (MBBR) and biological aerated filter (BAF) processes in the secondary treatment area; commissioning of the outfall and clean water, backwash and clean water pumping system processes in the tertiary treatment area; and completion of the green roof system in the Operations and Maintenance Building.

The RTF Project Component is continuing with Hartland Resource Management Group ("HRMG" as the Design-Build-Finance-Operate-Maintain contractor for the RTF) progressing construction activities including: installation of insulation for Digesters 2 and 3, installation of biogas piping on the roof of the Digester building to tie into the Digester tanks in the Digester area; installation of hopper in the Other Municipal Solids Receiving Facility; commissioning of various system including boilers and completed insulation of hot water piping in the Residuals Handling Building; continued commissioning of various systems in the Residuals Drying Facility; and commenced the insulation of the fiberglass reinforced plastic (FRP) ductwork in the Residuals Storage and Odour Control Area.

The Conveyance System is being delivered through seven construction contracts: two design-build contracts and five design-bid-build contracts.

The two design-build Conveyance System contracts progressed over the reporting period as follows:

- Clover Point Pump Station: Kenaidan Contracting Limited ("Kenaidan" as the Design-Build Contractor) progressed construction and commissioning activities over the reporting period including: commencing pumping of wastewater to the McLoughlin Point WWTP; forming, pouring and stripping of concrete benches and upper plaza retaining walls; installation of stone exterior of the pump station; installed crane stops for electrical room monorail; installed public washroom accessories and finishes; and completed installation of pigging chamber.

- Macaulay Point Pump Station: Kenaidan Contracting Limited ("Kenaidan" as the Design-Build Contractor) progressed construction and commissioning activities over the reporting period including: commencing pumping of wastewater to the McLoughlin Point WWTP; installation of vent pipes and ongoing backfill around the existing structure at the Diversion Chamber; installation of FRP platform and stairs in the pump room; installation of acoustic insulation panels in the genset and pump rooms; and ongoing installation of electrical sleeves to the low level chamber.

The design-bid-build Conveyance System contracts progressed over the reporting period, as follows:

- Clover Forcemain: Windley Contracting Ltd. ("Windley" as the Construction Contractor) continued construction and commissioning activities including: supporting the commencement of pumping of wastewater from the Clover Point Pump Station, through the Clover Forcemain to the McLoughlin Point WWTP; ongoing construction of the seawall balustrade replacement and enhanced sidewalk.

- Residual Solids Conveyance Line ("RSCL"): the RSCL is being delivered through two construction contracts, with work progressing as follows:

    - Residual Solids Pipes: Don Mann Excavating Ltd. ("Don Mann" as the Construction Contractor) continued construction activities over the reporting period for the Saanich infrastructure improvement being undertaken at Peers Creek, including: realignment of a section of existing watermain; replacing existing sewer pipe with ductile iron pipe within a casing; removal of existing storm drain manhole and culvert pipes; and installation of new culverts and storm drain manhole.

    - Residual Solids Pump Stations: Knappett Projects Inc. ("Knappett" as the Construction Contractor) continued construction activities including: forming and pouring new pump bases and continued installation of mechanical equipment and piping for the Hartland water system improvements; replaced threaded hangar rods on Admirals and Tillicum Bridges; and installed odour control vent piping at all pump stations.

- Arbutus Attenuation Tank ("AAT"): NAC Constructors Ltd. (as the Construction Contractor) continued construction activities including: sections of mud mat poured

and completed; completed valve chamber excavation and subbase placement; backfill of culvert extension; and completed base slab pours for the valve chamber, lower sump and trough areas of the main tank.

- Trent Forcemain: Jacob Bros. Construction Inc. (as the Construction Contractor) progressed construction activities including: installation of Memorial Crescent air valve chamber; installation of forcemain on Stannard Avenue; reinstated three external drop structure manholes on Brooke Street; and installed 187m of forcemain on Brooke Street.

1.2 Dashboard

Table 1 indicates the high level status of the Project and each Project Component with regards to the six Key Performance Indicators ("KPI") that were defined within the Project Charter.

There were no changes made to the KPIs over the reporting period.

The safety KPI for the Project and the conveyance system remains yellow. Over the reporting period no recordable safety incidents occurred and the total recordable incident frequency decreased from 1.5 at the end of the July 2020 to 1.49.

The Project Team continues to work with and ensure that all of the prime contractor partners maintain safety as their number one priority. The Project Team is also actively monitoring the status of the COVID-19 public health emergency and is taking additional precautions to protect our staff, contractors, and the public. The BC Government has designated construction as an essential service, and issued guidelines for construction sites to minimize the risks of COVID-19 transmission or illness. All Project contractors have implemented additional precautions to ensure the health and safety of their workers. These measures follow the direction set by the BC Government, including emphasizing the importance of maintaining social distance, increasing handwashing stations, reducing in-person meetings and increasing cleaning of common areas. The Project Team will continue to monitor contractors' compliance with the direction of the government as the situation evolves.

The schedule KPI for the Project overall and the Project components remains green. The COVID-19 public health emergency is impacting construction progress and may delay some interim project milestones, such as the transition to commissioning. However, construction is ongoing at all of the Project's sites, in accordance with provincial guidelines, and based on current progress the Wastewater Treatment Project remains on schedule to meet the regulatory deadline for treatment by the end of 2020.

The cost KPI for the Project overall and the conveyance system remained red over the reporting period, and are expected to remain red for the duration of the Project, primarily as a result of inflation in the Vancouver Island construction market. Other factors that have contributed to budget pressures include: design development to incorporate stakeholder input; geotechnical considerations including removal and disposal of contaminated material; and schedule constraints associated with the requirement to provide wastewater treatment by the regulatory deadline of December 31, 2020.

Based on the value of the contracts awarded to-date and the refreshed cost estimate for the scope remaining to be procured, the Project Team forecast the cost to complete the Project at

$775M, or $10M over the Project's control budget. In May 2019 the CRD Board approved an increase in the Project's budget by $10M to $775M.

Subsequent to May 2019 the Project Team have continued to manage risks and there have been two main opposing budget drivers:

i) The Project's financing costs to-date have been lower than budgeted for two reasons: firstly as a result of low interest rates since the start of the Project, and secondly due to the receipt of funding from the provincial government earlier than forecast; and

ii) The Project's construction costs may be higher than budgeted as many contractors have advised that there are cost impacts from the COVID-19 public health emergency. Impacts include labour availability, work modifications to comply with provincial guidelines, and delays to the delivery of equipment and supplies.

It is too early to determine the cost impact to the Project, but given the ability to offset the unforeseen costs of COVID-19 through the finance cost savings, the Project Team remain confident that, if construction continues at the current pace, the Project cost will be within the Project's $775M budget.

Table 1- Executive Summary Dashboard

Key Performance Indicators		Project Overall	WWTP	RTF	Conveyance System	Comments
Safety	Deliver the Project safely with zero fatalities and a total recordable incident frequency (TRIF) of no more than 1*.					No recordable incidents occurred over the period. Site inspections are ongoing. The Project Team is actively monitoring the status of the COVID-19 public health emergency and is taking additional precautions to protect our staff, contractors, and the public. All Project contractors have implemented additional precautions to ensure the health and safety of their workers. The Project Team will continue to monitor and follow the direction of the government during this evolving situation.
Environment	Protect the environment by meeting all legislated environmental requirements and optimizing opportunities for resource recovery and greenhouse gas reduction.					There were no environmental incidents over the reporting period:
Regulatory Requirements	Deliver the Project such that the Core Area complies with provincial and federal wastewater regulations.					No regulatory issues.
Stakeholders	Continue to build and maintain positive relationships with First Nations, local governments, communities, and other stakeholders.					Engagement activities were ongoing over the reporting period. Significant efforts were made to provide accurate and timely information to stakeholders.
Schedule	Deliver the Project by December 31, 2020.					The COVID-19 public health emergency is impacting construction progress and may delay some interim project milestones, such as the transition to commissioning. The Wastewater Treatment Project has made significant progress and currently remains on schedule to meet the regulatory deadline for treatment by the end of 2020.
Cost	Deliver the Project within the Control Budget ($765 million).					Based on the value of the contracts awarded to-date and a refreshed cost estimate for the scope remaining to be procured, the Project Team has forecast the cost to complete the Project at $775M, or $10M over the Project's Control Budget. This is primarily as a result of inflation in the Vancouver Island construction market. Other factors that have contributed to budget pressures include: design development to incorporate stakeholder input; geotechnical considerations including removal and disposal of contaminated material; and schedule constraints associated with the requirement to provide wastewater treatment by the regulatory deadline of December 31, 2020. The CRD Board have approved an increase in the Project's budget by $10M, to $775M. Many contractors have advised that there are cost impacts from the COVID-19 public health emergency. It is too early to determine the cost impact to the Project, but given the ability to offset the unforeseen costs of COVID-19 through the finance cost savings, the Project Team remain confident that, if construction continues at the current pace, the Project cost will be within the Project's $775M budget.

* A TRIF of no more than 1 means that there is 1 or fewer recordable incidents (being a work-related injury or illness that requires medical treatment beyond first aid or causes death, days away from work, restricted work or transfer to another job, or loss of consciousness) for every 200,000 person-hours of work	
Status	Description
	KPI unlikely to be met
	KPI at risk unless correction action is taken
	KPI at risk but corrective action has been identified/is being implemented
	Good progress against KPI

2 Wastewater Treatment Project Progress

2.1 Safety

Safety information for the reporting period and cumulative for the Project from January 1, 2017 is summarized in Table 3.

The Project Team is actively monitoring the status of the COVID-19 public health emergency and is taking additional precautions to protect our staff, contractors, and the public. The BC Government has designated construction as an essential service, and issued guidelines for construction sites to minimize the risks of COVID-19 transmission or illness.

All Project contractors have implemented additional precautions to ensure the health and safety of their workers. These measures follow the direction set by the BC Government, including emphasizing the importance of maintaining social distance, increasing handwashing stations, reducing in-person meetings and increasing cleaning of common areas. The Project Team will continue to monitor contractors' compliance with the direction of the government during this evolving situation.

Site safety tours and weekly safety inspections were carried out by Project Management Office ("PMO") construction and safety personnel over the reporting period at all active worksites: McLoughlin Point WWTP, RTF, Macaulay Point Pump Station, Clover Point Pump Station, Clover Forcemain, Residual Solids Pipes; Residual Solids Pump Stations; Arbutus Attenuation Tank and Trent Forcemain.

Over the reporting period (August 2020) six safety incidents occurred, comprising: two first-aid, one high potential for harm and three report-only incidents, as summarized in Table 2.

Table 2: Safety Incidents over the Reporting Period

Date	Work Site	Incident Type	Description	Outcome	Corrective Action Taken
August 13, 2020	McLoughlin Pt WWTP	First Aid	Worker chipping concrete sustained minor eye injury.	A small piece of concrete entered right eye. Worker was wearing safety glasses, but was not wearing a face shield.	Tool-box talk with crews to remind them of personal protective equipment requirement of wearing a face-shield over safety glasses when chipping or grinding.
August 13, 2020	McLoughlin Pt WWTP	First Aid	While moving a door on a rack the load shifted pinching the worker's left index finger.	Worker reported to first aid where the small laceration was attended to. No follow up was required. Worker was wearing gloves at time of incident which lessened the injury.	Reminder to crews to always be aware of their surrounding and potential for injury when undertaking activities

Date	Work Site	Incident Type	Description	Outcome	Corrective Action Taken
August 17, 2020	McLoughlin Pt WWTP	High Potential for Harm First Aid	A worker fell through an opening in the Tertiary building floor when a fiberglass cover panel that was not secured correctly gave way.	The channel cover panel was not secured properly, nor cordoned off and gave way beneath the worker. Worker fell approximately 15 feet into a water filled channel. Prime Contractor's Emergency Response Plan was initiated and worker was quickly retrieved from the channel area with minor abrasions. Worker was assessed onsite by first aid and paramedics and then transported to hospital for further assessment. Site stand down was initiated. Worker returned to work the following day, no further medical follow up required.	WorkSafeBC called, attended site and full investigation completed. Control zone established around the loose channel covers. All channel covers were inspected and covers not fastened were immediately secured.
August 17, 2020	McLoughlin Pt WWTP	Report Only	During commissioning clean water was directed to the effluent channel, instead of the dirty backwash tank.	Personnel working in the tertiary area noticed water level rise in channel and reported it to operations team.	Procedures review with staff to ensure awareness of systems and operations protocols to prevent unintended direction of flows.
August 17, 2020	Residual Solids Pump Station	Report Only	Car damaged from contractors temporary fence.	Fencing blew over and landed on the vehicle	Additional securing of the fencing was completed to prevent a reoccurrence.
August 17, 2020	McLoughlin Pt WWTP	Report Only	A loader carrying pipe contacted a parked vehicle causing minor damaged.	Owner contacted and contractor will be responsible for the repairs	Tool-box talk to remind loader operator to be aware of their surroundings and proximity in and around the work area. Crews to avoid travel on non-project roads as they are narrow with cars are parked on both sides.

Key safety activities conducted during August included:

- bi-weekly project update meetings with prime contractors: Kenaidan, Windley, Don Mann, HRP, Knappett, Jacob Bros and NAC;
- monthly update meetings with prime contractors: Don Mann, HRP;
- monthly Incident Investigation reviews;
- reviewed site specific safety plans and high risk tasks;
- WTP Safety Manager and/or Construction Manager conducting regular site inspections at all active Project work sites; and
- hosted Prime Contractor Safety Coordination Meeting with Project safety representatives.

Table 3: WTP Safety Information

	Reporting Period (August 2020)	Project Totals
Person Hours		
PMO	2,877	154,954
Project Contractor	64,412	2,126,373
Total Person Hours	67,289	2,281,327
PMO	29	
Project Contractors (& Project Consultants) working on Project Sites	371	
Total Number of Employees	400	
Near Miss Reports	0	46
High Potential Near Miss Reports	1	7
Report Only	3	173
First Aid	2	67
Medical Aid	0	10
Medical Aid (Modified Duty)	0	2
Lost Time	0	5
Total Recordable Incidents	0	17
		Project Frequency (from January 1, 2017)
First Aid Frequency		5.9
Medical Aid Frequency		1.1
Lost time Frequency		0.4
Total Recordable Incident Frequency		1.5

2.2 Environment and Regulatory Management

Environmental and regulatory activities continued over the reporting period relating to both the planning of upcoming work and the execution of current work.

2.2.1 Environment

Environmental work progressed as planned over the reporting period. The focus was on environmental monitoring of construction activities and planning for upcoming work.

Key environmental management activities completed in August included:

- Don Mann and their environmental consultant McElhanney completed in-stream work at the site of the Peers Creek culvert replacement on Interurban Road. The in-stream work involved isolating the stream from fish and installing dewatering equipment in preparation for culvert construction. There were no fish present in the isolation zone.

2.2.2 Regulatory Management

During the reporting period, the Project Team continued to monitor the advancement of the remaining construction-related regulatory approvals and supported or led the advancement of remaining permit applications.

Key permitting activities for August included:

- The CRD provided a draft Statutory Right-of-Way Plan to the BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development. The Plan would be used to convert the current Licence of Occupation for the McLoughlin Point outfall into a long term tenure.

The status of key Project permits are summarized in Table 4. The table is not a list of all required Project permits, but rather a summary of the status of key Project permits. There were no changes made from the table presented in the Project's July 2020 Monthly Report.

Table 4- Key Permits Status

Permit/Licence	*Anticipated Date*	*Status*	*Party Responsible for Obtaining Perming*
McLoughlin Point Harbour Crossing			
Transport Canada Lease	Following completion of construction	On track	HRP
McLoughlin Point Outfall			
Transport Canada Lease	Following completion of construction	On track	HRP

2.3 First Nations

First Nations communication and engagement was ongoing over the reporting period. Meetings with the Esquimalt and Songhees' liaisons continued, as did meetings with the W̱SÁNEĆ Leadership Council's (WLC) liaison. The meetings are a forum for covering both Project-related issues with the potential to impact First Nations, as well as an opportunity for broader discussion of CRD-related issues.

Key activities in August included:

- The CRD and the Esquimalt, Songhees and WLC, during their respective meetings, discussed screening of archaeological material that was encountered during construction. The purpose of these discussions was to identify potential locations for the material that remained after screening.

2.4 Stakeholder Engagement

The Project maintained its ongoing two-way Communications and Engagement Plan to provide Project information to stakeholders, communities and the public and to respond to public inquiries. The key focus of the communications and engagement activities over the period was to keep residents and stakeholders informed of Project plans, progress and construction information, and to receive and respond to questions and concerns raised by the community. A variety of communications tools and engagement activities were utilized to support the implementation of the plan, including stakeholder meetings, Project website updates and notifications of construction through notices and a public inquiry program, among other methods.

Construction Communications

A letter providing information to residents about a change in working hours for the Trent Forcemain was hand delivered to 142 residents along the route (Appendix A). In addition, as part of ongoing construction communications, residents affected by localized, temporary disruptions, such as driveway impacts, were notified by hand delivery of notices.

Signs were posted near the entrances to the Dallas Road seawall pedestrian path describing the work that would be taking place for the Trent Forcemain (Appendix B).

A postcard was mailed to 2,959 households in James Bay and Fairfield providing residents with an update regarding the timing for the remaining construction work and public amenities along Dallas Road (Appendix C).

Project Website

Over the reporting period the Project website, wastewaterproject.ca, was updated with information about the Project. The Dallas Road Update postcard and Dallas Road Seawall sign were posted.

The CRD's Twitter and Facebook accounts was used to provide Project information to the public, including an update on the work taking place along Dallas Road.

Community Meetings

Over the reporting period, the Project Team held meetings with the following municipality representatives:

- City of Victoria Technical Working Group; and
- District of Saanich Technical Working Group;

Public Inquiries

Public inquiry numbers from the Project email address and 24/7 information phone line (1 844 815-6132) are noted in Table 5.

Table 5 – Project Inquiries- July 2020

Inquiry Source	Contacts for August 2020
Information phone line inquiries	18
Email inquiries responded to	17

Key themes of the public inquiries were as follows:

- interest in restoration, landscaping and public amenities;
- questions regarding noise associated with construction; and
- interest in when construction in specific areas will be finished.

2.5 Resolutions from Other Governments

There were no resolutions related to the Project passed by other governments during the reporting period.

2.6 Schedule

Progress over the reporting period is summarized in Section 2.9.

Figure 1 shows the high-level Project schedule. This schedule is unchanged from that shown previously.

Over the reporting period the COVID-19 public health emergency continued to have impacts on the Project. Specifically, the COVID-19 public health emergency is impacting construction progress and may delay some interim project milestones, such as the transition to commissioning. However, construction is ongoing at all of the Project's sites, in accordance with provincial guidelines, and based on current progress the Wastewater Treatment Project remains on schedule to meet the provincial and federal regulations for treatment for the Core Area's wastewater by December 31, 2020.

Figure 1- High-Level Project Schedule



2.6.1 30 day look ahead

Key activities and milestones for the next 30 days (September) are outlined below by function.

Safety

- CRD corporate occupational health and safety coordination committee meeting;
- host Prime Contractor Safety Coordination Meeting with Project safety representatives;
- prime contractor progress meetings;
- review of any site specific safety plans or high risk tasks;
- review prime contractor document submissions;
- issue safety notices for trending observations or similar incidents occurring on project sites;
- WTP Safety Manager and/or Construction Manager will conduct regular site inspections at all active Project work sites; and
- incident reporting review with prime contractors at active work locations.

Environment and Regulatory Management

- finalizing the Licence Agreements for the Harbour Crossing and McLoughlin Point Outfall with Transport Canada.

First Nations

- continue meeting with First Nation liaisons.

Stakeholder Engagement

- ongoing construction communications with stakeholders; and
- ongoing community liaison meetings.

Cost Management and Forecast

- prepare cost reports;
- monitor schedule;
- prepare for Quarter 3 close and interim audit; and
- submit funding claims to Infrastructure Canada (under the Building Canada Fund and Green Infrastructure Fund).

Construction

McLoughlin Point

- commission security systems, mechanical systems, fire systems, and plumbing systems;
- building systems integration; and
- biological growth and process optimization.

Clover Point Pump Station

- install split stone to exterior walls;
- install firestop and smoke seals;
- install green roof system;
- plant trees and shrubs;
- complete final painting and touch ups;
- spray foam insulation; and

- backfill north retaining wall.

Macaulay Point Pump Station
- install outdoor site furnishings;
- commence demolition of existing structure;
- remove and salvage existing equipment; and
- plant trees and shrubs, and install green roof system.

Residuals Treatment Facility
- continue functional start-up, wet testing and initial system verification;
- commence process commissioning with residual solids;
- complete exterior insulation and hydro test Digester #1;
- complete exterior insulation Digester #2;
- hydro testing and pneumatic testing Digested Solids Storage Tank;
- complete pipe insulation, jib crane and weather cover at Other Municipal Solids Receiving Facility;
- continue testing and commissioning activities at the Residuals Handling Building;
- continue testing and commissioning activities at the Dryer Building;
- install lime stabilization unit; and
- continue site grading, fencing, road paving, and retention ponds.

Clover Forcemain
- final paving of Dallas Rd from Lewis Street to Dock Street; and
- clean-up and demobilize.

Residual Solids Pipes
- commence conveyance operations; and
- complete Peers Creek culvert and supporting utility replacement.

Residual Solids Pump Stations
- commence conveyance operations; and
- final grading, trail restoration; and installation of fence and landscaping at Pump Station #2;
- final grading and install fence at Pump Station #3; and
- remove scaffolding from Admirals and Tillicum bridges.

Arbutus Attenuation Tank (AAT)
- install valve chamber piping;
- commence construction of concrete walls, columns, stairs within the attenuation tank; and
- install manhole and associated piping.

Trent Forcemain
- commence installation of sanitary sewer on Dallas Road;
- install sanitary sewer and valve chamber at Memorial Crescent from Dallas Road to Thurlow Road; and
- restoration and paving at Memorial Crescent.

2.6.2 60 day look ahead

Key activities and milestones for the next 60 days (October) are outlined below by function.

Safety

- prime contractor progress meetings;
- review of any site specific safety plans or high risk tasks;
- review prime contractor document submissions;
- issue Safety Notices for trending observations or similar incidents occurring on project sites;
- WTP Safety Manager and/or Construction Manager will conduct regular site inspections at all active Project work sites; and
- incident reporting review with prime contractors at active work locations.

Environment and Regulatory Management

- finalizing a long term tenure with the Province for the portion of the McLoughlin Point outfall that is outside of the Victoria Harbour boundary.

First Nations

- delivering archaeological screening material to the Esquimalt and Tsartlip Nations.

Stakeholder Engagement

- ongoing construction communications with stakeholders;
- ongoing community liaison meetings; and
- planning and execution of opening media event.

Cost Management and Forecast

- prepare cost reports;
- prepare Q3 financial close reporting;
- prepare for interim audit; and
- balance and confirm all funding claims to Infrastructure Canada (under the Building Canada Fund and Green Infrastructure Fund) are submitted.

Construction

McLoughlin Point

- achieve functional completion;
- complete landscaping;
- complete commissioning;
- complete integration of remote SCADA; and
- commence acceptance testing.

Clover Point Pump Station

- install grass Crete pavers;
- reinstate curbs, walkway and roadways;
- install pathways;
- form and pour upper plaza level;
- install public art to generator exhaust stack; and
- install water fountain, City of Victoria benches, trash cans and bike maintenance station.

Macaulay Point Pump Station

- achieve substantial completion;
- plant trees and shrubs;
- place topsoil and finish grading;
- install gravel pathways;
- install boardwalk and viewing plaza; and
- place seeded turf.

Residuals Treatment Facility

- achieve Functional Completion;
- continue process commissioning with residuals;
- complete odour control biotrickling filter acclimation period; and
- complete retention ponds, perimeter fencing and commence site landscaping.

Clover Forcemain

- final clean up;
- demobilize site; and
- achieve total completion.

Residual Solids Pipes

- Complete Peers Creek culvert and supporting utility replacement.

Residual Solids Pump Stations

- final clean up; and
- demobilization.

Arbutus Attenuation Tank (AAT)

- install curb, pipe supports, monorail and aluminium platform for the valve chamber;
- install attenuation exterior walls; and
- install attenuation tank interior walls and columns.

Trent Forcemain

- install secant and soldier pile walls;
- removal of existing retaining wall and walkway at Dallas Road; and
- install curb and gutter and sidewalk at Memorial Crescent.

2.7 Cost Management and Forecast

The monthly cost report for August is shown in Appendix D. The cost report summarizes Project expenditures and commitments by Project Components and the major cost centres common to the Project Components.

The Project Team has been reporting budget pressures through its monthly reports to the Project Board (and CRD Board) since September 2017, primarily as a result of inflation in the Vancouver Island construction market. Other factors that have contributed to budget pressures include: design development to incorporate stakeholder input; geotechnical considerations including removal and disposal of contaminated material; and schedule constraints associated with the requirement to provide wastewater treatment by the regulatory deadline of December 31, 2020.

Based on the value of the contracts awarded to-date and the refreshed cost estimate for the scope remaining to be procured, the Project Team forecast the cost to complete the Project at $775M, or $10M (1.3%) over the Project's control budget. In May 2019 the CRD Board approved an increase in the Project's budget by $10M to $775M, and on August 14, 2019, the associated amendment to the 2019-2023 Financial Plan was approved.

Subsequent to May 2019 the Project Team have continued to manage risks and there have been two opposing budget drivers:

i) The Project's financing costs to-date have been lower than budgeted for two reasons: firstly as a result of low interest rates since the start of the Project, and secondly due to the receipt of funding from the provincial government earlier than forecast; and

ii) The Project's construction costs may be higher than budgeted as many contractors have advised that there are cost impacts from the COVID-19 public health emergency. Impacts include labour availability, work modifications to comply with provincial guidelines, and delays to the delivery of equipment and supplies.

It is too early to determine the cost impact to the Project, but given the ability to offset the unforeseen costs of COVID-19 through the finance cost savings, the Project Team remain confident that, if construction continues at the current pace, the Project cost will be within the Project's $775M budget.

2.7.1 Commitments

Commitments were made over the reporting period in furtherance of delivering the Project. The net commitments made during the reporting period resulted in an increase in committed costs of $1.3 million. The significant commitments made in the reporting period comprised the approval of provisional items in construction contracts and contract change orders.

2.7.2 Expenses and Invoicing

The Project expenditures for the reporting period were as expected and were within the budget allocations for each of the budget areas. The main Project expenditures incurred over the reporting period were associated with construction activities and project management office-related costs.

2.7.3 Contingency and Program Reserves

Over the reporting period a contingency draw of $0.28M was made and $0.4M was reallocated from savings in a budgeted line item (RTF financing) into contingency, as summarised in Table 6. The draws to-date, remaining contingency and program reserve balances are summarized in Table 6.

Table 6- Contingency and Program Reserve Draw-Down Table

WTP Contingency and Program Reserve Draws and Reallocations	Draw Date		$ Amount
Contingency and Program Reserve (in Control Budget)		**$**	**69,318,051**
Net Contingency and Program Reserve draws to July 31, 2020		$	(54,280,640)
Contingency and Program Reserve balance as at July 31, 2020		**$**	**15,037,411**
Residual Solids Discharge Line Connection to the Secondary Bypass Line	Aug-20	$	(281,522)
WWTP Total Draw		$	(281,522)
Reallocation of savings in a budgeted line item (RTF Financing) into RTF Contingency	Aug-20	$	400,000
RTF Total Increase		$	400,000
Conveyance Total Draw		$	-
PMO Total Draw		$	-
BC Hydro Total Draw		$	-
WTP Program Reserve Draw		$	-
Contingency and Program Reserve credits in the reporting period		$	400,000
Contingency and Program Reserve draws in the reporting period		$	(281,522)
Contingency and Program Reserve balance as at August 31, 2020		**$**	**15,155,889**

2.7.4 Project Funding

The federal and provincial governments are assisting the Capital Regional District in funding the Project.

The Government of British Columbia will provide $248 million towards the three components of the Project, while the Government of Canada is contributing:

- $120 million through the Building Canada Fund Major infrastructure Component towards the McLoughlin Point WWTP;
- $50 million through the Green Infrastructure Fund towards the conveyance system; and
- up to $41 million towards the RTF through the P3 Canada Fund.

The Project Team has applied to the Federation of Canadian Municipalities (FCM) for additional funding and has executed a grant agreement for the contribution of up to $346,900 towards the

delineation of the contamination and remediation and risk assessment for the McLoughlin Point Wastewater Treatment Plant.

The status of funding claims is summarised in Table 7. Note that the timing for the provision of Government of British Columbia and Government of Canada's funding differs by funding source. The Project Team will submit claims to the funding partners in accordance with the relevant funding agreements. In accordance with the funding agreements, funding from the P3 Canada Fund and the remainder of the funding from the Government of British Columbia cannot be claimed until relevant Project components are substantially complete.

Table 7- Project Funding Status

Funding Source	Maximum Contribution	Funding Received in the Reporting Period	Funding Received to Date
Government of Canada (Building Canada Fund)	$120M	-	$108M
Government of Canada (Green Infrastructure Fund)	$50M	-	$45 M
Government of Canada (P3 Canada Fund)	$41M	-	-
Government of British Columbia	$248M	-	$186.0M
Federation of Canadian Municipalities	$0.3M	-	-
TOTAL	**$459.3M**	-	**$339M**

2.8 Key Risks and issues

The Project Team actively identified and managed Project risks over the reporting period. Table 8 summarizes the highest-level risks that were actively managed over the reporting period, as well as the mitigation steps identified and/or undertaken over the reporting period.

No changes were made to the active risks summary over the reporting period:

The COVID-19 public health emergency continued to have impacts on the Project over the reporting period. It is anticipated that these impacts may affect several of the Project's risks. The Project Team are currently evaluating the impact of the public health emergency on the Project's risks, and anticipates that changes may be made to several of the risks as the situation evolves. Those risks that the Project Team have identified as potentially impacted, and that are currently under review, are identified in Table 8.

Table 8- Project Active Risks Summary

Risk Event	Description of Risk Event	Risk mitigation activities undertaken or planned in the reporting period	Assessed risk level	Trend in risk level from previous reporting period
Project				
Misalignment between First Nations' interests and the implementation of the Project.	The assessed risk level reflects the Project Team's priority of establishing strong and effective relationships with First Nations interfacing with, or interested in, the Project.	First Nations engagement activities remained ongoing over the reporting period (see section 2.3 for further details).	L	No change
Divergent interests between multiple parties and governance bodies whose co-operation is required to successfully deliver the Project.	The assessed risk level reflects the Project Team's priority of establishing strong and effective relationships with municipal, provincial and federal government departments.	The Project Team continued engagement with municipal, provincial and federal government departments throughout the reporting period.	L	No change
Misalignment between Project objectives/scope and stakeholder expectations.	The assessed risk level reflects the Project Team's priority of establishing strong and effective community stakeholder engagement.	Community engagement activities were ongoing over the reporting period (see section 2.4 for further details).	L	No change
Lack of integration between Project Components.	Planning challenges and system integration between the McLoughlin point WWTP, RTF and Conveyance System components of the Project results in schedule delays and/or additional Project costs.	Physical and schedule interfaces are clearly delineated in all construction contracts along with the requirement for commissioning and control plans. The Project Team has used a single Owner's engineer (Stantec) to develop the indicative design for all critical project components with significant interfaces. Commissioning and control plans are under development	L	No change
Senior government funds issue delayed.	The assessed risk level reflects the Project Team's priority of ensuring Project funding commitments are honoured.	Responsibility for meeting funding commitments has been assigned and is being monitored.	L	No change

Risk Event	Description of Risk Event	Risk mitigation activities undertaken or planned in the reporting period	Assessed risk level	Trend in risk level from previous reporting period
Downstream works delays.	Delay to the commissioning of the conveyance projects delays commissioning of the WWTP and the RTF.	Schedule has sufficient time allowance to ensure conveyance elements complete prior to requirement. Contractor agreements will include terms that require the contractor to recover schedule delays and/or allow for CRD acceleration.	M	No change but this risk may be impacted by the COVID-19 public health emergency (assessment is currently underway)
Upstream works delays.	Delay to the commissioning of either the WWTP or the RTF impacts the commissioning of the other plant.	Contracts with HRP (as the Design-Build Contractor for the McLoughlin Point WWTP) and HRMG (as the Design-Build-Finance-Operate Maintain contractor for the RTF) include terms that require the contractor to recover schedule delays and/or allow for CRD acceleration. Liquidated damages for late delivery are included in both HRP and HRMG contracts.	L	No change but this risk may be impacted by the COVID-19 public health emergency (assessment is currently underway)
Public directly contacting contractors at sites.	Direct contact between the public and contractors could expose both parties to worksite hazards and potential injuries.	Communications and engagement plan and coverage of communications in contractor orientations.	M	No change
Change in law.	A change in law impacts the scope, cost or schedule of the Project.	Keep apprised of proposed modifications to relevant regulations so as to do the following as appropriate: submit comments on proposed modifications; and/or consider including anticipated modifications in contracts.	H	No change
Labour - availability and/or cost escalation.	There is insufficient labour available to construct the Project, and/or there is significant labour cost.	The Project Team will, through the use of competitive selection processes for all construction contracts, ensure that all Project contractors have appropriate experience and therefore understand labour risk.	L	No change

Risk Event	Description of Risk Event	Risk mitigation activities undertaken or planned in the reporting period	Assessed risk level	Trend in risk level from previous reporting period
Disagreement on contractual obligations of the construction contractors.	There is a disagreement between the Project Team and a contractor regarding the performance of their contractual obligations.	The Project Team takes a proactive management approach to the resolution of any changes, claims and disputes that arise, working expeditiously to achieve resolution with the goal of minimizing any impacts to budget and schedule while ensuring adherence to the terms of the construction contracts.	M	No change but this risk may be impacted by the COVID-19 public health emergency (assessment is currently underway)

Risk Level Key - Assessed risk level (based on likelihood and potential impact			
Low	**Medium**	**High**	**Closed**
L	**M**	**H**	**C**

2.9 Status (Engineering, Procurement and Construction)

2.9.1 Wastewater Treatment Plant (McLoughlin Point WWTP)

The McLoughlin Point WWTP Project Component continued with Harbour Resource Partners ("HRP" as the Design-Build contractor for the McLoughlin Point WWTP) progressing construction and commissioning activities, including commencing commissioning with wastewater.

Key activities in progress or completed by HRP in August were as follows:

- Primary treatment area:
  - completed wet commissioning of Densadeg 1, 3 and 2;
  - commenced commissioning of Plate settler 1 & 2 process;
  - commenced Sludge tank, plant drain tank process commissioning; and
  - commenced fine screens process commissioning.

- Secondary treatment area:
  - commenced moving bed bio reactor (MBBR) process commissioning;
  - commenced biological aerated filter (BAF) process commissioning;
  - BAF cell 9 biolite installed, final covers and piping install underway;
  - commenced Blower process commissioning; and
  - Suez continued progressing through their pre-commissioning and commissioning tasks.

- Tertiary treatment area:
  - commenced outfall and clean water tank process commissioning;
  - commenced Backwash and Clean water pumping systems process commissioning;
  - disk filter system turned over to the commissioning team;
  - untreated wash down water system ready for influent; and
  - treated wash down water system progressed.

- O&M building:
  - Lower level interior south of the workshop nearing completion;
  - Second level throughout is nearing completion; and
  - Green roof system is complete.

- Site Works:
  - completed final north planter and tsunami walls; and
  - continued miscellaneous backfill on site.

Photographs of construction progress over the month of August at McLoughlin Point WWTP are shown in Figures 2-5.



Figure 2– McLoughlin Point Wastewater Treatment Plant – appliances being installed

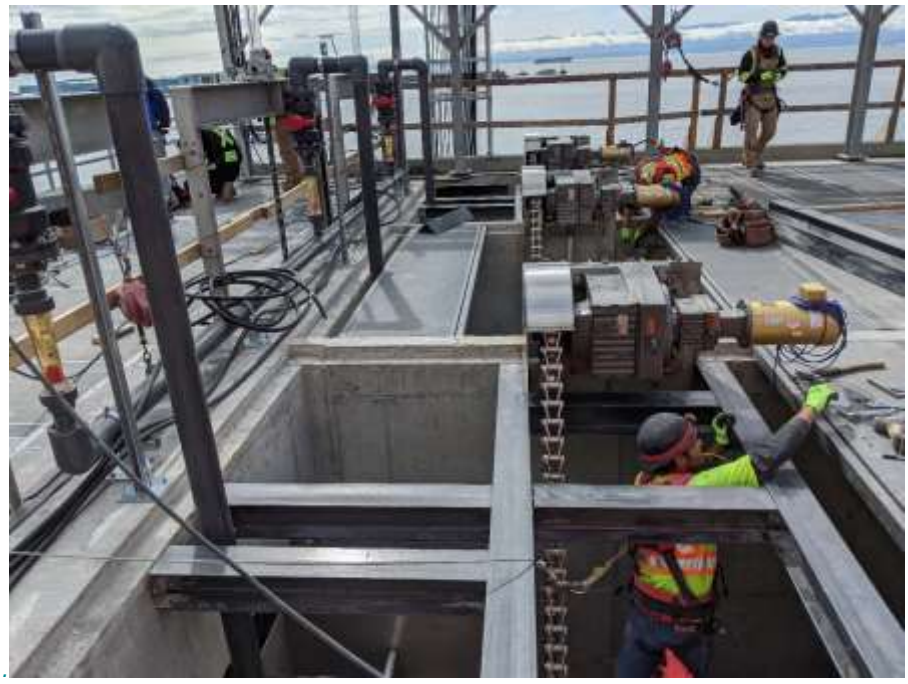


Figure 3– McLoughlin Point Wastewater Treatment Plant- Installation of rotating system on the disk filter channels.

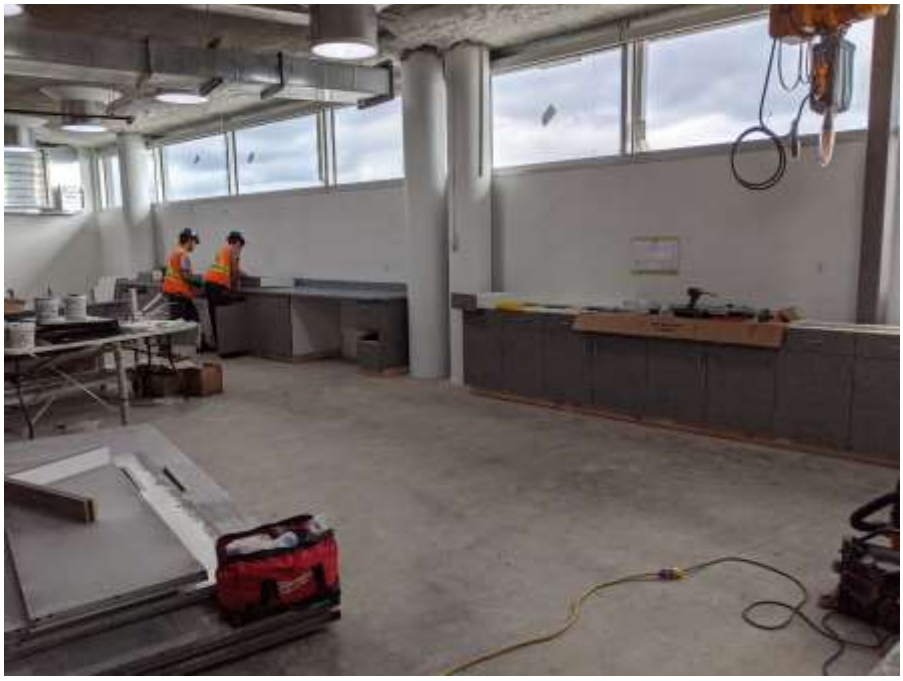


Figure 4− McLoughlin Point Wastewater Treatment Plant- Cabinet installation in workshop – Operations and Maintenance Level 1.



Figure 5− McLoughlin Point Wastewater Treatment Plant- Louvers installed at west entrance above doorway.

2.9.2 Residuals Treatment Facility

The RTF Project Component continued with Hartland Resource Management Group ("HRMG" as the Design-Build-Finance-Operate-Maintain contractor for the RTF) progressing construction and commissioning activities.

Key activities in progress or completed by HRMG in August were as follows:

- Digester Area
  - installation of insulation at Digesters 2 and 3;
  - commenced filling Digested Solids storage tanks with water for hydro test and installation of gas membrane; and
  - installation of biogas piping on roof of Digester Building tying into digester tanks.

- Other Municipal Solids Receiving Facility
  - completed install of hopper.

- Residuals Handling Building
  - commissioning of various systems including boilers; and
  - completed insulation of hot water piping.

- Residuals Drying Facility
  - commissioning of various systems in progress.

- Residuals Storage & Odour Control
  - commenced insulation of fiberglass reinforced plastic (FRP) ductwork.

- Operations Building
  - Fire alarm verification is progressing.

Photographs of construction progress over the month of August at the Residuals Treatment Facility are shown in Figures 6-8.



Figure 6– Residuals Treatment Facility- Dryer building and residuals handling building.



Figure 7– Residuals Treatment Facility- Operations building area.



Figure 8– Residuals Treatment Facility – Filling of the Digested Solids Storage Tank.

2.9.3 Conveyance System

2.9.3.1 Clover Point Pump Station

The Clover Point Pump Station continued with Kenaidan Contracting Limited ("Kenaidan" as the Design-Build Contractor) progressing construction and commissioning activities over the reporting period, including commencing the pumping of wastewater from the Clover Point Pump Station, through the Clover Forcemain to the McLoughlin Point WWTP.

Other key construction activities in progress or completed by Kenaidan in August included:

- formed, placed and stripped concrete benches and upper plaza retaining walls;
- formed and poured north retaining wall;
- installed stone exterior to pump station;
- installed pipe supports to storm pumps;
- installed crane stops for electrical room monorail;
- installed public washroom accessories and finishes;
- completed installation of pigging chamber; and
- installed acoustic panels in generator room.

Photographs of construction progress over the month of August at Clover Point are shown in Figures 9-11.



Figure 9−Clover Point Pump Station- Stonework masonry completed on exterior of public washroom.



Figure 10−Clover Point Pump Station- concrete pour of north retaining wall.



Figure 11- Clover Point Pump Station – Backfill and grading around the landscaping walls.

2.9.3.2 Macaulay Point Pump Station and Forcemain

The Macaulay Point Pump Station and Forcemain continued with Kenaidan Contracting Limited ("Kenaidan" as the Design-Build Contractor) progressing construction and commissioning activities over the reporting period, including commencing the pumping of wastewater from the Macaulay Point Pump Station, through the Macaulay Forcemain, to the McLoughlin Point WWTP.

Other key construction activities in progress or completed by Kenaidan in August were as follows:

- Diversion Chamber:
  - ongoing backfill around the existing drop structure; and
  - installation of vent pipes.

- Pump Station:
  - installed additional air release valves in the pump room;
  - ongoing installation of fiberglass reinforced plastic (FRP) platform and stairs in the pump room;
  - ongoing FRP grating installation in the bin room;
  - installation of Acoustic Insulation Panels in Genset Room and Pump Rooms;
  - ongoing vent pipe installation on the East side;
  - continued backfill on the East side; and
  - ongoing installation of electrical sleeves to the low level chamber.

Photographs of construction progress over the month of August at Macaulay Point Pump Station are shown in Figures 12-13.



Figure 12–Macaulay Point Pump Station- Installation of acoustic panels in Drywell.



Figure 13−Macaulay Point Pump Station- Clean up and landscaping east of the blue house.

2.9.3.3 Clover Forcemain (CFM)

Windley Contracting Ltd. (“Windley” as the Construction Contractor) continued construction and commissioning activities over the reporting period, including supporting the commencement of pumping of wastewater from the Clover Point Pump Station, through the Clover Forcemain to the McLoughlin Point WWTP.

Key construction activities in progress or completed by Windley in August included:

- seawall balustrade replacement construction continues; and
- construction of enhanced sidewalk.

Photographs of construction progress over the month of August on the Clover Forcemain are shown in Figures 14-15.



Figure 14−Clover Forcemain- new aluminium railing is installed and sidewalk ongoing



Figure 15−Clover Forcemain- Parking bollards installed.

2.9.3.4 Residual Solids Conveyance Line

The RSCL is being delivered through two construction contracts:

- Residual Solids Pipes; and
- Residual Solids Pump Stations

Residual Solids Pipes: Don Mann Excavating Ltd. (“Don Mann” as the Construction Contractor for the Residual Solids Pipes) continued construction activities over the reporting period for the Saanich infrastructure improvement being undertaken at Peers Creek.

Key construction activities in progress or completed by Don Mann in August were as follows:

- fish salvage and creek dewatering was conducted with supervision by McElhanney;
- existing concrete-encased BC Hydro transmission duct bank was exposed, and more concrete was added to the surround;
- realigned a section of an existing watermain, the new section was successfully tested and tied in to the existing main by Saanich with support from Don Mann;
- existing sewer pipe was replaced with ductile iron pipe within a casing;
- removal of existing storm drain manhole and culvert pipes;
- installed twin culverts across Interurban Road;
- installation and connection of a new storm drain manhole; and
- two boreholes were advanced to assess soil conditions as part of concrete
- Headwall design.

Photographs of construction progress over the month of August on the Residual Solids Pipes are shown in Figures 16-17.



Figure 16− Residual Solids Pipes- Peers Creek – Base gravel being placed and graded over culverts.



Figure 17−Residual Solids Pipes – Peers Creek – Backfilling and compacting of culverts.

Residual Solids Pump Stations: Knappett Projects Inc. (“Knappett” as the Construction Contractor for the Residual Solids Pump Stations) continued construction and commissioning activities over the reporting period.

Key construction activities in progress or completed by Knappett in August included:

- form and pour new pump bases and continue installation of mechanical equipment and piping for the Hartland water system improvements;
- replaced threaded hanger rods on Admirals and Tillicum bridges;
- installed valve chamber hatch drains at pump stations 2 & 3;
- install odour control unit vent piping at all pump stations; and
- completed site grading at the Marigold pump station.

Photographs of construction progress over the month of August on the Residual Solids Pump Stations are shown in Figures 18-19.



Figure 18−Residual Solids Pump Stations– Tillicum Bridge – Installing new hanger rods.



Figure 19 −Residual Solids Pump Stations – Pump Station # 1: installing pipe stands on the Odour Control Unit vent piping.

2.9.3.5 Arbutus Attenuation Tank

NAC Constructors Ltd. (as the Construction Contractor for the Arbutus Attenuation Tank) continued construction activities over the reporting period.

Key construction activities in progress or completed by NAC Constructors Ltd. in August include:

- sections of Attenuation Tank mud mat poured and completed;
- completed valve chamber excavation, subbase placement, and mud mat placement;
- commenced coring of valve chamber piping and doorway;
- completed 90% of the main tank and 100% of the valve chamber base slab reinforcing steel, injection and PVC water stop;
- completed and backfilled installation of culvert extension;
- additional anchors were proof tested to resolve the failed anchor along with supplementary reinforcing steel installation around adjacent anchors; and
- Completed base slab pours of the Valve Chamber, the Lower Sump and Trough area of the Main Tank.

Photographs of construction progress during the month of August at the Arbutus Attenuation Tank are shown in Figures 20 and 21.

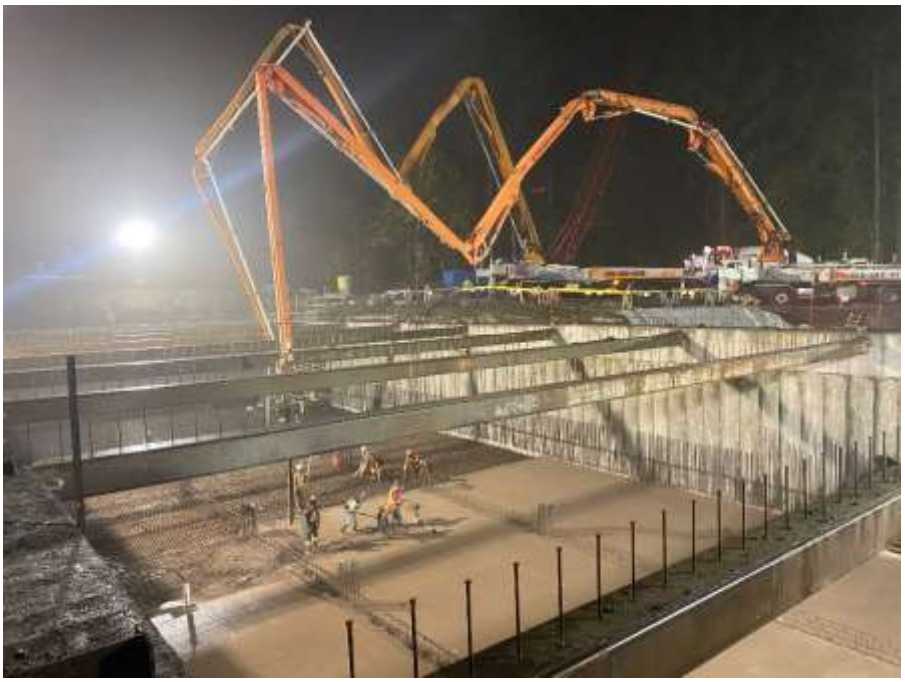


Figure 20−Arbutus Attenuation Tank- Base Slab night time concrete pour



Figure 21−Arbutus Attenuation Tank- slab pour complete and covered with wet blankets for curing.

2.9.3.6 Trent Forcemain

Jacob Bros. Construction Inc. (as the Construction Contractor for the Trent Forcemain) progressed continued construction activities over the reporting period.

Key construction activities in progress or completed by Jacob Bros. in August included:

- installed Memorial Crescent air valve chamber and internal hardware setup ready for commissioning;
- installation of forcemain on Stannard Avenue and Brooke Street;
- reinstated three external drop structure manholes on Brooke Street prior to backfill; and
- completed Memorial Crescent watermain grade adjustment work.

A photograph of construction progress during the month of August at the Trent Forcemain is shown in Figure 22.



Figure 22−Trent Forcemain- base course paving on Eberts Street.

Appendix A− Trent Forcemain: Updated Work Hours (August 6, 2020)

Wastewater Treatment Project

August 6, 2020

Dear Resident,

We are writing to notify you that the contractor for the Trent Forcemain project will be changing their work hours on Saturdays and will be starting at 8:00 a.m. beginning August 8.

Work hours are now Monday to Friday from 7:00 a.m. to 7:00 p.m. and Saturday from 8:00 a.m. to 7:00 p.m.

Construction for the Trent Forcemain continues with over 50% of the pipes installed (1,000m of 1,900m).

We appreciate your patience while this work is being completed. Please feel free to contact us at our 24/7 phone line 1-844-815-6132 or email wastewater@crd.bc.ca if you have any questions.

Thank you,

Wastewater Treatment Project Team



Appendix B− Dallas Road Update (August 6, 2020)

Wastewater Treatment Project
Treated for a cleaner future

Dallas Road Update
August 2020

Clover Point

The majority of construction on the pump station is complete and commissioning (or system testing) is underway.

Public space improvements are currently being built: a new viewing plaza, connecting pathways, benches, water fountain, public art, bike racks, and a new public washroom. Anticipated opening: November 2020.

Clover Point Road remains closed and the City of Victoria will determine when it will reopen.

The site trailer and laydown area will be fully restored to its original condition in fall 2020.

Dallas Road

The City of Victoria is replacing the seawall balustrade near Ogden Point on Dallas Road and adding a plaza to the sidewalk. Anticipated completion: September 2020.

The City of Victoria has designated the new bike path along Dallas Road as a multi-use path for cyclists and pedestrians to share as a pilot project, similar to the Galloping Goose or E&N Rail Trail. Signs and pathway markings anticipated to be complete: end of August 2020.

Final paving of Dallas Road between Lewis and Dock streets: September. Standard and accessible parking stalls marked on Dallas Road: fall 2020.

Pathway lighting, garbage cans, and bike racks have been installed along the path and 88 trees have been planted in Beacon Hill Park.

Any questions about the work, please contact the Project Team.

24/7 Phone Line
1.844.815.6132

Email
wastewater@crd.bc.ca

Website
wastewaterproject.ca

Appendix C− Trent Forcemain: Dallas Road Seawall (August 17, 2020)

Dallas Road Seawall

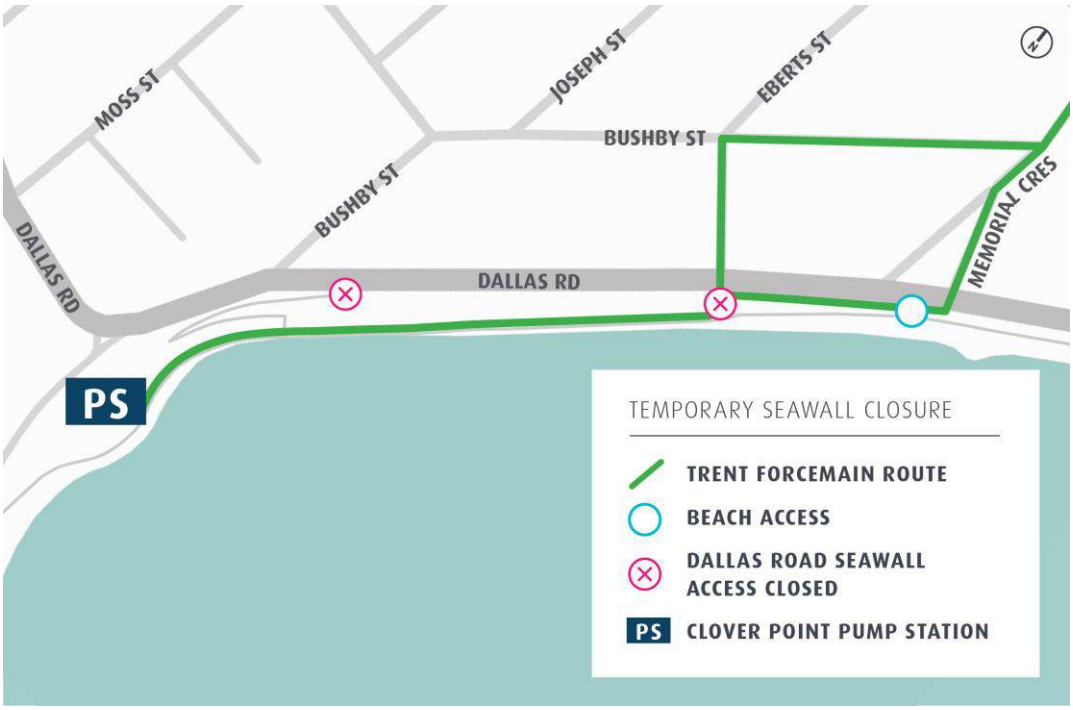
The Wastewater Treatment Project includes construction of the Trent Forcemain, 1.9km of pipes that will be installed from the intersection of Chandler Avenue and St. Charles Street to the Clover Point Pump Station. This work includes installing a pipe under the pedestrian path on the Dallas Road Seawall. The path will be temporarily closed and some parking will be restricted during construction. Beach access will be maintained.

What's Happening

- The Dallas Road Seawall between Memorial Crescent and the Clover Point Pump Station will be excavated and a pipe will be installed.
- Final restoration of the pedestrian path will take place after this section has been tested and completed.

Timeline

- Pipe installation is expected to begin in August 2020.
- Restoration of the seawall is anticipated to be complete in fall 2020.



Thank you for your patience as this work is completed.

Any questions about the work, please contact the Project Team.

24/7 Phone Line
1.844.815.6132

Email
wastewater@crd.bc.ca

Website
wastewaterproject.ca

Appendix D– Monthly Cost Report (August)

MONTHLY COST REPORT
as at August 31, 2020

Description	BUDGET		COST EXPENDED					COMMITMENTS			FORECAST		VARIANCE	
	Control Budget	Allocated Budget	Expended to July 31, 2020	Expended over reporting period (August 2020)	Expended to August 31, 2020	Expended to August 31, 2020 as a % of Allocated Budget	Remaining (Unexpended) Allocated Budget at August 31, 2020	Total Committment at August 31, 2020	Unexpended Commitment at August 31, 2020	Uncommitted Allocated Budget at August 31, 2020	Forecast to Complete	Forecast at Completion	Variance at Completion $	Variance at Completion as a % of Allocated Budget
McLoughlin Point Wastewater Treatment Plant	**331.4**	**328.1**	**303.0**	**4.2**	**307.2**	**94%**	**20.9**	**321.2**	**14.0**	**6.9**	**20.9**	**328.1**	**-**	**0%**
Construction	306.7	321.1	302.6	4.2	306.8	96%	14.3	320.5	13.8	0.5	14.3	321.1	-	0%
Contingency	14.9	0.1	-	-	-	0%	0.1	-	-	0.1	0.1	0.1	-	0%
Financing	9.8	6.9	0.5	-	0.5	7%	6.4	0.7	0.2	6.2	6.4	6.9	-	0%
Residuals Treatment Facility	**159.4**	**140.1**	**11.4**	**0.0**	**11.4**	**8%**	**128.7**	**139.1**	**127.7**	**1.0**	**128.7**	**140.1**	**-**	**0%**
Construction	145.4	139.1	11.4	0.0	11.4	8%	127.6	139.1	127.6	0.0	127.6	139.1	-	0%
Contingency	12.3	0.6	-	-	-	0%	0.6	-	-	0.6	0.6	0.6	-	0%
Financing	1.7	0.4	0.0	-	0.0	3%	0.4	0.0	0.0	0.4	0.4	0.4	-	0%
Conveyance System	**158.0**	**215.6**	**170.4**	**5.1**	**175.6**	**81%**	**40.1**	**196.2**	**20.7**	**19.4**	**40.1**	**215.6**	**-**	**0%**
Macaulay Point Pump Station	25.4	30.9	27.7	0.8	28.5	92%	2.4	30.9	2.4	0.0	2.4	30.9	-	0%
Macaulay Forcemain	5.6	7.4	7.4	-	7.4	100%	-	7.4	-	-	-	7.4	-	0%
Craigflower Pump Station	12.5	12.4	12.4	-	12.4	100%	-	12.4	-	-	-	12.4	-	0%
Clover Point Pump Station	23.7	27.3	24.7	-	24.7	91%	2.5	27.3	2.5	0.0	2.5	27.3	-	0%
Currie Pump Station^	2.8	0.1	0.1	-	0.1	100%	-	0.1	-	-	-	0.1	-	0%
Arbutus Attenuation Tank	14.2	24.6	14.7	1.0	15.7	64%	8.9	23.3	7.6	1.3	8.9	24.6	-	0%
Clover Forcemain	14.6	32.5	30.3	0.3	30.6	94%	1.9	31.9	1.3	0.6	1.9	32.5	-	0%
Currie Forcemain^	3.3	0.2	0.2	-	0.2	100%	-	0.2	-	-	-	0.2	-	0%
Trent Forcemain	9.5	11.3	3.9	0.9	4.8	42%	6.5	8.5	3.7	2.8	6.5	11.3	-	0%
Residual Solids Conveyance Line	19.1	36.6	34.4	0.8	35.2	96%	1.4	36.6	1.4	0.0	1.4	36.6	-	0%
Residual Solids Pump Stations & Bridge Crossings	4.6	18.0	14.1	1.3	15.5	86%	2.5	17.1	1.6	0.9	2.5	18.0	-	0%
Residual Solids Conveyance Line – Highway Crossing	-	0.4	0.3	-	0.3	76%	0.1	0.4	0.0	0.1	0.1	0.4	-	0%
Contingency	16.8	9.9	-	-	-	0%	9.9	-	-	9.9	9.9	9.9	-	0%
Financing	5.8	4.1	0.2	-	0.1	4%	3.9	0.3	0.2	3.7	3.9	4.1	-	0%
Project Management Office ("PMO")	**75.8**	**77.9**	**57.4**	**1.6**	**59.1**	**76%**	**18.8**	**70.4**	**11.4**	**7.4**	**18.8**	**77.9**	**-**	**0%**
Project costs Aug 2016-Dec 2016	2.2	2.2	2.2	-	2.2	100%	-	2.2	-	-	-	2.2	-	0%
Owner's Engineering	17.2	17.7	14.5	0.9	15.4	87%	2.3	17.7	2.3	-	2.3	17.7	-	0%
Conveyance Design	5.0	9.5	7.8	0.2	8.0	85%	1.5	8.9	0.9	0.6	1.5	9.5	-	0%
Advisors & Professional Support	7.0	14.8	10.3	0.1	10.4	71%	4.4	11.6	1.1	3.2	4.4	14.8	-	0%
Project Board	2.0	1.3	0.9	0.0	1.0	76%	0.3	1.0	-	0.3	0.3	1.3	-	0%
Project Board Expenses	0.3	0.1	0.1	-	0.1	64%	0.0	0.1	-	0.0	0.0	0.1	-	0%
Project Team	29.1	23.1	16.5	0.4	16.9	73%	6.3	22.9	6.1	0.2	6.3	23.1	-	0%
Project Leadership Team Expenses	0.7	0.4	0.2	-	0.2	62%	0.1	0.2	-	0.1	0.1	0.4	-	0%
Project Support Team Expenses	0.5	0.2	0.1	-	0.1	67%	0.0	0.1	-	0.0	0.0	0.2	-	0%
CRD Financial Services	1.5	1.4	0.9	0.0	1.0	70%	0.4	1.4	0.4	-	0.4	1.4	-	0%
CRD Human Resources	0.3	0.3	0.2	0.0	0.2	92%	0.0	0.3	0.0	-	0.0	0.3	-	0%
CRD Corporate Communications	0.2	0.2	0.2	-	0.2	90%	0.0	0.2	0.0	-	0.0	0.2	-	0%
CRD Real Estate	0.3	0.3	0.2	-	0.2	92%	0.0	0.3	0.0	-	0.0	0.3	-	0%
CRD Information Technology	0.4	0.4	0.3	0.0	0.3	74%	0.1	0.4	0.1	-	0.1	0.4	-	0%
CRD Insurance	0.1	0.0	0.0	-	0.0	100%	-	0.0	-	-	-	0.0	-	0%
CRD Operations	0.6	0.6	0.5	0.0	0.5	88%	0.1	0.6	0.1	-	0.1	0.6	-	0%
CRD Legislative Services	0.1	0.1	0.1	-	0.1	100%	-	0.1	-	-	-	0.1	-	0%
CRD Corporate Safety	0.2	0.2	0.2	-	0.2	100%	-	0.2	-	-	-	0.2	-	0%
CRD Executive Services	-	0.1	0.1	-	0.1	86%	0.0	0.1	0.0	-	0.0	0.1	-	0%
Office Lease	1.9	1.3	0.9	0.0	0.9	71%	0.4	1.2	0.3	0.1	0.4	1.3	-	0%
Office Supplies	0.1	0.2	0.2	-	0.2	92%	0.0	0.2	-	0.0	0.0	0.2	-	0%
Vehicles	0.2	0.2	0.2	-	0.2	95%	0.0	0.2	0.0	-	0.0	0.2	-	0%
Connections Call Center	-	0.0	0.0	-	0.0	100%	-	0.0	-	-	-	0.0	-	0%
Communication support materials	0.5	0.2	0.1	-	0.1	61%	0.1	0.1	-	0.1	0.1	0.2	-	0%
Computer Hardware, Software & Training	1.0	1.1	0.7	-	0.7	61%	0.4	0.7	-	0.4	0.4	1.1	-	0%
Contingency	4.8	2.3	-	-	-	0%	2.3	-	-	2.3	2.3	2.3	-	0%
BC Hydro	**12.9**	**4.3**	**2.0**	**0.0**	**2.1**	**48%**	**2.2**	**2.1**	**0.0**	**2.2**	**2.2**	**4.3**	**-**	**0%**
Third Party Commitments	**8.1**	**8.1**	**4.1**	**0.1**	**4.1**	**51%**	**4.0**	**6.9**	**2.7**	**1.3**	**4.0**	**8.1**	**-**	**0%**
Program Reserves	**19.2**	**0.9**	**-**	**-**	**-**	**0%**	**0.9**	**-**	**-**	**0.9**	**0.9**	**0.9**	**-**	**0%**
Core Area Wastewater Treatment Project	**765.0**	**775.0**	**548.4**	**11.0**	**559.4**	**72%**	**215.5**	**735.9**	**176.5**	**39.1**	**215.5**	**775.0**	**-**	**0%**

* Values presented in $millions, results in minor rounding differences
** Cost report presents approved expenditures
^ Component no longer required, and would not provide any value therefore removed from Project Scope; Costs include Seaterra initiation, planning and design

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REPORT TO ELECTORAL AREAS COMMITTEE
MEETING OF WEDNESDAY, JULY 8, 2020

Subject **Bylaw No. 1465 – Livestock Kill Compensation; Alternatives for Electoral Area Participation**

ISSUE

On March 13, 2019, the Electoral Areas Committee (EAC) directed staff to prepare proposed service establishment bylaw amendments to provide for livestock kill compensation within the Southern Gulf Islands (SGI) and Salt Spring Island (SSI) Electoral Areas.

BACKGROUND

In March 2019, staff were directed to examine options and prepare bylaw amendments for splitting the existing livestock kill compensation service into three separate services, such that residents of each electoral area would only be responsible for paying livestock kill compensation claims from their specific electoral area, rather than the current cost-share arrangement which requires all residents to share equally.

Due to its nature, being a regulatory service within a regulatory service created by Letters Patent, rather than an establishing bylaw, this conversion has been found to be more complicated than initially thought. Direction is required as to what the preferred method of service arrangement is in the electoral areas, prior to drafting of bylaw amendments.

Legal Framework
A regional board which charges dog licensing fees may pay compensation to the owner of livestock killed or injured by any dog more than four months in age, whose owner cannot be located, and where the owner of the livestock has taken all reasonable precautions against such attacks (*Local Government Act*, RSBC 2015, c 1, s. 319(4)).

The Capital Regional District (CRD) has a compensation program in its *Animal Impounding and Regulation Bylaw No. 1, 1986* (Bylaw No. 1465), ss. 19 to 23, contained in Appendix A. The CRD has paid compensation since the creation of its animal control service, starting with the *Dog Regulation and Impounding Bylaw No. 1, 1979* (Bylaw No. 551).

The per animal limit is presently $750. No annual maximum limit is set out. The total compensation claims received for 2018 was $8,681.25 and $2,475 for 2019 (two claims for SGI and one for Metchosin), not including administrative and veterinarian costs. The CRD does not specifically budget for these claims, and this amount is borne by the operating budget for animal control which does not have adequate capacity to manage these additional unplanned costs to the program. Throughout the history of this program there have been loss claims in all electoral areas.

The typical process is for the CRD to send staff, along with a qualified veterinarian, to investigate and determine whether an animal kill was by a rogue dog. The cost of this process can be greater than $1,000 when all staff, veterinary and administrative time is considered depending on the location and nature of the claim, not inclusive of the compensation claim itself. The CRD has processed approximately 16 such claims in the last 15 years. With claim amounts difficult to predict from year to year the existing budget has not included ongoing funding for claims.

Prior Discussions
The evolution of the Bylaw No. 1465 discussions at EAC are as follows:

Sept. 5, 2018:

> *Staff were directed to bring forward bylaw amendments to eliminate future compensation claims following any claims that are currently in process.*

Oct. 10, 2018:

> *That staff report item 5.2 and Bylaw No. 4264, Animal Regulation and Impounding Bylaw No. 1, 1986, Amendment Bylaw No. 12, 2018 be deferred pending consultation with the farming community and;*
>
> *That staff be directed to provide alternative options to make the sheep kill program applicable to individual electoral areas or municipal jurisdictions.*

Dec. 4, 2018 (Special EAC):

> During the EAC strategic planning session, the EAC Directors requested that the amended bylaw be brought back to the January 9, 2019 meeting for reconsideration.

Jan. 9, 2019:

> *The staff report was referred back to staff to report back on alternative options to allow each Electoral Area to make its own decision on participation in the livestock kill compensation program.*

Staff were told not to undertake consultation with farmers as the Electoral Areas Committee felt they had heard from the farming community on the issue.

Mar. 2019:

> *That staff be directed to prepare proposed service establishment bylaw amendments to provide for livestock kill compensation within the Southern Gulf Islands and Salt Spring Island Electoral Areas, as directed by the Committee.*

DISCUSSION

Bylaw No. 1465 is a Regulatory Bylaw established in 1986 in support of Letters Patent from 1979. The bylaw outlines the scope of the animal control service, including operation of a pound and payment of compensation for injury to livestock. The Letters Patent set out the method of service funding and requires each electoral area participant to share equally in animal control. There is no separate service establishment bylaw that articulates the funding mechanism for this livestock kill compensation program. Due to legal restrictions, changes cannot be made to the service authority absent a conversion of the Letters Patent into an establishing bylaw and separation of the livestock kill compensation service, as directed by the CRD Board.

Without significant delay, the current bylaw may be amended to limit the amount paid to a specific incident, per claimant per year, establish an annual cap, or increase the compensation amount. Taxation would still remain split amongst the three electoral area participants.

If the EAC chooses to remove the livestock kill compensation component from Bylaw 1465 to set up a new service(s), the establishing bylaws to create the new separate services would need Ministry approval. Because this is a regulatory bylaw, and the compensation services can be established without borrowing, each Electoral Area Director can consent on behalf of the electors to the conversion and the service separation (sections 349 and 339(b) of the *Local Government Act*).

Once in place, CRD would requisition the participating Electoral Areas under the new services separate from the ongoing requisition for animal control. Typical service establishment bylaw processes can take up to a year to put in place.

ALTERNATIVES

Alternative 1:

a) That staff be directed to convert the Animal Control Service created by Letters Patent to a service operated by establishing bylaw;
b) That staff be directed to separate-out the livestock kill compensation function into three separate services, one for each electoral area; and
c) That the bylaw for each livestock kill compensation service set an annual maximum at the recommendation of the applicable Electoral Area Director.

Alternative 2:

a) That staff refrain from converting the Animal Control Service, and retain the livestock kill compensation provisions in its current form; and
b) That an annual maximum for compensation be set to a value of $10,000.

IMPLICATIONS

Financial Implications

The financial implications of the changes to the livestock kill compensation component of Bylaw No. 1465 will depend solely on the option chosen.

In any event, it is recommended that a base reserve fund of $5,000 be established and maintained to manage these claims going forward. It is also recommended that an annual maximum cap be established on the compensation program that would require a lesser amount of funding to sustain the program and any potential claims, balancing the interests of livestock owners with the administrative cost of operating the program.

Alternative 1: One animal control service, three compensation services

This option will retain enforcement, operations, and administration with shared costs among all electoral areas, but will split payment of compensation into each electoral area specifically.

Alternative 2: No change

This would leave the status quo in place, but set an annual maximum for claims in an amount that is fair to claimants but is possible to budget for in a manner that does not unnecessarily raise taxation. This would also free up CRD resources to be used on other projects relating to the electoral areas, as bylaw conversion and service establishment are time-intensive projects.

Intermunicipal Implications

CRD's Animal Control Service provides contract-for-service work to other municipalities. As a result of this service change and clarification of the compensation service, contractual amendments may be required to ensure that each municipality pays for its own animal injury compensation claims and sets its own annual maximum under its applicable bylaw.

CONCLUSION

Any change to alter the way Electoral Areas participate will require the conversion of the Letters Patent and one animal control service establishing bylaw with one or more livestock kill compensation services. Removal of or change in rates for the livestock kill compensation component can be achieved without new service establishment bylaws needing to be created as long as all Electoral Areas participate. As this program is currently not funded in the current Animal Control budget, 2020 claims will need to be funded from the Bylaw Services Operating Budget and budgeted for in 2021 should the program continue.

RECOMMENDATION

a) That staff be directed to convert the Animal Control Service created by Letters Patent to a service operated by establishing bylaw;
b) That staff be directed to separate-out the livestock kill compensation function into three separate services, one for each electoral area; and
c) That the bylaw for each livestock kill compensation service set an annual maximum at the recommendation of the applicable Electoral Area Director.

Submitted by:	Shawn Carby, CD, BHSc, MAL, Senior Manager Protective Services
Concurrence:	Kristen Morley, J.D., General Manager, Corporate Services & Corporate Officer
Concurrence:	Kevin Lorette, P.Eng., MBA, Acting Chief Administrative Officer

Attachment: Appendix A: Bylaw No. 1465 *Animal Regulation and Impounding Bylaw No. 1, 1986*

Bylaw 1465

Animal Regulation and Impounding Bylaw No. 1, 1986

CAPITAL REGIONAL DISTRICT

BYLAW NO. 1465

(As amended by Bylaw Nos. 1771, 2012, 3168, 3194, 3210, 3472, 3697, 3785, 3884, 3908)

Consolidated version authorized in accordance with Bylaw No. 3014, CRD Consolidation Authorization Bylaw No. 1, 2002

ANIMAL REGULATION AND IMPOUNDING BYLAW NO. 1, 1986

A bylaw to regulate the keeping of animals within the Capital Regional District

For further details please consult the CRD Animal Control Office
#212-2780 Veterans Memorial Parkway, Victoria, BC
Phone: 250-478-0624 or 1-800-665-7899

For reference to original bylaws and amendments,
please contact the Legislative Services department, Capital Regional District,
625 Fisgard Street, Victoria, B.C., V8W 2S6
Phone: 250-360-3129

CAPITAL REGIONAL DISTRICT
BYLAW NO. 1465

****

A BYLAW TO REGULATE THE KEEPING OF ANIMALS WITHIN THE CAPITAL REGIONAL DISTRICT

****

WHEREAS it is deemed expedient to regulate the keeping of animals within the Capital Regional District and to provide for the fixing, imposing and collecting of licence fees from the issuance of licences to any person who owns, possesses or harbours any dog;

AND WHEREAS the Letters Patent of the Capital Regional District dated the 16th day of February, 1979, confer on the Regional Board with respect to participating member municipalities, the powers conferred on the council of a municipality by Sections 524, 525, 932, 933, and 934 of the *Municipal Act* and those powers which are granted under the *Livestock Protection Act*;

NOW THEREFORE the Regional Board of the Capital Regional District, in open meeting assembled, enacts as follows:

DEFINITIONS:

1.

(1) In this Bylaw unless the context otherwise requires,

"Animal" means an animal that is

(a) tame or kept, or that has been and is being sufficiently tamed or kept, to serve some purpose for the use of man; and

(b) includes rabbits, goats, sheep, swine, horses, cattle, poultry kept for the purpose of providing meat or eggs, fur bearing animals as defined in the *Fur Farm Act*.

"Animal Control Officer" means the person appointed from time to time by the Regional Board for the purpose of administering this Bylaw, and includes any assistant or any person appointed by the Regional Board to assist in carrying out the provisions of this Bylaw.

"Breeding Kennel" - means a parcel where dogs are kept, trained, cared for, and bred.

"Boarding Kennel" - means a parcel where dogs are kept, trained, cared for, bred and/or boarded.

"Cat" means both male and female of the species *felis domesticus* apparently over the age of four (4) months.

"Dangerous" when used in relation to any animal means any animal that has attacked or bitten, attempted to attack or bite or chased any person or animal or wildlife but excludes any attack by a dog on other animals or wildlife engaged in molesting livestock. *(Bylaw 3168)*

"Dog" means both male and female of the species *canis domesticus* apparently over the age of four (4) months.

"Guide Dog" means a dog used by a blind person to assist him to avoid hazards, and includes a dog for which a certificate has been issued under the *Blind Persons Rights Act* R.S.B.C. 1979 C29.

"Highway" includes any street, road, lane, bridge, viaduct, and any other way open to the use of the public, but does not include a private right-of-way on private property.

"Impounded" means seized, delivered, received or taken into the Pound or in the custody of the Animal Control Officer as provided for herein.

"Owner" in respect of any animal includes possessor or harbourer and "Owned" includes possessed or harboured.

"Parcel" means a lot, block, or other area in which land is held or into which land is subdivided and which is registered under one title, pursuant to the *Land Title Act*.

"Police Dog" means any dog owned by an accredited Police Force and trained to assist Police on investigations.

"Pound" means any building or enclosure or place established for impounding animals by the Regional Board under the provisions of this Bylaw.

"Public Beach" means any public land located within FIFTEEN METRES (15 m) of any lake or between low water mark and FIFTEEN METRES (15 m) beyond high water mark of any body of salt water but does not include any private lands or any lands included in any highway.

"Regional Board" means the Regional Board of the Capital Regional District.

"Regional District" means all of the Regional District not contained within a city, district, town or village.

"Treasurer" means Treasurer of the Capital Regional District.

"Unlicenced Dog" means any dog for which the licence for the current year has not been paid as provided herein.

"Zone" means any zone district established under the zoning bylaws of the Capital Regional District.

(2)

(a) For the purposes of this Bylaw an animal is deemed to be "running at large" if it is on land which is not owned or occupied by the owner of the animal.

(b) For the purposes of this Bylaw an animal shall not be deemed to be "running at large" if it is:

i) On the property of its owner or of another person who has the care and control of the animal, or

ii) Under the direct and continuous control of a person who is competent to control it, or

iii) Securely confined within an enclosure, or

iv) Securely fastened so that it is unable to roam.

(c) For the purpose of this Bylaw, a dangerous animal is deemed not to be under the direct and continuous control of a person. *(Bylaw 3194)*

KENNELS:

2.

(1)

(a) Subject to paragraph (b) no person, being the owner or occupier of a parcel, shall cause or permit the keeping or harbouring on that parcel, in respect of each dwelling unit on the parcel, more than four (4) dogs over the age of four (4) months without holding a valid kennel licence issued under this Bylaw. *(Bylaw 3168)*

(b) No person holding a valid kennel licence shall cause or permit the keeping or harbouring on a parcel more dogs than is permitted under the terms of his kennel licence over the age of eight (8) months.

(2) (a) Subject to paragraphs (b) and (c) no person shall use a parcel as a kennel for the keeping, training, care, breeding, or boarding of any animals unless the operation is a permitted use under an applicable Zoning Bylaw.

(b) Breeding kennel licences can be issued only to persons who are engaged in solely the breeding of dogs, and whose dog or dogs are registered with a bona fide Kennel Club or associated with other bona fide dog clubs.

(c) No person shall use a parcel as a breeding or boarding kennel unless there is a dog exercise area fenced in such a manner that the dog or dogs cannot escape the confines of the exercise area.

LICENCING DOGS:

3. The owner of a dog shall obtain a licence for the calendar year, January 1 to December 31 in accordance with the Bylaw on or before the last day of February in each year for each dog owned by him/her over the age of four (4) months; provided, however, if he/she becomes the owner of such a dog after the last day of February in any year, he/she shall obtain a licence therefore forthwith.

(Bylaw 3472, 3785)

4.

(1) The licence shall be issued by the Animal Control Officer or such other person as he or she appoints from time to time, and applications for licences may be made to him or her or to any other person duly authorized to receive same. *(Bylaw 3472)*

(2) Every licence shall be distinguished by a number, and a record shall be kept by the Regional District of all licences issued and, for the purpose of identification, a general description of the dog in respect of which such licence was issued.

5.

(1) Every application for a licence shall be accompanied by a licence fee payable to the Capital Regional District as prescribed in Schedule "A".

(2) Notwithstanding Subsection (1), a licence shall be issued free of charge for a dog which has been neutered or spayed during the 12-month period immediately preceding the application for the licence, provided that not more than one free licence shall be issued for any one dog.

(3) Before issuing a licence for a spayed or neutered dog, the issuer of the licence may require the owner to furnish proof that the dog has been spayed or neutered.

(4) If the appropriate licence fee has not been paid by the last day of February of the licencing year, the owner of any dog not so licenced shall pay a further fee as set out in Schedule “A” unless no licence fee was payable in respect of such dog by the end of February of the licencing year.

(Bylaw 3785)

(5) Notwithstanding Subsection (1) the total dog licence fees payable by any person who operates a kennel shall be as prescribed in Schedule "A" for all dogs owned by him.

(6) No licence fee shall be charged for Police Dogs and Guide Dogs.

(7) The owner of a dog declared dangerous must purchase a “Dangerous Dog Licence” for a fee listed in Schedule "A". *(Bylaw 3472)*

6. Every licence issued under this Bylaw shall be for the calendar year in which the licence is issued and shall expire on the 31st day of December next following the date on which the licence takes effect. There shall be issued with each licence a tag which shall be impressed or stamped with a number corresponding to the number of the licence and with figures denoting the year in which the licence expires.

7. The owner of every dog licenced pursuant to this Bylaw shall cause the dog to wear the licence tag.

8. If the ownership of a licenced dog changes hands the new owner may apply for a new licence at no cost provided that the old licence tag and receipt are surrendered to the Animal Control Officer.

9. Any person holding a valid and subsisting licence for any dog under the bylaw of any municipality or of a regional district who takes up residence within the Capital Regional District may make application for a free licence for the remainder of the year provided that the dog's current licence tag and receipt are surrendered to the Animal Control Officer. This provision shall not apply to any person who has obtained the licence in a municipality or other regional district while residing within the Capital Regional District.

10. No person shall remove from a dog the licence tag issued for that dog under this Bylaw, except with the authority of the owner of the dog.

ESTABLISHMENT OF POUND:

11. The establishment, maintenance and operation of facilities for the impounding of animals at such place or places and upon such premises as the Regional Board may by resolution from time to time determine is hereby authorized.

12. The Regional Board may from time to time appoint an "Animal Control Officer" and may enter into a contract with any persons to provide for such pound keeping services.

IMPOUNDING ANIMALS:

13. The authority to seize and impound animals conferred by this Bylaw upon the Animal Control Officer may be exercised by a peace officer or a bylaw enforcement officer.

14. (a) The Animal Control Officer is hereby authorized to seize and impound unlicenced dogs, and dogs and other animals which are at large. *(Bylaw 3168)*

(b) The Animal Control Officer is hereby authorized to impound any dangerous dog found to be in a place or in circumstances prohibited by this Bylaw. *(Bylaw 3168)*

(c) The owner of a "dangerous dog" must display a warning sign at each entrance of the property and buildings. The sign must be posted so it cannot be removed, and must be visible and capable of being read from the street or land abutting the entrance to the property. *(Bylaw 3168)*

15. The owner of any animal impounded pursuant to the provisions of this Bylaw may reclaim such animal on application to the Animal Control Officer during normal working hours prior to its sale or destruction on proof of ownership and on payment of the fees and charges prescribed in Schedule "B". No dog may be released from the Pound without the purchase of a valid licence.

16. The Animal Control Officer may destroy any animal suffering from an incurable disease or injury.

17. Subject to Section 18 of this Bylaw, if an impounded animal is not claimed within seventy-two (72) hours of the time of its impoundment, the Animal Control Officer may destroy the animal or sell it.

NOTICE OF IMPOUNDING:

18. If the owner of any impounded animal is known to the Animal Control Officer, the Animal Control Officer shall forthwith notify the owner by telephone of the impoundment, or mail the form set out in Schedule "C" of this Bylaw, or post at the owner's home the form set out in Schedule "C" of this Bylaw.

COMPENSATION:

19. The Regional Board shall pay compensation to the owner of any sheep, goat, poultry for the purpose of providing meat and eggs, domestic rabbits, animals of the bovine species, swine, horses or fur-bearing animals as defined in the *Fur Farm Act* killed or injured by any dog apparently over the age of four (4) months, the owner of which is unknown, and after diligent enquiry cannot be found in the amount of the lesser OF

    (a) SEVENTY- FIVE (75%) PERCENT of the decrease in the market value of the animal as a result of its death or injury, or

    (b) SEVEN HUNDRED AND FIFTY ($750.00) DOLLARS.

20. All claims pursuant to the provisions of this Bylaw shall be filed with the Animal Control Officer.

21. No claim shall be authorized under this Bylaw unless:

    (a) The Regional Board is satisfied that the owner of the sheep, goat, poultry for the purpose of providing meat and eggs, domestic rabbits, animals of the bovine species, swine, horses or fur-bearing animals as defined in the *Fur Farm Act* submitting the claim has taken all reasonable precautions for protecting such sheep, goat, poultry for the purpose of providing meat and eggs, domestic rabbits, animals of the bovine species, swine, horses or fur-bearing animals under the *Fur Farm Act*; and

(b) The loss is reported to the Animal Control Officer within three (3) business days of the occurrence being discovered.

22. The Animal Control Officer is hereby authorized to approve any claim under this Bylaw up to the amount of ONE HUNDRED ($100.00) DOLLARS. Any claim in excess of ONE HUNDRED ($100.00) DOLLARS shall be referred to the Regional Board for authorization of payment.

23. Applications for compensation under this Bylaw shall be in the form attached hereto as Schedule "D".

GENERAL:

24.

(1) No owner of an animal shall suffer or permit such animal to "run at large" as defined in Section 1. (2) of this Bylaw.

(2) An owner of a dangerous dog shall keep it muzzled and on a leash. *(Bylaw 3168)*

(3) No person shall prevent or obstruct or attempt to prevent or obstruct, an Animal Control Officer in the fulfilment of their duties under this Bylaw. *(Bylaw 3168)*

25. Every owner of a female dog in "heat" shall confine the same or cause it to be confined in a secure building or enclosure so that it cannot come in contact with other dogs.

26.

(1) No owner of a dog shall permit or cause the dog to cry or bark in a manner which disturbs quiet, peace, rest, enjoyment, comfort or convenience of the neighbourhood or of persons in the vicinity of the place where the dog is kept.

(2) Except in an Agricultural Zone no person shall keep, harbour or permit, allow or suffer to be kept or harboured on any property owned, occupied or controlled in any way by such person any animal which disturbs or tends to disturb the quiet, peace, rest, enjoyment comfort or convenience of the neighbourhood in which the animal is kept or harboured or of persons in the vicinity of such animal.

27.

(1) An owner shall ensure his or her animal is provided with:
   (a) clean potable drinking water and food of sufficient quantity and quality to allow for healthy growth and the maintenance of healthy body weight;
   (b) food and water receptacles kept clean and disinfected and located so as to avoid contamination by excreta;
   (c) the opportunity for regular exercise sufficient to maintain good health, including daily opportunities to be free of a confined area and exercised regularly under appropriate control; and

(d) necessary veterinary care when such animal exhibits signs of pain, injury, illness or suffering.

(2) An owner shall not keep an animal which normally resides outdoors, or which is kept outdoors for extended periods of time, unless such animal is provided with an outdoor shelter:
(a) which has a total area that is at least twice the length of the animal in all directions and that also allows the animal to turn around freely and adopt normal resting postures;
(b) which ensures protection from heat, cold and dampness that is appropriate to the weight and type of protective outer coat of such animal;
(c) which provides sufficient shade to protect the animal from the direct rays of the sun at all times; and
(d) which is regularly cleaned and sanitized, and removed of excreta daily.

(3) No person may cause an animal to be hitched, tied or fastened to a fixed object where a choke collar or choke chain forms part of the securing apparatus, or where a rope or cord is tied directly around the animal's neck.

(4) No person shall keep any animal hitched, tied or fastened to a fixed object as the primary means of confinement for an extended period of time.

(5) No person may cause an animal to be confined in an enclosed space or vehicle, including a car, without adequate ventilation. Such enclosed space or vehicle (if stationary) shall be in an area providing sufficient shade to protect the animal from the direct rays of sun at all times.

(6) No person may transport an animal in a vehicle outside the passenger compartment or in an uncovered passenger compartment unless it is adequately confined or unless it is secured in a body harness or other manner of fastening which is adequate to prevent it from falling off the vehicle or otherwise injuring itself.

(Bylaw 3908)

28. The Animal Control Officer may enter upon property on which animals are kept at any reasonable hour and may inspect any animal and the facilities for housing the same in order to ascertain whether the regulations contained in this Bylaw are being obeyed.

29. No person shall suffer or permit any animal owned or harboured by him or in his charge to be on any of the public beaches listed in Schedule "E" from June 15 to September 15 inclusive.

PENALTY:

30.
(1) No person shall do any act or suffer or permit any act or thing to be done in contravention of this Bylaw.

(2) Notwithstanding any other provision of this Bylaw where the Animal Control Officer has reasonable grounds to believe that an owner is not complying with any provision of this Bylaw, he may give a written or verbal warning.

(3) Any person who contravenes any provision of this Bylaw is guilty of an offence and is liable upon conviction to the penalties prescribed by the *Offence Act*, provided that the minimum penalty is not less than FIFTY ($50.00) DOLLARS for the first offence and for each subsequent offence to a minimum penalty of not less than ONE HUNDRED ($100.00) DOLLARS.

(4) The penalties imposed under Subsection (3) hereof shall be in addition to and not in substitution for any other penalty or remedy imposed by this Bylaw.

(5) A separate offence shall be deemed to be committed upon each day during and in which a contravention of this Bylaw occurs or continues.

31. The Animal Control Officer may, if he/she has reason to believe that an offence has been committed against this Bylaw, complete and leave with the alleged offender, or at the address of the alleged offender with someone who appears to be sixteen years of age or greater, a Municipal Ticket Information indicating a voluntary penalty equal to the minimum for such an offence.
(Bylaw 3194)

SEVERANCE:

32. If a section, subsection, sentence, clause or phrase of this Bylaw is for any reason held to be invalid, by the decision of a Court of competent jurisdiction; such decision shall not affect the validity of the remaining portions of this Bylaw.

33. Schedules "A" to "E" inclusive of this Bylaw which are attached hereto form part of this Bylaw.
(Bylaw 3194)

34. Bylaw No. 688 "Dog Regulation and Impounding Bylaw No. 1, 1980" and amendments thereto, except insofar as it repeals any other bylaw is hereby repealed.

35. This Bylaw may be cited as the "Animal Regulation and Impounding Bylaw No. 1, 1986".

READ A FIRST TIME THIS	23rd	day of	July	1986
READ A SECOND TIME THIS	23rd	day of	July	1986
READ A THIRD TIME THIS	25th	day of	March	1987
APPROVED BY THE MINISTER OF MUNICIPAL AFFAIRS THIS	12th	day of	May	1987
RECONSIDERED AND FINALLY ADOPTED THIS	10th	day of	June	1987

A.J. Peterson
CHAIRMAN

J. Nevile-Smith
ACTING SECRETARY

This Bylaw is a copy of *Animal Regulation and Impounding Bylaw No. 1, 1986*, consolidated under section 139 of the *Community Charter* and is printed on the authority of the Corporate Officer of the CRD.

Original signed by Sonia Santarossa
CORPORATE OFFICER

SCHEDULE "A"

(Bylaws 1771, 2012, 3168, 3210, 3697, 3785, 3884)

DOG LICENCE FEES

(a)	Female Dog (not spayed)	$45.00
(b)	Female Dog (spayed)	$25.00
(c)	Male Dog (not neutered)	$45.00
(d)	Male Dog (neutered)	$25.00
(e)	Replacement of Lost License	$5.00
(f)	Early Purchase Discount	$5.00
(g)	Late Application Penalty	$10.00
(h)	Breeding Kennel having four (4) or less dogs	$75.00
(i)	Breeding Kennel having five (5) or more dogs	$150.00
(j)	Boarding Kennel	$200.00
(k)	Dangerous Dog License	$100.00

SCHEDULE "B"

(Bylaws 2012, 3168, 3697, 3884)

ANIMAL IMPOUNDMENT FEES

1.	DOGS		
	(1)	First impoundment fee	$75.00
	(2)	Second impoundment fee	$100.00
	(3)	Third impound fee (a) $50.00 incremental increase for each additional impound	$150.00
	(4)	Penalty added to impoundment fee for unlicensed dogs	$50.00
	(5)	Maintenance and sustenance charge for each 24 hour period or part thereof that the dog has remained in the pound	$15.00
2.	CATS		
	(1)	Impound fee	$25.00
	(2)	Maintenance and sustenance charge for each 24 hour period or part thereof that the cat has remained in the pound	$10.00
3.	ASS, CATTLE, GOAT, HORSE, MONKEY, MULE, SHEEP, SWINE, ANY ANIMAL OF THE BOVINE SPECIES		
	(1)	Impound fee	$50.00
	(2)	Maintenance and sustenance charge for each 24 hour period or part thereof that the ass, cattle, goat, horse, monkey, mule, sheep, swine, and any animal of the bovine species has remained in the pound	$20.00
4.	BIRD, DOVE, DUCK, FOWL, FOX, FUR-BEARING ANIMALS as defined in the *Fur Farm Act*, GERBIL, GOOSE, GUINEA PIG, HAMSTER, MOUSE, PIGEON, RABBIT, RACCOON, REPTILE, RODENT, SKUNK, SQUIRREL or TURKEY		
	(1)	Impoundment fee	$10.00
	(2)	Maintenance and sustenance charge for each 24 hour period or part thereof that the bird, dove, duck, fowl, fox, fur-bearing animal as defined in the Fur Farm Act, gerbil, goose, guinea pig, hamster, mouse, pigeon, rabbit, raccoon, reptile, rodent, skunk, squirrel or turkey has remained in the pound.	$5.00
5.	Costs for special equipment or personnel used, if any, to effect the impoundment.		AT COST
6.	Veterinary expenses, if any, to treat injured or sick impounded animals.		AT COST

SCHEDULE "C"

NOTICE OF IMPOUNDMENT
(Section 18)

TO:

TAKE NOTICE that pursuant to the provisions of the "Capital Regional District Animal Regulation Bylaw No. 1465, 1986"

_____
(Description of Animal or Animals Impounded)

was (or were) impounded in the Pound kept by the undersigned at

_____

on _____the _____ day of _____, 20_____

at the hour of _____A.M./P.M.

AND FURTHER TAKE NOTICE that unless within three (3) days after the date of this notice you appear at the Pound and release the animal (s) so impounded by the payment of the lawful fees and charges, the same will be destroyed or sold as provided in the said Bylaw.

DATED this _____ day of _____, 20_____.

_____
Animal Control Officer

SCHEDULE "D"

APPLICATION FOR COMPENSATION UNDER THE CAPITAL REGIONAL DISTRICT ANIMAL REGULATION AND IMPOUNDING BYLAW NO. 1465, 1986

(Section 19)

1. Name _____

2. Address _____
Postal Code

3. At _____ a.m./p.m. on _____, 20_____,
the following domestic animals owned by me were killed or injured by dog(s):

	Number	Type	Age	Registered	Value
POULTRY FOR THE PURPOSE OF PROVIDING MEAT AND EGGS					
GOAT					
SHEEP					
ANIMALS OF THE BOVINE SPECIES					
DOMESTIC RABBITS					
SWINE					
HORSES					
FUR-BEARING ANIMALS AS DEFINED IN THE *FUR FARM ACT*					

4. Within three (3) business days of the date stated above I notified

5. The owner of the dog(s) is/are unknown and after diligent enquiry cannot be found.

6. I understand that, if approved, payment of this claim will be made pursuant to Section 19 of the Animal Regulation Bylaw No. 1465, 1986.

Witness

Owner

SCHEDULE "E"

1. AYLARD FARM BEACH	The sandy beach at the Capital Regional District's East Sooke Park known as Aylard Farm.
2. GLEN LAKE PARK BEACH	(Park, Plan 27201, Section 87, Esquimalt District and Park, Plan 40038, Sections 88 and 87, Esquimalt District)
3. LANGFORD LAKE PARK BEACH	(Lot 10, Plan 2075, Section 85, Esquimalt District)
4. VESUVIUS BAY BEACH	The beach extending from the public access stairs on Langley Street south to the bluff at the end of the gravel portion of the beach.
5. BADER BEACH	The beach extending from the public access at Collins Road north for 350 metres.

Making a difference...together

REPORT TO ELECTORAL AREA SERVICES COMMITTEE
MEETING OF WEDNESDAY, OCTOBER 14, 2020

SUBJECT **South Galiano Fire Society - Request for Fire Commission**

ISSUE SUMMARY

To seek direction on a request from the South Galiano Fire Society's board of directors to establish a fire commission for administration of the South Galiano Fire Protection Service.

BACKGROUND

Since 1970, the CRD has established and funded a fire protection and emergency response service on South Galiano Island in the Southern Gulf Islands electoral area, now operated pursuant to South Galiano Island Fire Protection and Emergency Response Local Service Establishment Bylaw No. 1, 1993 (Bylaw No. 2148).

The responsibilities of fire protection have always been contracted to the South Galiano Fire Protection Society (the "Society"), which owns the land the fire hall is situated on. Like many fire societies, it is a registered charity and undertakes fundraising for aspects of the fire service as well as other activities which may be outside the scope of the CRD service but of benefit to the community.

Planning and Protective Services negotiates fire services contribution agreements on behalf of the CRD. CRD's most recent contribution agreement with the Society expired December 31, 2018. Since that time, the Society has operated in accordance with the terms of the expired contract while staff work with the Society to get a new agreement in place.

Recently, the Society has been dealing with some internal issues involving the dismissal of a long-time volunteer firefighter, a membership status dispute, and an accompanying WorkSafe complaint investigation, which is being conducted by CRD as per WorkSafe requirements. Under the current governance, CRD has no ability to interfere in the membership affairs of the Society, and under contract, only looks at whether the fire service provision is adequate.

ALTERNATIVES

Alternative 1
The Electoral Area Services Committee recommends to the Capital Regional District Board:

1. That staff be directed to engage with the Society Board and its membership to discuss the implications and requirements of converting to commission governance, and report back to the Electoral Areas Committee if the Society wishes to proceed.

Alternative 2
The Electoral Area Services Committee recommends to the Capital Regional District Board:

1. That no changes be made to the current governance of the South Galiano Fire Service and the Society be informed that the CRD does not wish to pursue creation of a commission at this time.

Alternative 3
That this report be referred back to staff for additional information.

IMPLICATIONS

Governance Implications for Society
The internal disputes experienced by the Society at present will not be solved by the transition to a fire commission model – the Society will still exist, is still a registered charity with obligations to the Canada Revenue Agency, its external funders, donors, and members, and is still required in the community to accept estate gifts, donations, and to purchase equipment and fund programs outside the scope of the CRD fire service but to the benefit of South Galiano. CRD has no way, other than through the contribution agreement contract, to direct its internal affairs.

Were the CRD to be granted a director seat or voting membership on the Society Board, it could then have a voice in the affairs of the Society; alternatively, if the membership desired, CRD could take a directive role on the Board (through a majority of seats appointed by the CRD), using its appointments to guide the strategic direction and administration of the Society.

Should the Society choose to wind-up and divest its assets – a decision of the membership – as a registered charity it will need to provide its assets to an organization with a similar purpose. This would likely be the CRD or potentially another fire society capable of servicing South Galiano. If the assets were purchased with CRD contribution funding, the Society would need to agree to transfer ownership to CRD to be held in trust for use in delivering the service.

Governance Implications for CRD

CRD uses three models for fire protection services:

- **Contribution:** CRD contracts the obligation of hiring a qualified Fire Chief and providing a fire protection service to Provincial standards to a reputable society, then funds the operations based on annual and multi-year budgets. The contractor is responsible for complying with public procurement requirements, *Freedom of Information and Protection of Privacy* requirements, maintaining its status as a corporate body (e.g. society/charity/corporation), paying its WorkSafe and third party insurance, and other expenses out of this annual contribution. The contractor has limited access to CRD departments but is expected to have its own safety programs, comply with all applicable laws (employment standards, WorkSafe requirements, etc) and have its own operating policies.

- **Commission:** A CRD commission of members of the public, volunteer firefighters, and the relevant electoral area director are delegated the management of the administrative aspects of the fire service, select a qualified Fire Chief consistent with CRD practices, and that Fire Chief takes on the responsibility of volunteer coordination for the department, as well as compliance with CRD policies. The Fire Chief has support of CRD departments, such as Planning and Protective Services, Corporate Services, Information Technology, Finance, and others. The CRD's policies and procedures apply. CRD directly budgets for and pays expenses of the service, with budgets set by the Commission and approved by the CRD Board.

- **Direct:** CRD directly employs or contracts with a Fire Chief. CRD staff and the Board

provide supervision, and the Fire Chief takes on the responsibility of volunteer coordination. All CRD policies and procedures apply. The CRD Board directly budgets for and pays expenses of the service.

At present, some services use the Contribution or Commission model, or some hybrid of it.

Using a Commission-only model would require CRD to select commissioners from the community and service area (whether by nomination and Board selection or by poll of participants and volunteer firefighters); to appoint a fire chief; and to engage in volunteer coordination. The fire chief would need to establish an intake and training process for admitting volunteer firefighters. A period of transition would be needed in order to provide adequate fire service coverage for the South Galiano Area. The Society would be free to work out its internal affairs through whatever process it deemed necessary and could approach CRD for collaboration in future. CRD may create a commission by bylaw, without elector approval, and delegate its corporate powers to it for administration of the service.

Using a Commission-and-Society model, CRD and the Society could agree that some or all of the directors of the Society are appointees of the CRD, being those members of the fire commission. Those appointees would be protected by *Local Government Act*-indemnity provisions in certain cases, and could sit on the Society's board to represent CRD's interests in the fire service. The appointees could be a combination of those individuals nominated by the service area participants, the volunteer firefighters, and the CRD in some proportion, giving wide community representation to the fire commission and the society. This would not resolve the issues faced within the Society, however, which are based on membership requirements and admission, member and non-member treatment, and training and WorkSafe responsibilities.

Taking no action and maintaining the status quo is also an option. On entering into a new contract with the Society, Planning and Protective Services could take a more active role in enforcing its terms to require the Society to keep current membership lists, have a specific volunteer firefighter training program, and to ensure it pays and complies with WorkSafe. Though the current contract has similar provisions, as CRD is currently without a contract, CRD is responsible for the WorkSafe requirements of the volunteer firefighters. Minor changes and observation and enforcement by Planning and Protective Services would allow the society and its membership to resolve its disputes internally without CRD involvement, but would provide a framework within which to operate the fire service to provincial standards.

Financial Implications

The general cost of providing a fire service would remain the same for CRD.

However, establishing a fire commission would have minor financial impacts, largely made up of additional staff time in Planning and Protective Services and Corporate Services to establish the Commission and work with the Society's membership and service area members on appointees and volunteer recruitment, which may potentially defer other planned project work. Staff should also conduct service area consultation, in order to ensure that community members served by the fire department are able to voice their interests and concerns in a potential restructuring of the service.

The Society may own firefighting equipment that was not purchased by CRD. CRD may need to

rent, purchase or be gifted that equipment in order to adequately provide the fire service.

If the Society chose to wind-up, the fundraising aspects of the Society, and its ability to purchase equipment over-and-above what CRD would normally budget for a department of the current size or engage in other services outside the scope of CRD would no longer be possible. It is likely not in the CRD or the Society's best interests to wind-up the Society.

Service Delivery Implications

Establishing a fire commission would require buy-in from Society members, those individuals who make up the volunteer firefighters of South Galiano. Without these individuals, there can be no volunteer fire service. In any event, a period of transition and an interim service agreement would be necessary for the Society to continue to run the fire service while CRD established a commission.

Alignment with Existing Plans & Strategies

This is a new request. The current initiative was to negotiate a new contribution service with the existing society, maintaining the status quo.

CONCLUSION

CRD uses multiple-models for volunteer fire service delivery. The Society's internal disputes will not be resolved by the creation of a Commission, though CRD may choose to do this, or to negotiate a contribution agreement with further CRD oversight, to ensure adequate fire protection services while the Society works through its internal affairs.

RECOMMENDATION

The Electoral Area Services Committee recommends to the Capital Regional District Board:

> That staff be directed to engage with the Society Board and its membership to discuss the implications and requirements of converting to commission governance, and report back to the Electoral Areas Committee if the Society wishes to proceed.

Submitted by:	Steven Carey, B. Sc., J.D., Manager, Legal Services
Concurrence:	Kristen Morley, J.D., General Manager, Corporate Services & Corporate Officer
Concurrence:	Kevin Lorette, P. Eng., MBA, General Manager, Planning & Protective Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT

Appendix A: Correspondence from South Galiano Fire Society

SNC/KM

South Galiano Volunteer Fire Department

Serving Galiano Island since 1963

David Howe
Electoral Area Director
Southern Gulf Islands
PO Box 1000
Victoria B.C.
V8W 2S6

Dear Sir

The South Galiano Fire Society Board of Directors Is requesting that the CRD consider transitioning our Society to become a Commission under CRD direction.
The board passed the following resolution at our August 4, 2020 meeting:
"Be it resolved that the CRD investigate the possibility of the Society transitioning to become a commission" Carried unanimously.

The Board believes this is the only way to resolve an ongoing issue with a recent member of the department and an apparent lack of confidence in the department by some members of the area .

Submitted on behalf of the South Galiano Fire Society Board of Directors

Robert Matson
Acting President

Making a difference...together

REPORT TO ELECTORAL AREAS COMMITTEE
MEETING OF WEDNESDAY, OCTOBER 14, 2020

SUBJECT **Union of British Columbia Municipalities Grant for Active Transportation - Motion of Support**

ISSUE SUMMARY

To seek support to submit an Active Transportation grant application for community route mapping in the Southern Gulf Islands.

BACKGROUND

The Capital Regional District board has identified Transportation as a priority for the region, and states in the 2019-22 CRD Corporate Plan that it will: "Work with government/community partners to plan for & deliver an effective, long-term multi-modal transportation system & to increase use of public transit, walking & cycling (Priority 2(a)). Further, the CRD's Regional Climate Action Strategy (RCAS) has identified on-road transportation as the region's most significant source of greenhouse gas emissions, and notes that the CRD needs to focus on mitigating impacts of transportation by "moving towards lower carbon emissions options such as walking, cycling, transit and electric vehicles"(RCAS, 2017).

In response to this, and to requests from the SGI Community Economic Sustainability Commission, the CRD is undertaking a review to consider establishing a new Transportation Service for the SGI Electoral Area. A Request for Proposals will be issued this fall to obtain a detailed Business Case Modelling Report for the development of an integrated, multi-modal transportation service or services for the Southern Gulf Islands Electoral Area (SGIEA). The report will provide service model options that includes the steps necessary to develop a land-based public transit system, water-based inter-island passenger service, and a phased approach to achieving a universally designed, active transportation network.

This staff report seeks approval for the CRD to make an application to the UBCM Active Transportation Planning grant. The grant funds would be used to undertake a community mapping exercise that engages residents and stakeholder groups of the Pender, Mayne, Galiano and Saturna communities in identifying active transportation route needs, objectives, and preferences. This participatory process will directly inform the multi-modal trail system proposal of the broader SGIEA transportation project.

The SGI Active Transportation Planning project aligns with the UBCM Active Transportation Planning grant criteria to: 1) engage with the public and/or stakeholders 2) enhance the active transportation components of upcoming SGI Transportation Service Planning 3) identify active transportation policy considerations, objectives and actions for inclusion in our transportation planning 4) create maps of current and desired active transportation trails and networks 5) consider how active transportation networks can improve accessibility to community spaces and 6) consider how active transportation can reduce greenhouse gas emissions in our region. The total funds requested through the grant application are $10,000. As part of the application process, UBCM requires a motion of support from the local government to receive and manage grant funding.

ALTERNATIVES

Alternative 1
The Electoral Areas Committee recommends to the Capital Regional District Board: That the Board support an application to the *Union of British Columbia Municipalities Active Transportation Planning Program* for the Southern Gulf Islands Electoral Area to conduct community mapping of active transportation routes and direct staff to provide overall grant management.

Alternative 2
That staff be directed to report back with additional information.

IMPLICATIONS

This grant would provide supplemental funding to the SGIEA Transportation study, which has a $60 000 budget through Community Works Funds. The project is in alignment with the Board priority for community wellbeing – transportation and housing initiative to work with government/community partners to plan for and deliver an effective, long-term regional multi-modal transportation system and to increase use of public transit, walking and cycling.

CONCLUSION

The CRD is committed to investigating the establishment of a Transportation Service for the SGIEA. The UBCM's Active Transportation Planning Grant contributes the multi-modal trail component to ongoing Transportation Service planning work. Staff recommend conducting community mapping exercises through the program funding. The exercises will be designed to engage residents and stakeholders of Pender, Mayne, Galiano and Saturna in a participatory process to confirm active transportation routing that is integrated with existing and proposed recreational trail systems. If supported by the Board, UBCM will consider the CRD's grant application.

RECOMMENDATION

The Electoral Areas Committee recommends to the Capital Regional District Board: That the Board support an application to the *Union of British Columbia Municipalities Active Transportation Planning Program* for the Southern Gulf Islands Electoral Area to conduct community mapping of active transportation routes and direct staff to provide overall grant management.

Submitted by:	Justine Starke, MCIP, RPP, Manager, SGI Service Delivery, Corporate Services
Concurrence:	Kristen Morley, J.D., General Manager, Corporate Services & Corporate Officer
Concurrence:	Nelson Chan, MBA, CPA, CMA, Chief Financial Officer
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT(S)

Appendix A: CRD Internal Grant Proposal Form

CRD GRANT PROPOSAL REVIEW

Download this form and save it after filling in the first cell. **SAVE OFTEN** as a precautionary measure. Please email questions or suggestions for improvement to CRD Corporate Asset and Grant Management Analyst.

SECTION 1: APPLICANT AND GRANT INFORMATION

CRD DEPT.	SERVICE NAME: CONTACT YOUR FINANCIAL ADVISOR TO ENGAGE THEM IN YOUR PROPOSAL	SERVICE NO.:
Corporate Services	Southern Gulf Islands Administration	1.110

WHAT SERVICE TYPE COULD BENEFIT?	WHICH ELECTORAL AREA?	IF THE PROJECT IS IN AN ELECTORAL AREA, LIST THE COMMUNITY(IES) THAT WILL BENEFIT.
Regional	SGI	Pender, Galiano, Saturna, Mayne

GRANT PROGRAM NAME	APPLICATION DUE (MM/DD/YYYY)
Active Transportation Planning Program	10/30/2020

PROPOSED PROJECT TITLE	PROJECT TYPE
SGI Active Transportation Mapping Initiative	Planning: Asset, Community,Governance, Infrastructu

DESCRIBE THE OUTCOME OF THE PROJECT:

A community mapping exercise that engages each island community in a participatory process to map active transportation routes integrated with existing and proposed recreational trail systems and community destinations. Scope to include surveys, social media outreach, other digital media consultation (interactive mapping platform), interactive community maps in community halls, and, depending on Covid restrictions/considerations, live workshops or video meeting consultations. These documents will support concurrent work by a transportation consultancy to determine options for the potential establishment of an SGI Transportation Service. The mapping initiative would build on existing mapping proposals and focus on active transportation routes that supplement the Regional Parks' proposed spine trails for Mayne, Pender, Saturna and Galiano, as well as local trails managed by parks and recreation commissions and local trail societies.

SECTION 2: ALIGNMENT AND IMPACT – Is it a Good Fit for the CRD?

Grants can provide timely additional resources to advance organizational goals. The pursuit of a grant opportunity must, however, be carefully reviewed to check for potential impacts that can have unexpected and unintended consequences. Some grants are straightforward; others are more complex. The questions below help sort everything out for well-informed action.

ALIGNMENT WITH A CRD BOARD PRIORITY?	ALIGNMENT WITH A CORPORATE PRIORITY?	ALIGNMENT WITH THE REGIONAL GROWTH STRATEGY?
Community Wellbeing - Housing & Transportation	Not Applicable	Increase transportation choice
ALIGNMENT WITH THE SERVICE PLAN?	**ALIGNMENT WITH THE CAPITAL PLAN?**	**ALIGNMENT WITH THE ASSET MANAGEMENT PLAN?**
Yes - for the current year	Not Applicable	Not Applicable

IF THE PROJECT ALIGNS WITH A DEPARTMENTAL / DIVISIONAL STRATEGIC PLAN, PLEASE SPECIFY WHICH ONE:

Gulf Islands Regional Trails Management Plan; Regional Transportation Strategy; Regional Growth Strategy

THE TIME-RELATED QUESTIONS BELOW ARE SEEKING APPROXIMATIONS. FOR AN EXPLANATION OF CONTEXT/METHODOLOGY, CLICK HERE.

HOW MANY HOURS, ***APPROXIMATELY***, WILL PREPARING THE **GRANT APPLICATION** TAKE?	HOW MANY HOURS, ***APPROXIMATELY***, WILL **GRANT ADMINISTRATION** TAKE IF AWARDED?
☑ 1-10 ☐ 11-30 ☐ 31-50 ☐ 51-70 ☐ 71-90 ☐ 91-110 ☐ 111-130 ☐ 131-170 ☐ 171+	☐ 1-10 ☑ 11-30 ☐ 31-50 ☐ 51-70 ☐ 71-90 ☐ 91-110 ☐ 111-130 ☐ 131-170 ☐ 171+

GRANT REQUEST:	CRD COSTS: ELIGIBLE AND INELIGIBLE	TOTAL PROJECT COST (EST.)	MAIN SOURCE OF CRD FUNDING SHARE	EVIDENCE OF SECURED FUNDS
$ 10,000		$ 10,000	Operating Budget	Yes-funding evidence is available now

WHAT IMPACT WILL THE APPLICATION EFFORT HAVE ON THE YOUR SERVICE'S WORKPLAN?	WHAT IMPACT WOULD RECEIVING THIS GRANT HAVE ON YOUR SERVICE'S WORKPLAN?
1-Low: Applying is not disruptive to the Service's workplan	1-Low:This grant is not disruptive to the Service's workplan

IF APPLYING FOR THE GRANT HAS AN IMPACT RATING OF 2 OR 3, IDENTIFY YOUR SERVICE'S WORKPLAN ADJUSTMENTS NEEDED TO ACCOMMODATE THE GRANT APPLICATION EFFORT.

IF BEING AWARDED THE GRANT HAS AN IMPACT RATING OF 2 OR 3, IDENTIFY YOUR SERVICE'S WORKPLAN ADJUSTMENTS NEEDED TO ACCOMMODATE PROJECT IMPLEMENTATION.

WHAT TYPE OF OBLIGATIONS WOULD GETTING THE GRANT IMPOSE ON THE CRD:	1. TYPICAL-Executing/amending agreement, claims, project reports

IF THE CRD OBLIGATIONS ARE TYPE 2, DESCRIBE ADJUSTMENTS TO THE SERVICE'S WORKPLAN OR ANY OTHER MEASSURES NEEDED TO ACCOMMODATE THESE OBLIGATIONS.

WHAT SPILLOVER BENEFITS, **ABOVE AND BEYOND THE GRANT PROGRAM OBJECTIVES**, COULD RESULT FROM THIS GRANT EFFORT? SEE **INTANGIBLE BENEFIT** EXPLANATION

☑ INNOVATION ☑ PARTNERSHIP/COLLABORATION ☑ SUPPORT OF RURAL COMMUNITIES ☐ MITIGATION OF A SEVERE RISK

CRD GRANT PROPOSAL REVIEW

Download this form and save it after filling in the first cell. SAVE OFTEN as a precautionary measure. Please email questions or suggestions for improvement to CRD Corporate Asset and Grant Management Analyst.

SECTION 3: ASSET MANAGEMENT REVIEW: For projects that relate to new or renewed assets

This section is oriented to infrastructure assets and may not apply to a project relating to natural assets. To respond, type or choose 'Not applicable' as needed. Space is provided below for commentary related to natural assets and eco-system services.

FOR WHAT YEAR IS THE ASSET IN THE CAPITAL PLAN?	DOES THE ASSET HAVE AN ASSET MANAGEMENT PLAN?	WHAT IS THE ASSET'S REMAINING SERVICE LIFE?
	Choices	

WHAT IS THE ASSET'S CONDITION RATING?	WHAT IS RISK OF ASSET FAILURE?
Choices	Choices

USE THIS SPACE, IF REQUIRED, TO ELABORATE ON ASSET MANAGEMENT CONSIDERATIONS YOU THINK NEED TO BE HIGHLIGHTED (E.G.: COMMENTS RELATING TO NATURAL ASSETS)

SECTION 4: THINK LIKE A FUNDER: What makes the project a great fit for the grant program?

DESCRIBE FEATURES OF THE PROPOSED PROJECT THAT MAKE IT A GREAT FIT TO ACHIEVE THE GRANT PROGRAM'S OBJECTIVES AND EVALUATION CRITERIA

The SGI Active Transportation Mapping Initiative will meet UBCM's Active Transportation Planning program objectives by:

-enhancing the active transportation components of upcoming SGI Transportation Service planning documents
-identifying active transportation policy considerations, objectives and actions for inclusion in our transportation planning
-engaging with the public and/or stakeholders
-creating maps of current and desired active transportation trails and networks
-considering how active transportation networks can facilitate movement between community amenities and improve accessibility to community spaces
-considering how integrated transportation networks can reduce greenhouse gas emissions in our region

SECTION 5: ATTESTATION AND APPROVALS

In this section, the Project Lead attests to the accuracy of the information submitted in this form and forwards it for review and approval according to Departmental practices. The form makes room to customize approval processes to suit Divisional / Departmental needs. Completed forms are sent to the CRD Corporate Asset and Grant Management Analyst.

PROJECT LEAD ATTESTATION

- ✓ I CERTIFY THAT THIS PROPOSAL PROVIDES A TRUTHFUL AND ACCURATE REPRESENTATION OF THE PROJECT;
- ✓ I HAVE REVIEWED THE GRANT PROGRAM GUIDE CAREFULLY AND ATTEST THAT AN APPLICATION FOR THIS PROJECT CAN MEET ALL THE GRANT PROGRAM REQUIREMENTS;
- ✓ I ATTEST THAT THE SERVICE CAN AMEND ITS WORKPLAN TO ALLOCATE THE RESOURCES NEEDED FOR OUTCOME ACHIEVEMENT WITHIN THE PROGRAM TIMELINE;
- ✓ I HAVE IDENTIFIED, IN CONSULTATION WITH MY MANAGER, ALL IMPACTS /OBLIGATIONS ENABLING SENIOR MANAGEMENT'S INFORMED CONSIDERATION OF THIS PROPOSAL.

NAME	TITLE	DATE (MM/DD/YYYY)
Justine Starke	Manager, SGI Service Delivery	09/22/2020

MANAGER AUTHORIZATION TO PROCEED WITH THE PROPOSED PROJECT

NAME	TITLE	DATE (MM/DD/YYYY)

SENIOR MANAGER AUTHORIZATION TO PROCEED WITH THE PROPOSED PROJECT

NAME	TITLE	DATE (MM/DD/YYYY)

GENERAL MANAGER AUTHORIZATION TO PROCEED WITH THE PROPOSED PROJECT

NAME	TITLE	DATE (MM/DD/YYYY)
Kristen Morley	GM, Corp. Services	09/25/2020

THANK YOU FOR YOUR TIME AND THOUGHTFUL ATTENTION TO THIS ASSESSMENT PROCESS.

ONCE THE REQUIRED APPROVALS FOR THIS PROPOSAL ARE SECURED, THE PROJECT LEAD SENDS THE APPLICATION TO CRD Corporate Asset and Grant Management Analyst

Investing in Canada Infrastructure Program (ICIP) – Rural and Northern Communities Program Grant Application: Juan de Fuca Electoral Area (Port Renfrew Water Service)

On September 9, 2020, the Capital Regional District (CRD) Board adopted a resolution supporting a grant application under the above noted program, for the Wilderness Mountain Water Service System Upgrade Project. The EA Director, would now like to recommend to the Board to rescind this resolution and recommend a new resolution from the Board to support a grant application for the Port Renfrew Water Service Supply Upgrade Project instead. The change is due to the outcome of feasibility work recently completed for the Wilderness Mountain project, which demonstrates that the anticipated project scope and budget needs to be reconsidered. As noted in the September 9, 2020 report to the Electoral Areas Committee and the Board, the resolution is required to support the grant application which is due October 22, 2020. The Port Renfrew project funding request is $1.6 million.

RECOMMENDATION:

The Electoral Areas Committee recommends to the CRD Board:

1. That the September 9, 2020 Board resolution recommending that a grant application through the Investing in Canada Infrastructure Program – Rural and Northern Communities Program be submitted for the Wilderness Mountain Water Service project, be rescinded; and,
2. That the Board authorize staff to submit an application for grant funding for the JDF Electoral Area: Port Renfrew Water Service Supply upgrade Project through the Investing in Canada Infrastructure Program – Rural and Northern Communities Program; and that the Board supports the project and commits to its share ($50,000) of the project.

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REPORT TO ELECTORAL AREAS COMMITTEE
MEETING OF WEDNESDAY, SEPTEMBER 09, 2020

SUBJECT **Investing in Canada Infrastructure Grant Program; Rural and Northern Communities Funding Stream**

ISSUE SUMMARY

A Capital Regional District (CRD) Board resolution is required for grant applications to the Investing in Canada Infrastructure Program (ICIP); Rural and Northern Communities (RNC) funding stream.

BACKGROUND

On June 25, 2020, BC and Canada announced the second intake of the RNC stream to support infrastructure projects across the province. For this intake, the program has $58.7M available in funding for eligible projects. The first intake was in 2019 and was oversubscribed, with $95M allocated to projects under the RNC stream.

Regional districts are an eligible recipient under the grant program and permitted to submit one application for each community. For ICIP, a community refers to a settlement area with a regional district or an established/proposed service area.

Applications for RNC are due October 22, 2020 and must include a Board resolution. Staff have identified four projects that meet eligibility requirements within this program stream.

PROGRAM	LOCATION	PROJECT	REQUEST ($)	APPENDIX
RNC	Salt Spring Island (SSI)	Maliview WWTP Upgrading Project	$2,000,000	A
RNC	Juan de Fuca (JDF)	Wilderness Mountain Water System Upgrades	$800,000	B
RNC	Juan de Fuca (JDF)	Port Renfrew Water Supply Upgrade	$1,600,000	C
RNC	Southern Gulf Islands (SGI)	Lyall Harbour Boot Cove Water System Upgrades	$600,000	D

Based on past experience, disclosure of unsuccessful applications, and feedback from various provincial and federal funders, staff have developed an assessment tool to evaluate competing applications and limit submissions for a higher probability of success from the funder. Key factors include Ministry consultation and advice, as well as regional distribution. All projects were also reviewed according to key determinants of success: alignment with grant program requirements, sustainable service delivery, and grant history.

ALTERNATIVES

Alternative 1
The Electoral Areas Committee recommends to the Capital Regional District Board:
That the Capital Regional District submit one application, as endorsed in the following resolution:

> That the Capital Regional District Board (the Board) authorize staff to submit an application for grant funding for the SSI: Maliview WWTP Upgrading Project through the Investing in Canada Infrastructure Program – Rural and Northern Communities Program; and that the Board supports the project and commits to its share ($230,000) of the project.

Alternative 2
The Electoral Areas Committee recommends to the Capital Regional District Board:
That the Capital Regional District submit applications for four proposals, as endorsed in the following resolutions:

1. That the Capital Regional District Board (the Board) authorize staff to submit an application for grant funding for the SSI: Maliview WWTP Upgrading Project through the Investing in Canada Infrastructure Program – Rural and Northern Communities Program; and that the Board supports the project and commits to its share ($230,000) of the project; and
2. That the Capital Regional District Board (the Board) authorize staff to submit an application for grant funding for the JDF: Wilderness Mountain Water System Upgrades Project through the Investing in Canada Infrastructure Program – Rural and Northern Communities Program; and that the Board supports the project and commits to its share ($50,000) of the project; and
3. That the Capital Regional District Board (the Board) authorize staff to submit an application for grant funding for the JDF: Port Renfrew Water Supply Upgrade Project through the Investing in Canada Infrastructure Program – Rural and Northern Communities Program; and that the Board supports the project and commits to its share ($50,000) of the project; and
4. That the Capital Regional District Board (the Board) authorize staff to submit an application for grant funding for the SGI: Lyall Harbour Boot Cove Water System Upgrades through the Investing in Canada Infrastructure Program – Rural and Northern Communities Program; and that the Board supports the project and commits to its share ($50,000) of the project.

IMPLICATIONS

Financial implications

RESOURCES AND EXPECTATIONS
Developing grant applications is both time-consuming and resource demanding on services. As grant outcomes are unpredictable and shaped by factors outside of the CRD's control, resources and capacity are considered to ensure they are effectively distributed in a way that brings the most value.

The CRD's grant experience over the years reveals three key grant award patterns:

1. Multiple asks can result in zero wins;
2. Multiple asks can result in only one win, which is typically the lowest or near lowest ask; and
3. Focusing on one solid ask leads to greater success.

Based on these patterns, below is a more in-depth analysis of the implications with the two options on how we can approach the submission of applications.

OPTION		IMPLICATIONS
1	Submit all four proposals	1. Everyone has a fair chance their project will be funded. 2. Lowest grant request may be awarded. 3. Affects relationships with funders. 4. Likelihood of all projects being funded is low. 5. Grant effort wasted with burden on capacity to complete the applications. 6. ICIP Program Officer selects the project and may not be the project that the organization had deemed most critical.
2	Submit one proposal	1. Tension between CRD Services. 2. The most critical project to maintain service levels and best aligned with grant program be put forth. 3. Consider ICIP Program Office advice.

It is important to manage expectations regarding grant outcomes if the option of submitting all applications is pursued. Grant programs are oversubscribed with highly qualified projects; the probability of being awarded for all four applications is remote. As an example, last year's submission approach to the 2019 intake of the Community, Culture and Recreation stream and the Rural and Northern Communities stream was to submit all four CRD projects, with the result that only one project was awarded a grant. Additional information and grant history on some of these projects are summarized in Appendix E.

CONCLUSION

The Investing in Canada Infrastructure Program provides funding to infrastructure projects across BC. Previous intakes to the Rural and Northern Communities stream have been oversubscribed and the likelihood of all four applications being awarded is remote. Factors that impact successful grant applications include availability of funds and their equitable distribution across the province as well as program alignment. By taking a strategic approach in considering how many grant applications to submit, and which project(s) to submit, the CRD is taking ownership of project decisions and maximizing the funding request through selecting the best (and most critical) project to put forward.

RECOMMENDATION

The Electoral Areas Committee recommends to the Capital Regional District Board:
That the Capital Regional District Board (the Board) authorize staff to submit an application for grant funding for the SSI: Maliview WWTP Upgrading Project through the Investing in Canada Infrastructure Program – Rural and Northern Communities Program; and that the Board supports the project and commits to its share ($230,000) of the project.

Submitted by:	Carlo Vijandre, PMP, FMP, AScT Manager, Asset Management
Concurrence:	Nelson Chan, MBA, CPA, CMA, Chief Financial Officer
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT(S)

Appendix A: Maliview WWTP Upgrading Project
Appendix B: Wilderness Mountain Water System Upgrades
Appendix C: Port Renfrew Water Supply Upgrade
Appendix D: Lyall Harbour Boot Cove Water System Upgrades
Appendix E: Infrastructure Funding History

CRD GRANT PROPOSAL REVIEW

Download this form and save it after filling in the first cell. **SAVE OFTEN** as a precautionary measure. Please email questions or suggestions for improvement to CRD Corporate Asset and Grant Management Analyst.

SECTION 1: APPLICANT AND GRANT INFORMATION

CRD DEPT.	SERVICE NAME: CONTACT YOUR FINANCIAL ADVISOR TO ENGAGE THEM IN YOUR PROPOSAL.	SERVICE NO.:
IWS	Port Renfrew Water Service	

WHAT SERVICE TYPE COULD BENEFIT?	WHICH ELECTORAL AREA?	IF THE PROJECT IS IN AN ELECTORAL AREA, LIST THE COMMUNITY(IES) THAT WILL BENEFIT.
Local	JDF	Port Renfrew

GRANT PROGRAM NAME	APPLICATION DUE (MM/DD/YYYY)
ICIP - Rural and Northern Communities	10/22/2020

PROPOSED PROJECT TITLE	PROJECT TYPE
Port Renfrew Water Supply Upgrade	Infrastructure Assets - New or Renew

DESCRIBE THE OUTCOME OF THE PROJECT:

Water supply to the community of Port Renfrew will be upgraded to assure supply in the future.

SECTION 2: ALIGNMENT AND IMPACT – Is it a Good Fit for the CRD?

Grants can provide timely additional resources to advance organizational goals. The pursuit of a grant opportunity must, however, be carefully reviewed to check for potential impacts that can have unexpected and unintended consequences. Some grants are straightforward; others are more complex. The questions below help sort everything out for well-informed action.

ALIGNMENT WITH A CRD BOARD PRIORITY?	ALIGNMENT WITH A CORPORATE PRIORITY?	ALIGNMENT WITH THE REGIONAL GROWTH STRATEGY?
Not Applicable	Customer Service	Protect rural community integrity
ALIGNMENT WITH THE SERVICE PLAN?	**ALIGNMENT WITH THE CAPITAL PLAN?**	**ALIGNMENT WITH THE ASSET MANAGEMENT PLAN?**
Yes - for the current year	Yes-for current year	Yes

IF THE PROJECT ALIGNS WITH A DEPARTMENTAL / DIVISIONAL STRATEGIC PLAN, PLEASE SPECIFY WHICH ONE:

THE TIME-RELATED QUESTIONS BELOW ARE SEEKING APPROXIMATIONS. FOR AN EXPLANATION OF CONTEXT/METHODOLOGY, CLICK HERE.

HOW MANY HOURS, *APPROXIMATELY*, WILL PREPARING THE **GRANT APPLICATION** TAKE?

☐1-10 ☑11-30 ☐31-50 ☐51-70 ☐71-90 ☐91-110 ☐111-130 ☐131-170 ☐171+

HOW MANY HOURS, *APPROXIMATELY*, WILL **GRANT ADMINISTRATION** TAKE IF AWARDED?

☐1-10 ☐11-30 ☐31-50 ☐51-70 ☐71-90 ☑91-110 ☐111-130 ☐131-170 ☐171+

GRANT REQUEST:	CRD COSTS: ELIGIBLE AND INELIGIBLE	TOTAL PROJECT COST (EST.)	MAIN SOURCE OF CRD FUNDING SHARE	EVIDENCE OF SECURED FUNDS
$ 1,600,000	$ 50,000	$ 1,650,000	Capital Reserve Fund	Yes-funding evidence is available now

WHAT IMPACT WILL THE APPLICATION EFFORT HAVE ON THE YOUR SERVICE'S WORKPLAN?	WHAT IMPACT WOULD RECEIVING THIS GRANT HAVE ON YOUR SERVICE'S WORKPLAN?
1-Low: Applying is not disruptive to the Service's workplan	1-Low:This grant is not disruptive to the Service's workplan

IF APPLYING FOR THE GRANT HAS AN IMPACT RATING OF 2 OR 3, IDENTIFY YOUR SERVICE'S WORKPLAN ADJUSTMENTS NEEDED TO ACCOMMODATE THE GRANT APPLICATION EFFORT.

IF BEING AWARDED THE GRANT HAS AN IMPACT RATING OF 2 OR 3, IDENTIFY YOUR SERVICE'S WORKPLAN ADJUSTMENTS NEEDED TO ACCOMMODATE PROJECT IMPLEMENTATION.

WHAT TYPE OF OBLIGATIONS WOULD GETTING THE GRANT IMPOSE ON THE CRD:	1. TYPICAL-Executing/amending agreement, claims, project reports

IF THE CRD OBLIGATIONS ARE TYPE 2, DESCRIBE ADJUSTMENTS TO THE SERVICE'S WORKPLAN OR ANY OTHER MEASSURES NEEDED TO ACCOMMODATE THESE OBLIGATIONS.

WHAT SPILLOVER BENEFITS, **ABOVE AND BEYOND THE GRANT PROGRAM OBJECTIVES**, COULD RESULT FROM THIS GRANT EFFORT? SEE **INTANGIBLE BENEFIT** EXPLANATION HERE.

☐ INNOVATION ☐ PARTNERSHIP/COLLABORATION ☑ SUPPORT OF RURAL COMMUNITIES ☐ MITIGATION OF A SEVERE RISK

CRD GRANT PROPOSAL REVIEW

Download this form and save it after filling in the first cell. SAVE OFTEN as a precautionary measure. Please email questions or suggestions for improvement to CRD Corporate Asset and Grant Management Analyst.

SECTION 3: ASSET MANAGEMENT REVIEW: For projects that relate to new or renewed assets

This section is oriented to infrastructure assets and may not apply to a project relating to natural assets. To respond, type or choose 'Not applicable' as needed. Space is provided below for commentary related to natural assets and eco-system services.

FOR WHAT YEAR IS THE ASSET IN THE CAPITAL PLAN?	DOES THE ASSET HAVE AN ASSET MANAGEMENT PLAN?	WHAT IS THE ASSET'S REMAINING SERVICE LIFE?
2023	Not yet; an AMP is being developed	New asset

WHAT IS THE ASSET'S CONDITION RATING?	WHAT IS RISK OF ASSET FAILURE?
Excellent - New Asset	Not Applicable

USE THIS SPACE, IF REQUIRED, TO ELABORATE ON ASSET MANAGEMENT CONSIDERATIONS YOU THINK NEED TO BE HIGHLIGHTED (E.G.: COMMENTS RELATING TO NATURAL ASSETS)

SECTION 4: THINK LIKE A FUNDER: What makes the project a great fit for the grant program?

DESCRIBE FEATURES OF THE PROPOSED PROJECT THAT MAKE IT A GREAT FIT TO ACHIEVE THE GRANT PROGRAM'S OBJECTIVES AND EVALUATION CRITERIA.

The current water supply system consists of 200 mm diameter asbestos cement pipe that is at the end of its service life. Part of the line was replaced in 2017 under a previous grant program. The remainder of the line is approximately 1.6 km long.
If the line is not replaced the community of Port Renfrew is at risk of losing its potable water supply due to failure of the existing supply main.

SECTION 5: ATTESTATION AND APPROVALS

In this section, the Project Lead attests to the accuracy of the information submitted in this form and forwards it for review and approval according to Departmental practices. The form makes room to customize approval processes to suit Divisional / Departmental needs. Completed forms are sent to the CRD Corporate Asset and Grant Management Analyst.

PROJECT LEAD ATTESTATION

- [x] I CERTIFY THAT THIS PROPOSAL PROVIDES A TRUTHFUL AND ACCURATE REPRESENTATION OF THE PROJECT;
- [x] I HAVE REVIEWED THE GRANT PROGRAM GUIDE CAREFULLY AND ATTEST THAT AN APPLICATION FOR THIS PROJECT CAN MEET ALL THE GRANT PROGRAM REQUIREMENTS;
- [x] I ATTEST THAT THE SERVICE CAN AMEND ITS WORKPLAN TO ALLOCATE THE RESOURCES NEEDED FOR OUTCOME ACHIEVEMENT WITHIN THE PROGRAM TIMELINE;
- [x] I HAVE IDENTIFIED, IN CONSULTATION WITH MY MANAGER, ALL IMPACTS /OBLIGATIONS ENABLING SENIOR MANAGEMENT'S INFORMED CONSIDERATION OF THIS PROPOSAL.

NAME	TITLE	DATE (MM/DD/YYYY)
Ian Jesney	Sr. Mgr. Infrastructure Engineering	08/13/2020

MANAGER AUTHORIZATION TO PROCEED WITH THE PROPOSED PROJECT

NAME	TITLE	DATE (MM/DD/YYYY)

SENIOR MANAGER AUTHORIZATION TO PROCEED WITH THE PROPOSED PROJECT

NAME	TITLE	DATE (MM/DD/YYYY)
Ian Jesney	Sr. Mgr. Infrastructure Engineering	

GENERAL MANAGER AUTHORIZATION TO PROCEED WITH THE PROPOSED PROJECT

NAME	TITLE	DATE (MM/DD/YYYY)

THANK YOU FOR YOUR TIME AND THOUGHTFUL ATTENTION TO THIS ASSESSMENT PROCESS.

ONCE THE REQUIRED APPROVALS FOR THIS PROPOSAL ARE SECURED, THE PROJECT LEAD SENDS THE APPLICATION TO CRD Corporate Asset and Grant Management Analyst

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ERM 20-36

REPORT TO ENVIRONMENTAL SERVICES COMMITTEE
MEETING OF WEDNESDAY, SEPTEMBER 16, 2020

SUBJECT **Recycling Markets Update**

ISSUE SUMMARY

To provide the committee with an update on matters affecting recycling markets and their impact on local recycling programs and Hartland Landfill.

BACKGROUND

In 2018 and 2019, the Environmental Services Committee/Parks & Environment Committee received information reports outlining the status of recycling markets and matters affecting them, such as the decision made by China to severely restrict the importation of recyclable materials. In BC, one significant factor affecting the recycling of a variety of waste and recyclable materials is the BC Recycling Regulation (BCRR). The BCRR mandates extended producer responsibility (EPR), requiring that producers of products that are subject to the regulation assume responsibility for managing them once they have been used and become waste. This has included residential packaging and printed products since 2014 and is the reason why the Capital Regional District (CRD) now serves as a collection contractor to Recycle BC, the EPR agency responsible for these materials, rather than providing the service itself as it had done for the previous 25 years.

On June 29, 2020, an Order-In-Council was passed amending the BCRR in a number of significant ways, with some of these changes taking effect immediately, while others will be phased in by 2023. This Order-In-Council arose in part as a result of the feedback received by the province on its Clean BC Plastics Action Plan consultation paper, and a copy of the Order-In-Council is provided for information in Appendix A. Highlights of the changes include:

- Increasing the minimum deposit on refundable beverage containers from five cents to ten cents, effective June 29, 2020
- Requiring that all milk and milk substitute beverage containers become subject to a deposit/refund system effective February 1, 2022; and
- Expanding the range of packaging and paper products that are subject to the BCRR to include packaging-like products and single-use products, effective January 1, 2023.

Both packaging-like and single-use products will be subject to the regulation if they would typically be disposed of after a single use or short-term use. The intent of the expansion is to include products that can more easily be integrated with the existing residential recycling system and would include items that consumers typically expect to be able to recycle through their residential curbside and/or depot collection programs.

The addition of packaging-like products is intended to capture items that are used by consumers for their own packaging needs, such as a reusable food storage container. From the consumer's perspective, such items are often indistinguishable from packaging and so there is often an expectation to be able to recycle them through residential recycling programs like the blue box or local recycling depot.

Packaging-like products that will become subject to EPR in 2023 will include items such as:

- Food bags and films: including sandwich and freezer bags, paper lunch bags, aluminum foil wrap, plastic film wrap, wax paper and parchment paper
- Disposable food storage containers: typically those intended for short-term use, such as plastic lunch containers aluminum pie plates and baking trays; and
- Household items purchased as a product, such as moving boxes, plastic film used as drop sheets for painting, bubble wrap and plastic plant pots and saucers.

The addition of single-use items is intended to capture items that may not be considered packaging but similarly serve a single or short-term purpose. Single-use products that will become subject to EPR in 2023 include items that serve a single or short-term use, such as straws, stir sticks, disposable utensils, plates, bowls and cups that can be managed through existing residential recycling systems. Party supplies will also become subject to the regulation, including items such as paper streamers and pinwheels but will not include costumes, balloons, ribbons and other items, as they would contaminate existing recycling streams.

These changes to the BCRR can be expected to provide residents with new recycling alternatives for a range of items and help reduce the amount of waste being received at Hartland Landfill. It can be expected that Recycle BC will expand its services to collect these additional products through curbside and/or depot recycling programs, including those provided by the CRD under contract to Recycle BC. They will help to address the issues associated with a variety of single-use items, including polystyrene cups and containers, diminishing the need for a model bylaw to ban their use, as was presented at the July 24, 2019 Environmental Services Committee meeting in a Notice of Motion.

CONCLUSION

Recycling programs and markets are significantly influenced by the BC Recycling Regulation (BCRR), which mandates producer responsibility for recycling a variety of materials. On June 29, 2020, an Order-In-Council was passed amending the BCRR to include an expansion of the range of packaging and paper products that are subject to the BCRR to include packaging-like products and single-use products, effective January 1, 2023. Once in effect, it can be expected that recycling services in the region, including those provided by the CRD, will be expanded to collect these additional materials.

RECOMMENDATION

The Environmental Services Committee recommends to the Capital Regional District Board:

That the Recycling Markets Update report be received for information.

Submitted by:	Russ Smith, Senior Manager, Environmental Resource Management
Concurrence:	Larisa Hutcheson, P. Eng., General Manager, Parks & Environmental Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT

Appendix A: Province of British Columbia Order in Council – June 29, 2020

PROVINCE OF BRITISH COLUMBIA

ORDER OF THE LIEUTENANT GOVERNOR IN COUNCIL

Order in Council No. 370 *, Approved and Ordered* June 29, 2020

Lieutenant Governor

Executive Council Chambers, Victoria

On the recommendation of the undersigned, the Lieutenant Governor, by and with the advice and consent of the Executive Council, orders that

(a) the Recycling Regulation, B.C. Reg. 449/2004, is amended as set out in the attached Appendix 1,

(b) section 13 (2) of the Administrative Penalties (*Environmental Management Act*) Regulation, B.C. Reg. 133/2014, is amended by striking out "27 (1) (b) to (d), (2) or (3)" and substituting "27 (1) (b) to (d) or (2) to (4)",

(c) effective February 1, 2022, section 1 of Schedule 1 of the Recycling Regulation, B.C. Reg. 449/2004, is amended in the definition of "beverage" by striking out "but does not include milk, milk substitutes, rice milk, soya milk, flavoured milk, infant formulas, meal replacements or dietary supplements", and

(d) effective January 1, 2023, the Recycling Regulation is amended as set out in the attached Appendix 2.

Minister of Environment and Climate Change Strategy

Presiding Member of the Executive Council

(This part is for administrative purposes only and is not part of the Order.)

Authority under which Order is made:

Act and section: *Environmental Management Act*, S.B.C. 2003, c. 53, ss. 21 and 139

Other: OIC 995/2004, OIC 426/2014

R20358703

APPENDIX 1

1 Section 5 (1) (c) (ii) of the Recycling Regulation, B.C. Reg. 449/2004, is repealed.

2 Section 5 of Schedule 1 is amended

(a) by repealing subsection (1) and substituting the following:

(1) A seller must collect from the purchaser, at the time of sale of a beverage in a container, a deposit in an amount not less than $0.10. ***, and***

(b) in subsection (3) by striking out "set out in Table 1***" and substituting "***required by subsection (1)***".***

3 Section 6 of Schedule 1 is amended

(a) by repealing subsection (1) and substituting the following:

(1) A container redemption facility or, subject to subsection (2), a retailer whose premises are not identified in an approved plan, must accept containers for return and pay to the person returning the containers a refund in an amount, per container, not less than

(a) $0.10, or

(b) the amount of the deposit collected for those types of containers under section 5 (1), if that amount is more than $0.10. ,

(b) in subsection (5) by striking out "cash refund***" and substituting "***refund***", and***

(c) by adding the following subsection:

(6) A refund owing under subsection (1) is payable as follows:

(a) the refund must be paid in cash if

(i) requested by the person returning the containers, and

(ii) the person accepting the containers is a container redemption facility or a retailer whose premises are not identified in an approved plan, and has staff to collect and redeem containers;

(b) if paragraph (a) does not apply, the refund may be paid by another method.

4 Section 2 of Schedule 2 is amended

(a) by striking out "and***" at the end of paragraph (a) (x),***

(b) by adding "and***" at the end of paragraph (b), and***

(c) by adding the following paragraph:

(c) empty containers for the products described in paragraphs (a) and (b).

5 Section 3 (1) of Schedule 2 is amended by adding ", and includes empty containers for those products,***" after "***(Canada)***".***

6 ***Section 4 of Schedule 2 is amended by adding "***, and includes empty containers for this gasoline***" after "***container***".***

7 ***Section 5 of Schedule 2 is repealed and the following substituted:***

Pharmaceutical product category

5 (1) In this section, **"drug"** has the same meaning as in the *Food and Drugs Act* (Canada), except without reference to animals or paragraph (c) of that definition.

(2) The pharmaceutical product category consists of

(a) all unused or expired drugs except

(i) unused or expired drugs from a hospital, as defined in section 1 of the *Hospital Act*, or the office of a medical practitioner,

(ii) contact lens disinfectants,

(iii) antidandruff shampoo or products,

(iv) antiperspirants,

(v) antiseptic or medicated skin care products,

(vi) sunburn protectants,

(vii) mouthwashes, and

(viii) fluoridated toothpastes, and

(b) empty containers for the drugs to which paragraph (a) applies.

8 ***Section 1 (2) (b) of Schedule 5 is repealed and the following substituted:***

(b) bound reference books, literary books and text books.

APPENDIX 2

1 ***Schedule 5 of the Recycling Regulation, B.C. Reg. 449/2004, is repealed and the following substituted:***

SCHEDULE 5

PACKAGING AND PAPER PRODUCT CATEGORY

Packaging and paper product category

1 The packaging and paper product category consists of all of the following:

(a) packaging;

(b) packaging-like products as described in section 2;

(c) paper as described in section 3;

(d) single-use products as described in section 4.

Packaging-like products

2 (1) For the purposes of this Schedule, the following are packaging-like products, unless excluded under subsection (2), if ordinarily disposed of after a single use or short-term use, whether or not it could be reused:

(a) food containers;

(b) foil and wraps;

(c) bags;

(d) boxes;

(e) objects purchased by or supplied to consumers expressly for the purpose of protecting, containing or transporting commodities or products.

(2) Health, hygiene or safety products that, by virtue of their anticipated use, could become unsafe or unsanitary to recycle are excluded.

(3) For greater certainty, nothing in this section is intended to limit the scope of the definition of "packaging" in the Act.

Paper

3 (1) For the purposes of this Schedule, the following are paper unless excluded under subsection (2):

(a) flyers;

(b) brochures;

(c) booklets;

(d) catalogues;

(e) telephone directories;

(f) newspapers;

(g) magazines;

(h) paper fibre;

(i) paper used for copying, writing or any other general use;

(j) paper of any other description.

(2) The following are excluded:

(a) paper products that, by virtue of their anticipated use, could become unsafe or unsanitary to recycle;

(b) bound reference books, literary books and text books.

Single-use products

4 (1) For the purposes of this Schedule the following are single-use products unless excluded under subsection (2):

(a) a product that is ordinarily disposed of after a single use or short-term use, whether or not it could be reused;

(b) without limiting paragraph (a), the following products, if the product is ordinarily disposed of after a single use or short-term use, whether or not it could be reused:

(i) straws and items used to stir beverages;

(ii) utensils, plates, bowls and cups;

(iii) party supplies.

(2) Health, hygiene or safety products that, by virtue of their anticipated use, could become unsafe or unsanitary to recycle are excluded.

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EEP 20-37

REPORT TO ENVIRONMENTAL SERVICES COMMITTEE
MEETING OF WEDNESDAY, SEPTEMBER 16, 2020

SUBJECT **Millstream Meadows Remediation Project**

ISSUE SUMMARY

To seek approval to increase the budget for the Millstream Meadows remediation project.

BACKGROUND

The Millstream Meadows site is a 32-acre property in the District of Highlands that was used for the unregulated disposal of septage and other trucked liquid waste between the early 1940s and 1985 (see attached Appendix A site location plan). The Capital Regional District (CRD) acquired the property in 1984 and closed the site in 1985. Since then, the CRD and the Government of British Columbia (the Province) have worked cooperatively to investigate and remediate contamination at the property, with the end goal of divestiture. The overall project approach, schedule and budget is managed in cooperation with, and approved by, the Province.

Upon completion of remediation, the CRD will obtain a Certificate of Compliance to demonstrate compliance with provincial legislation. This provincial certification will reassure the public that contamination from historic site activities at the property poses no risk to health or the environment, and allow the site's redevelopment potential to be fully realized to generate economic development opportunities within the District of Highlands.

In 2007-2008, contractors removed 76,000 tonnes of contaminated soil from the site, and although a significant portion of the contamination was removed at that time, soil and groundwater contamination remains. Since 2016, the CRD has implemented a multi-phase Detailed Site Investigation intended to fully delineate the degree and extent of contamination, which is a requirement of the BC Ministry of Environment and Climate Change Strategy (ENV). Contamination has now been successfully delineated to the north, east, south and west. As a precautionary measure, the CRD continues to provide bottled drinking water to nearby residents and monitor nearby domestic well water quality. The analytical results confirm that domestic well water quality has, and continues to meet, provincial and federal drinking water standards.

Recent investigations have revealed deep groundwater contamination (depth >40m below ground surface) that extends further than anticipated and has likely migrated underneath neighbouring properties to the west of the site (see Appendix B for inferred extent of migration). This change in our understanding of historic contaminant migration has resulted in additional project costs and will likely see an extension in the schedule into 2021 to complete regulatory requirements associated with obtaining provincial certification for the additional properties. No further large sampling or drilling programs are anticipated at this time.

ALTERNATIVES

Alternative 1

The Environmental Services Committee recommends to the Capital Regional District Board:

That the Millstream Meadows project budget increase from $14.32M to $14.70M be incorporated into the 2021 capital plan, with the additional project budget of $0.38M funded from a combination of requisition under Bylaw No. 3519, Hartland tipping fees, provincial funding and the reserve funding from Septage Disposal service in 2021.

Alternative 2

The Environmental Services Committee recommends to the Capital Regional District Board:

That this staff report be referred back to staff for additional information.

IMPLICATIONS

Financial Implications

The CRD Board approved the overall project budget of $14.32M in the 2019-2023 capital plan on May 22, 2019. Project costs are shared between the CRD and the province at 61% and 39%, respectively. The 61% CRD share of the project budget has been funded through Municipal Finance Authority debt, requisition, Hartland tipping fees and the septage disposal service capital reserve.

Due to the contaminant migration to neighbouring properties to the west, additional funding of approximately $180K is now needed from Millstream service participants to account for associated additional costs to complete the project in 2021. The remainder of the $380K project budget increase will be funded by provincial funding, Hartland tipping fees and reserve funding from the septage disposal service, bringing the revised total project cost estimate to $14.70M.

With this budget increase, the project will have funding required to address additional work associated with obtaining Certificates of Compliance under provincial environmental legislation for the Millstream Meadows site and each of the affected adjacent properties.

Environmental & Climate Implications

Although there is residual contamination above environmental standards at the site, the property is closed to the public and there are no exposure pathways for nearby residents. Additionally, site-related contamination has not been observed in the CRD's offsite domestic well monitoring program. Remaining project activities will confirm stability of groundwater contamination, ensure there are no unacceptable current or future risks associated with the site, and obtain certification under provincial legislation.

Intergovernmental Implications

In 2019, the CRD reinitiated an application for rezoning to District of Highlands Industrial Zone (M1). The rezoning is consistent with the District of Highlands' Official Community Plan and would maximize potential redevelopment opportunities for the site and land value upon divestment. The District of Highlands has placed a hold on the CRD application, and initiated a local area planning process for the area.

Ongoing monitoring, site remediation and certification will result in public reassurance that the property does not pose a risk to neighbouring developments or the public, and allow the site potential to be fully realized, generating economic development within the District of Highlands. Completing the remediation will also deliver on the CRD's commitments under the cost-sharing agreement with the Province.

CONCLUSION

Since 2016, the Millstream Meadows remediation project has implemented a multi-phase detailed site investigation intending to fully delineate the degree and extent of contamination, meet regulatory requirements and prepare the site for divestment. Significant progress has been made in understanding contaminant distribution, and the recent discovery of contamination under neighbouring properties has resulted in increased costs and likely a schedule extension. CRD staff recommend an increase in the overall project budget to ensure funding is in place for the remainder of the project. Work continues to satisfy Ministry of Environment requirements to obtain individual Certificates of Compliance for the site and neighbouring affected properties.

RECOMMENDATION

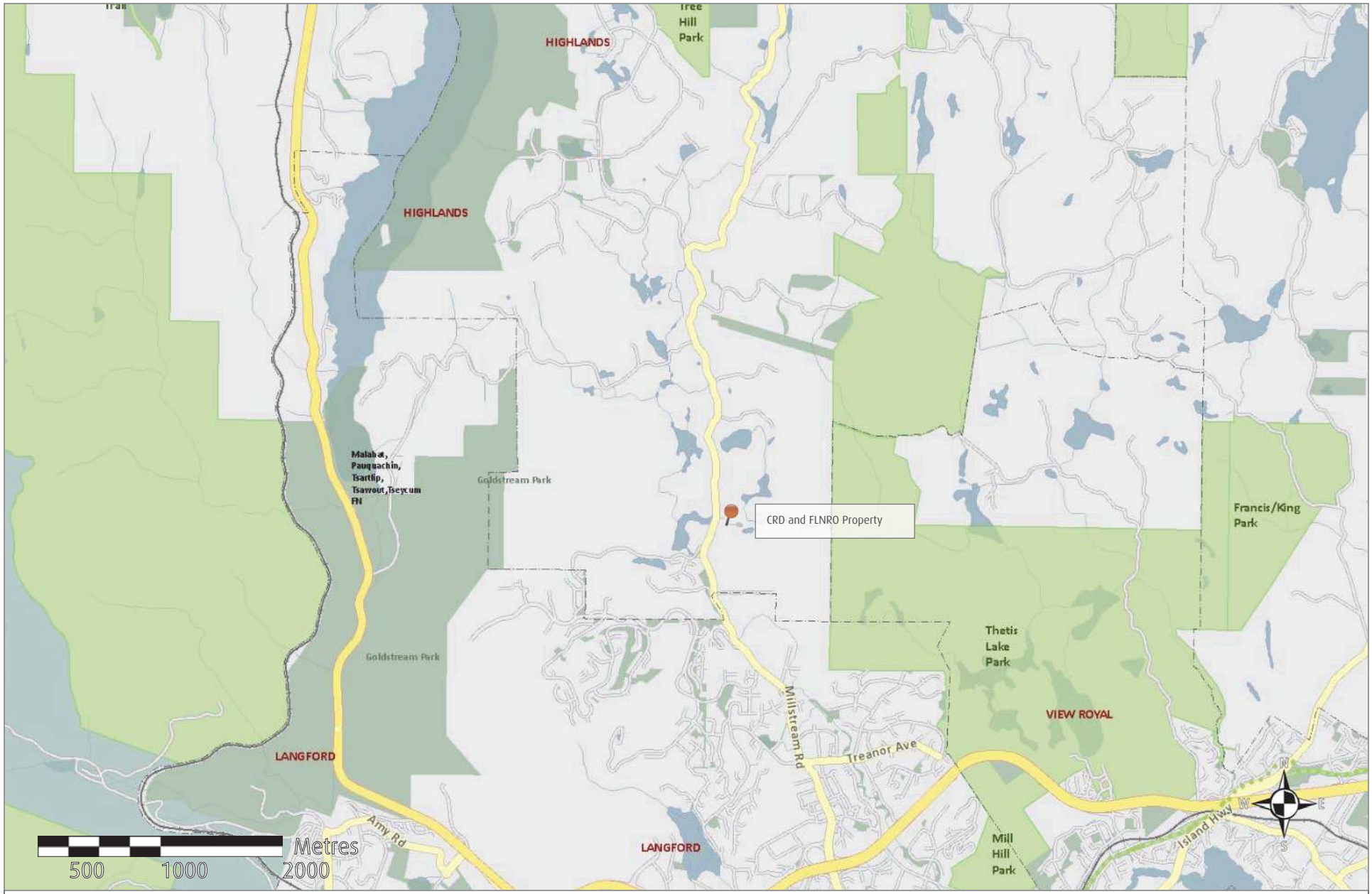
The Environmental Services Committee recommends to the Capital Regional District Board:

That the Millstream Meadows project budget increase from $14.32M to $14.70M be incorporated into the 2021 capital plan, with the additional project budget of $0.38M funded from a combination of requisition under Bylaw No. 3519, Hartland tipping fees, provincial funding and the reserve funding from Septage Disposal service in 2021.

Submitted by:	Glenn Harris, Ph.D., R.P.Bio., Senior Manager, Environmental Protection
Concurrence:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENTS

Appendix A: Site Location Plan
Appendix B: Map - Extent of Inferred Contaminant Migration



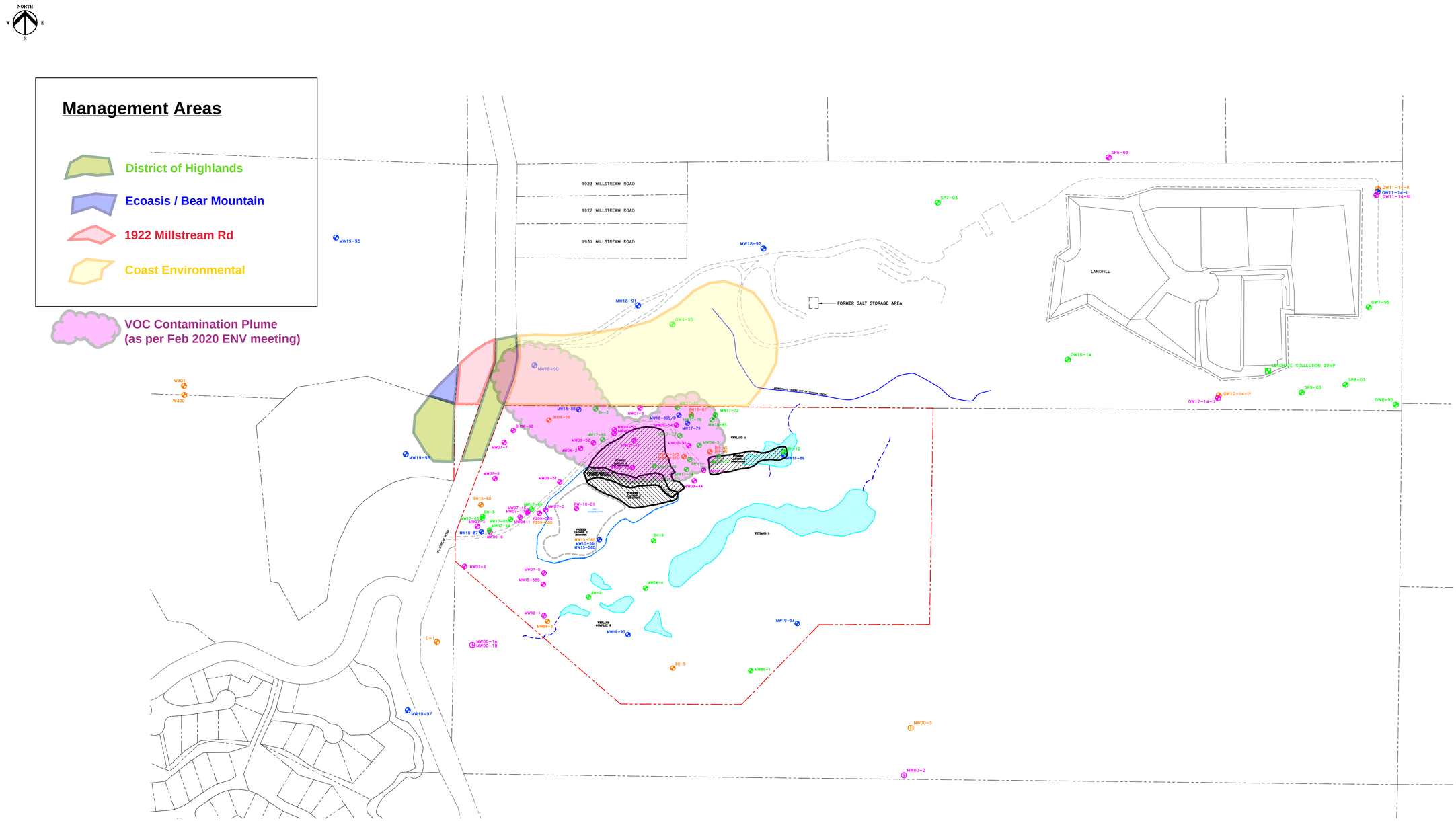
Important

This map is for general information purposes only. The Capital Regional District (CRD) makes no representations or warranties regarding the accuracy or completeness of this map or the suitability of the map for any purpose. This map is not for navigation. The CRD will not be liable for any damage, loss or injury resulting from the use of the map or information on the map and the map may be changed by the CRD at any time.

Printed Tue, Dec 30, 2014

Location Plan - CRD and FLNRO Millstream Meadows

Regional Community Atlas
Capital Regional District
gis@crd.bc.ca
http://www.crd.bc.ca



CHECK PRINT

LEGEND

10 50 75 100 150 200 METRES

- SUBJECT PROPERTY LIMITS
- TREE LINE
- INTERMITTENT STREAM
- APPROXIMATE EXTENT OF 2008 EXCAVATION BOUNDARY
- APPROXIMATE UNEXCAVATED EXTENT OF LAGOON 2 & 3
- EXCAVATED LAGOON BOUNDARY
- WETLAND
- FILL/OVERBURDEN
- SHALLOW BEDROCK (<20m BGS)
- INTERMEDIATE BEDROCK (20 to 60m BGS)
- DEEP BEDROCK (DEEPER THAN 60m BGS)

NOTES

1. ORIGINAL DRAWING IN COLOUR.
2. LOCATION OF EXISTING UTILITIES SHOWN ARE APPROXIMATE ONLY AND SHOULD BE CONFIRMED PRIOR TO INTRUSIVE WORK. NOT ALL UTILITIES MAY BE SHOWN.
3. DUE TO PREVIOUS CONSTRUCTION ACTIVITIES ON THE PROPERTY NORTH OF THE SITE MONITORING WELLS MW02-2 AND BH-13 ARE NO LONGER ACCESSIBLE. BASED ON A VISUAL INSPECTION, MONITORING WELLS MW02-2 AND BH-13 HAVE BEEN IDENTIFIED AS BURIED AND/OR DESTROYED.

REFERENCE DRAWINGS

No.	DATE	DESCRIPTION
Lidar2010Contours50cm.DWG	2010	CRD LIDAR CONTOURS

REVISIONS

REV.	DATE	DESCRIPTION	BY	CHK

SNC·LAVALIN

CLIENT NAME: CAPITAL REGIONAL DISTRICT

PROJECT LOCATION: 1965 MILLSTREAM ROAD VICTORIA, BC

TITLE: **SITE PLAN - OFFSITE**

DWN BY: PRT	SCALE: 1:2,000	DATE: 2020-01-08	DWG No: 636345-320 REV.: 0
CHK'D: AAZ	PLOT: 20200130.1521	CADFILE: 636345R33	

PATH: P:\CURRENT PROJECTS\CRD\636345 – MILLSTREAM MEADOWS\4.0 EXECUTION\4.5 GIS AND DRAWINGS\CAD\636345R33.DWG

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REPORT TO ENVIRONMENTAL SERVICES COMMITTEE
MEETING OF WEDNESDAY, SEPTEMBER 16, 2020

SUBJECT **Community Efficiency Financing Program Grant**

ISSUE SUMMARY

To seek support to submit an application to the Federation of Canadian Municipalities (FCM) Community Efficiency Financing grant program to study a regional accessible energy retrofit financing program.

BACKGROUND

The new Federation of Canadian Municipalities Community Efficiency Financing (CEF) grant program provides funding to local governments to plan, implement and scale up innovative financing models for residential energy projects. FCM has stated that multiple municipalities and partners are encouraged to collaborate on regional opportunities. As such, staff have received requests from local government staff to lead a regional application.

A Board resolution must accompany an application to the CEF, and is due October 30, 2020.

This CEF application would build upon past work, including:

- Oil to Heat Pump program, which contributed to hundreds of heat pump installations in the region between 2015 and 2018.
- Current CRD and municipal heat pump incentive top-ups through Better Homes BC.
- Transition 2050 Residential Retrofit Acceleration Project, supported by the FCM, which was launched in 2019 to accelerate retrofits in the region through industry-government collaboration, strategic planning and piloting solutions to non-financial barriers to climate-friendly retrofits.
- Bring it Home 4 Climate, a pilot program under Transition 2050 launched in August 2020 to coach homeowners on how to make their homes climate-friendly.
- BC Hydro Community Energy Manager Network initiative focused on retrofit financing and clarifying municipal authority regarding existing buildings.
- Various energy retrofit related studies and programs led by local governments in the region (including the Saanich Property Assessed Clean Energy (PACE) pilot).

The CEF project would support the design of a regional accessible energy retrofit financing program, which would identify: an accessible retrofit financing mechanism, program design components, greenhouse and economic benefits, and public and private partners. Outputs would directly inform the regional energy retrofit program scoping previously presented to the Board on May 13, 2020.

ALTERNATIVES

Alternative 1

The Environmental Services Committee recommends to the Capital Regional District Board:

That approval be given to submit an application to the Federation of Canadian Municipalities Community Efficiency Financing grant program to study a regional accessible energy retrofit financing program.

Alternative 2

That this report be referred back to staff for additional information.

IMPLICATIONS

Environmental & Climate Implications

Existing buildings account for more than 30% of greenhouse gas (GHG) emissions in the capital region, most of which is the result of burning either natural gas or heating oil for space and hot water heating. Reducing emissions from buildings is in line with the CRD's declaration of a Climate Emergency, the Regional Growth Strategy's (RGS) goal of achieving a 68% reduction in emissions by 2038, and the 2017 Regional Climate Action Strategy.

A successful application will enable the CRD to project a GHG emissions saving potential associated with an identified retrofit financing mechanism and program design.

Intergovernmental Implications

CRD is working with CRD Climate Action Inter-Municipal Working Group and additional municipal staff to support the development of the grant application. Should the CRD be successful in obtaining the funds, staff will continue to work with an inter-municipal project team to execute the study.

Financial Implications

Successful applicants will receive up to 80% of eligible costs, to a maximum of $175,000 grant. Should the application be successful, the project would be added to the 2021 work plan for the Climate Action Program. The remaining 20% of project costs would come from in-kind support and existing budgets.

CONCLUSION

Targeting GHG emission reductions from buildings is in line with CRD climate goals and strategies. The CRD has identified FCM's CEF grant program as an opportunity to further understand a regionally accessible energy retrofit financing program as a means to support the reduction of greenhouse gas emissions.

RECOMMENDATION

The Environmental Services Committee recommends to the Capital Regional District Board:

That approval be given to submit an application to the Federation of Canadian Municipalities Community Efficiency Financing grant program to study a regional accessible energy retrofit financing program.

Submitted by:	Glenn Harris, Ph.D., R.P.Bio., Senior Manager, Environmental Protection
Concurrence:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services
Concurrence:	Ted Robbins, B.Sc., C.Tech., Acting Chief Administrative Officer

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REPORT TO FIRST NATIONS RELATIONS COMMITTEE
MEETING OF WEDNESDAY, SEPTEMBER 30, 2020

SUBJECT **First Nations Economic Development Partnership Model**

ISSUE SUMMARY

This report seeks approval of a recommendation to the CRD Board of Directors to receive the *CRD First Nation Economic Development Partnership Model Feasibility Study Report, 2020* (the Report) attached as Appendix A for information.

BACKGROUND

In October 2018, the CRD approved the *Special Task Force on First Nations Relations Final Report* which included a recommendation under reconciliation through economic development that the Board direct staff to undertake a feasibility study for an Indigenous Economic Development Partnership Model to be considered by the incoming Board.

At the same time, the CRD approved a Statement of Reconciliation which includes the following theme:

> **Shared Prosperity** – The CRD recognizes the gap in wealth between First Nations and settler governments. The CRD will work towards a prosperous economic future for all of its residents and believes that improving the lives of the most vulnerable citizens creates a stronger and more resilient region for everyone. The CRD will seek partnerships, share information and deliver fair and equitable services in working with First Nations on achieving their economic goals.

Through 2019 and into 2020, the Indigenomics Institute, on behalf of the CRD, directly engaged eight of the nine First Nations with occupied reserve lands within the capital region. This engagement allowed these First Nations to share interests, opportunities and barriers around economic development, current relationship with the CRD, and potential actions supporting First Nations' economic inclusion within CRD services.

The model presented within the Report is based on understanding the social/cultural, environmental and economic characteristics of each First Nation, the identified principles underpinning model development, and a consideration of strategic opportunities within CRD programs and services. The specific recommendations contained within the report are intended to help guide staff activities over the coming years and also allow for flexibility as the landscape underpinning reconciliation through economic development continues to evolve rapidly.

ALTERNATIVES

Alternative 1
The First Nations Relations Committee recommends to the Capital Regional District Board:
That the *CRD First Nation Economic Development Partnership Model Feasibility Study Report, 2020* be received for information.

Alternative 2
The First Nations Relations Committee recommends to the Capital Regional District Board:
That this report be referred back to staff for additional information.

IMPLICATIONS

Environmental & Climate Implications

Environmental considerations have been identified as an overarching component of the model alongside social/cultural practices and beliefs and economic opportunities. The Report outlines that these three underpinning facets are not static in how they inform economic development opportunities and First Nations will likely be looking to acknowledge the interplay between these components which will then inform the type of partnership opportunities or resources the CRD could contribute in support of a potential activity or partnership.

Intergovernmental Implications

Goal three within the Report identifies a need to be working towards greater inclusivity of First Nations in CRD governance and decision-making. This goal touches on work that is already underway and is being more fully considered in a separate staff report.

Further, the Report outlines complementary actions that are intended to increase the effectiveness of more inclusive decision-making. First, identifying opportunities to First Nation's staff capacity in receiving referrals from the CRD and supporting their leadership in participating at CRD tables will establish a multi-pronged approach in supporting success at decision-making tables. Second, joint planning around economic development has been identified as another important component of bringing the CRD and First Nations together to work towards a prosperous economic future for all residents of the capital region.

Social Implications

The CRD, though the Statement of Reconciliation, recognized the gap in wealth between First Nations and settler governments. Goal one and four within the report are directly related to increasing opportunities for employment and the proportion of economic opportunities that go to First Nations. These two goals both seek to address wealth inequality within the context of CRD service delivery and acknowledge the CRD's limited, but important, role in broadly addressing significant systemic and structural barriers affecting Indigenous Peoples.

Financial Implications

There may be increases in the cost of certain activities associated with shifting the way the CRD procures goods and services from First Nations. Any increases in cost would be considered within the context of the CRD's Procurement Policy and the Board Priority of Reconciliation with First Nations and would be determined by staff on a project-by-project basis.

Alignment with Board & Corporate Priorities

The 2019 – 2022 CRD Board Priorities include Reconciliation with First Nations, specifically:

3a Look to First Nations for leadership in understanding how to create new regional planning and decision-making systems together on their Traditional Territories.
3b Seek partnerships, share information and deliver fair and equitable services in working with First Nations on achieving their economic goals.
3c Work with First Nations on taking care of the land and water while providing space for cultural and ceremonial use, food and medicine harvesting, traditional management practices and reclaiming Indigenous place names.

Alignment with Existing Plans & Strategies

The following strategies have been identified as related to the Reconciliation with First Nations Board Priority:

- Special Task Force on First Nations Relations Final Report and the Statement of Reconciliation
- Regional Climate Action Strategy
- Regional Food and Agricultural Strategy
- Regional Growth Strategy
- Regional Housing Affordability Strategy
- Regional Parks Strategic Plan
- Regional Water Supply Strategic Plan
- Organizational Development Plan

CONCLUSION

The Report begins to establish an approach for the CRD to better identify areas of opportunity within its service structure to advance reconciliation through economic development. Looking to enable partnerships and working directly with First Nations will be critical in supporting the First Nations in achieving their economic goals. This will help the CRD in defining its appropriate role in providing inputs towards an opportunity, being flexible in understanding and acknowledging the specific interests of each nation, and also taking a whole of CRD approach as there have been identified potential economic opportunities within a wide range of CRD departments. The final key component is for the CRD to maintain a focus on action and to look to taking measurable steps in supporting the Statement of Reconciliation theme of Shared Prosperity.

RECOMMENDATION

The First Nations Relations Committee recommends to the Capital Regional District Board:
That the *CRD First Nation Economic Development Partnership Model Feasibility Study Report, 2020* be received for information.

Submitted by:	Don Elliott, MUP, Manager, First Nations Relations
Concurrence:	Kristen Morley, J.D., General Manager, Corporate Services & Corporate Officer
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT(S)

Appendix A: CRD First Nation Economic Development Partnership Model Feasibility Study

Report, 2020

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CRD
First Nation Economic Development Partnership Model Feasibility Study Report

May 2020

By The Indigenomics Institute

Indigenomics Institute

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1.0 Introduction

This Indigenous Economic Development Partnership Model Feasibility Study Report sets the stage for building a strong understanding of the economic opportunities and interests of First Nations within the Capital Regional District's (CRD) spectrum of services. This work is intended to focus on existing services but also includes a recognition of longer-term opportunities that may require new services to be established or for legislative amendments at a provincial-level. It is important to note that innovative economic opportunities are constantly emerging, grounded in new and existing provincial legislation, some of which is not yet fully implemented or detailed. With this in mind, it is also important to consider this work as a living document. The model put forth should be revisited regularly to both measure impact and progress, as well as determine the need for revising the model as senior levels of government continue to evolve their approach to modern treaty and to reconciliation activities more broadly.

> *'**Economic reconciliation** is a form of **reconciliation** in action. It encourages material prosperity within the context of a holistic approach that is consistent with the notion of 'Namwayut – We Are All One." The work of **reconciliation** is multifaceted and ultimately influences every aspect of life.' - Reconciliation Canada*

The capital region spans the territories of approximately 20 First Nations, of which 11 have Reserve lands and 9 have settlement populations made up of over 5,000 members. For the purpose of this report, the focus has been on engaging those Nations with settlement populations contained within the capital region.

This report identifies specific opportunities for the CRD to establish enhanced partnership opportunities with First Nations that will support these Nations in moving towards their desired economic development outcomes. The CRD must first examine its own services and core activities and establish a clear pathway toward economic reconciliation in areas that are of particular interest to First Nations.

The Indigenomics Institute defines economic reconciliation as the space between the lived realities of Indigenous Peoples, the need to build understanding of the importance of the Indigenous relationship, and the requirement for progressive actions for economic inclusion. In an environment of economic reconciliation, this Partnership Model must consider the lived realities of Indigenous Peoples while building an understanding and process to facilitate a positive relationship between First Nations' economic interests and clear actions for economic inclusion.

This report sets the foundation for developing an initial understanding of a CRD Indigenous Economic Development Partnership Model that supports the engagement, planning, participation, and evaluation of results that can be used to establish the necessary structure for First Nations economic inclusion going forward. This project aims

to detail goals and objectives and maps the necessary preconditions for organizational change and the implementation of positive actions to establish a framework for the process and structure for Indigenous economic inclusion. This report identifies some immediate opportunities and highlights significant considerations for a coordinated CRD approach to more actively support First Nations economic inclusion.

The CRD is committed to a 'community focused approach' which means building First Nation economic development processes within the organization and setting the foundation for facilitating opportunities in partnership with the communities. Understanding the community's social and environmental context is important to consider in terms of the economic development process. By engaging with the Nations directly, this project highlights the interconnections between the social, economic, and environmental aspects of this emerging economic development model. It is important to draw particular attention to these areas of high-potential that can support the development of a reconciliation-focused economic model for First Nations.

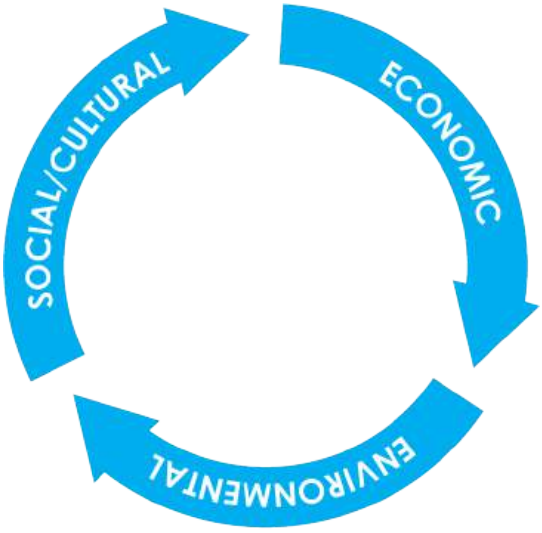


Figure 1- Interconnections within a CRD First Nation Economic Model

Critical to exploring an Indigenous Economic Development Partnership Model is the recognition of the interplay between economic opportunities, environmental considerations and social/cultural interests. This interplay is foundational and will help to create the space for exploring ideas and opportunities while also working to empower First Nations in all aspects of advancing their economic interest. These three facets underpinning the model are not static in nature and First Nations will likely need the space to explore the connections between these themes in order to better detail what type of partnerships and resources would support moving an opportunity forward with the CRD.

There are considerable economic opportunities for First Nations and it is timely for the CRD to examine its own spectrum of services and activities and establish the structure and process to support economic reconciliation. In establishing a foundational model, it can help the CRD to have a better understanding of the key economic interests of First Nations and how it can support working towards eliminating barriers and build on existing strengths to better support and work alongside First Nations.

2.0 Project Core Objectives

This project aims to support relationship building between the Nations and CRD in its delivery of programs and services with an economic focus. Further, it looks to support the development of strategic objectives that provides the CRD with a clear direction on First Nations economic reconciliation. The projects core objectives include:

1) Establish processes for organizational alignment with strategic inclusive planning;
2) Develop understanding for the need for education content relevant to reconciliation, *United Nations Declaration on the Rights of Indigenous Peoples* (UNDRIP), local protocols with Nations, the Douglas Treaties, and the Nations governance systems;
3) Establish Indigenous economic planning processes within the CRD;
4) Establish clear mechanisms and processes for First Nation's economic inclusion within CRD; and,
5) Focus on metrics to identify key outcomes for First Nation economic growth activities within the CRD's existing slate of services and deliverable areas.

3.0 Understanding the CRD and the UNDRIP Context

The broader national and provincial context informing reconciliation and the relationship between Indigenous Peoples and the Crown shapes the role of local government. Significant recent developments include new provincial negotiation practices that are shifting mindsets for reconciliation, new agreement models called "Comprehensive Reconciliation Agreements", the Recognition and Reconciliation of Rights Policy for treaty negotiations in British Columbia, and the passage of the *Declaration on the Rights of Indigenous Peoples Act (DRIPA)*.

At the center of this shifting context is the **Truth and Reconciliation Report** on the Calls to Action. Specifically, #92 on Business and Reconciliation which states,

"We call upon the corporate sector in Canada to adopt the United Nations Declaration on the Rights of Indigenous Peoples as a reconciliation framework and to apply its principles, norms, and standards to corporate policy and core operational activities involving Indigenous Peoples and their lands and resources. This would include, but not be limited to, the following:

- *Commit to meaningful consultation, building respectful relationships, and obtaining the free, prior, and informed consent of Indigenous Peoples before proceeding with economic development projects.*

- *Ensure that Aboriginal Peoples have equitable access to jobs, training, and education opportunities in the corporate sector, and that Aboriginal communities gain long-term sustainable benefits from economic development projects.*
- *Provide education for management and staff on the history of Aboriginal Peoples, including the history and legacy of residential schools, the United Nations Declaration on the Rights of Indigenous Peoples, Treaties and Aboriginal rights, Indigenous law, and Aboriginal–Crown relations. This will require skills-based training in intercultural competency, conflict resolution, human rights, and anti-racism."*

This shift in approach is occurring at a much more rapid pace through UNDRIP becoming embedded within BC law. With these ongoing developments also comes a shift in narratives. Organizations are now asking questions like, 'What does change look like?', 'How do we do things differently?', and 'What is our role and responsibility in reconciliation?' As the CRD undertakes framing economic development through its relationship with First Nations and its existing services, it will also see a clear shift in narrative. The CRD will move away from a common narrative of 'This is how we have always done things' or 'That's not our responsibility' towards a stronger understanding of operating in a new environment of First Nations economic reconciliation.

3.1 The United Nations Declaration on the Rights of Indigenous Peoples as a Framework for Economic Reconciliation.

We are in a moment of significant transformation in the work of reconciliation in Canada. A further examination provides important insight into key factors and approaches the CRD and local First Nations may wish to pursue through economic reconciliation.

Since 2015 with the release of the Calls to Action of the Truth and Reconciliation Commission, governments of all levels have been called to adopt and implement the **United Nations Declaration on the Rights of Indigenous Peoples** as the "framework for reconciliation". Call to Action 43 states:

> *We call upon Federal, Provincial, Territorial, and Municipal governments to fully adopt and implement the United Nations Declaration on the Rights of Indigenous Peoples as the framework for reconciliation.*

Placing the focus on the UN Declaration as a framework for reconciliation – and calling on governments, including local governments to adopt it – is a reflection of growing public awareness of Canada's long history of colonialism, its enduring impacts, and the slow pace of progress in addressing urgent social, cultural, and economic issues that relate to reconciliation. Through the process of reconciliation, it is increasingly being

recognized that all Canadians have a role to play in building a renewed future between Indigenous and non-Indigenous Peoples, and that much of the vital work that must occur is between individuals, families, neighbours, within our communities, and in how we live amongst each other in new ways.

The UN Declaration does not create or identify new rights. Rather, it was a co-operative effort by States and Indigenous Peoples to articulate long-standing and globally accepted human rights norms, including those in the Universal Declaration on Human Rights, in the particular context of Indigenous Peoples. These are international human rights norms that Canadians have been in the forefront of advancing, and which are at the foundation of Canada's legacy of protecting human rights including our Charter of Rights and Freedoms.

There are two aspects of the UN Declaration that are particularly relevant to the CRD's initiative to advance economic reconciliation with local First Nations:

- The economic rights of Indigenous Peoples are emphasized throughout the UN Declaration. Examples include: the right of Indigenous Peoples to pursue economic development (Article 3), to determine and develop economic priorities (Article 23), to maintain and strengthen their own economic institutions (Article 5), and to improve their economic and social conditions (Article 21). In addition, numerous articles of the UN Declaration affirm the right of Indigenous Peoples to the "lands, territories, and resources", including to redress where these may have been used or taken without their consent, and to determine and develop priorities for their development (Article 28; Article 32)

- The right of self-determination (Article 3) and the inherent right of self-government (Article 4; Article 5) are cornerstones of the UN Declaration, and are expressed in many articles that uphold the jurisdiction of Indigenous Peoples, and the requirement of free, prior, and informed consent (Article 19; Article 28; Article 32)

What these elements of the UN Declaration emphasize is a vision of reconciliation within which First Nations are increasingly self-governing, with clear structures and mechanisms in place for meaningful decision-making, and not merely as a relationship of stakeholders, consultation, or engagement.

3.2 Actions Taken by Federal, Provincial, and Local Governments

Since the Calls to Action were established, a number of steps have been taken by governments at all levels. The overarching and on-going trend is towards ever more concrete and meaningful steps to adopt and implement the UN Declaration.

The Federal Government formally endorsed the UN Declaration in 2016. Subsequently it adopted the **Principles respecting the Government of Canada's relationship with Indigenous Peoples** to help guide the government as it re-shapes its laws, policies, and practices to align with the UN Declaration and the recognition and implementation of Indigenous rights. One expression of this shift is a change in litigation practices, and an explicit effort to accelerate building more co-operative relations and less adversarial and conflict-oriented ones. This was codified in the **Attorney General of Canada's Directive on Civil Litigation Involving Indigenous Peoples**. The Federal Government has also promised legislation related to the implementation of the UN Declaration, and more broadly re-shaping relations with Indigenous Peoples.

Even more directly relevant for the CRD is the steps that have been taken by the Provincial Government. In addition to taking similar steps as the Federal Government, such as adopting the Draft Principles that guide the Province of British Columbia's Relationship with Indigenous Peoples, the Provincial Government recently adopted the **Declaration on the Rights of Indigenous Peoples Act (DRIPA)** the first legislation to enshrine the UN Declaration in law. Almost a year has passed since that Act and the Province has completed its first Annual Report and Concrete Actions Document. There are a number of aspects of DRIPA which are of particular relevance to CRD and how it further builds relations with local First Nations, including through economic reconciliation initiatives:

1. Section 3 of DRIPA requires the Provincial Government, in consultation and co-operation with Indigenous Peoples, to align its laws – both new and existing – with the UN Declaration. This means that in the upcoming years there will be reviews conducted of legislation under which the CRD operates, including the *Local Government Act,* as well as other statutes through which economic relations and opportunities are impacted.

2. Section 4 of DRIPA requires the Provincial Government, in consultation and co-operation with Indigenous Peoples, to develop an action plan to meet the objectives of the UN Declaration. This means that a comprehensive plan must be developed and implemented to end discrimination, ensure the human rights of Indigenous Peoples are upheld, the impacts of colonialism addressed, and more just, equal, and harmonious relations advanced. It can be expected the action plan will ultimately require new policies, practices, investments, public education and other initiatives. The Provincial Government has made clear that local governments and stakeholders will have roles to play in shaping the action plan, and it should be expected that the action plan will require certain action by local government.

3. Sections 6 and 7 of DRIPA create the space and expectation that agreements will be entered into between the Province and "Indigenous governing bodies" that implement consent based decision-making. While the decision to enter into such agreements is discretionary, it is important to note that the range of topics that could be the subject of such agreements is not limited, and certainly there is an expectation that they could include economic, planning, land use, and stewardship matters. Relatedly, it should be noted that some steps have already been taken by the Provincial Government to broadly re-shape its approach to negotiations, and to make agreements more open, flexible, living, and expansive.

There are also other Provincial Government developments that align with the directions that DRIPA further advances:

- The **Shishalh Foundation Agreement** is typically held up as a model for new agreements and has a number of implications for local government planning and relations.

- A new **Recognition and Reconciliation of Rights Policy for Treaty Negotiations in British Columbia** was adopted in September that is intended to accelerate treaty negotiations and align them with the UN Declaration. It should be expected by the CRD that local First Nations will pursue, and in some instances complete, agreements in the near to medium-term that reflect these new models and policy directions.

- *DRIPA* states that agreements may be with "Indigenous governing bodies", a definition that is broader then *Indian Act* Bands, and societies (such as those formed as Tribal Councils). This could mean, over time, change and clarification in the Indigenous governments that the CRD must work with.

Furthermore, it should also be expected that local First Nations will increasingly view DRIPA and the UN Declaration, as the legally required lens through which relations with all governments, including the CRD, must be structured.

Alongside these efforts by the Federal and Provincial Governments, local governments have also been making strides in their reconciliation efforts. Historically, agreements around services have been the primary vehicle for economic relationships, however in recent years there has been an increasing diversification and expansion of models of relations. Across British Columbia one can find examples of these new types of relationships including: land transfers and joint land development; the sharing of revenue streams; employment and training; joint economic development structures and initiatives; shared planning processes for regional growth; cooperation on specific

resources; and broad protocols and commitments to principled approaches to reconciliation including through the UN Declaration. In addition, there are numerous examples of tripartite arrangements between the Provincial Government, local government, and First Nations that address particular land, economic development, cultural heritage, or other matters.

3.3 Setting the Stage for Economic Reconciliation

As the CRD sets out to revitalize its economic reconciliation efforts with local First Nations, it will be critical to maintain a clear view and understanding of the transitions which have been occurring, and the directions of change the future will continue to advance. It should be expected that the next five to ten years will witness a number of significant developments that may influence CRD activities including:

1) The adoption of more legislation federally and provincially related to Indigenous rights, including the UN Declaration;

2) The acceleration of negotiations between the Provincial Government and First Nations, including new agreement models;

3) The implementation of consent-based decision making models including, for example, through joint boards that have decision-making authority;

4) A decreasing reliance on the Courts to resolve matters, and a greater expectation that co-operative, alternative forms of dispute resolution will be more readily used to address matters;

5) Greater expectations, and actual levels of economic sharing between all levels of government and First Nations;

6) Significant increases in investments by Federal and Provincial Governments in supporting the rebuilding of Indigenous governments and Nations;

7) Formal pathways for First Nations to move out of the *Indian Act* and be governed by structured they have determined, including with clarified jurisdictions and applications of their own laws;

8) An increased ethic of "co-development" between First Nations and governments, where matters (including laws and policies) that may impact First Nations are addressed collectively from the earliest stages; and

9) A focus on structured regular, formal, mechanisms of interaction between Indigenous governments and Federal, Provincial, and local governments, and a reduced focus on how First Nations may be within or a part of already established government structures or processes.

4.0 Underpinning Principles of the CRD Economic Development Partnership Model

Understanding the characteristics of First Nations economic reconciliation within the context of the CRD requires the ability to draw on leadership, develop consistency and pursue planning objectives. The underpinning principles of the CRD's Indigenous Economic Development Partnership Model will help guide its development and implementation moving forward:

1. **Appropriate Role for the CRD**

    - The CRD can work within its service structure to both take a leadership position and work to support First Nations in advancing their own economic interests in pursuit of economic reconciliation, but does not have all levers, responsibility and resources.
    - A collaborative partnership approach will be critical to the CRD in working with First Nations, including their economic development corporations, municipalities, electoral areas and other organizations and entities that are active in economic development and intersect with First Nations economic interests.

2. **Flexible Approach to Supporting First Nations Economic Development Opportunities.**

    - CRD focus should reflect the unique opportunities within the context of the specific conditions of each First Nation. This will prevent a one size fits all approach and will better position the CRD as a partner working in support of First Nations' economic activities.
    - The CRD must employ a 'whole-of-CRD' approach to acknowledge and support the diverse interests of First Nations. This will consider both regional and sub-regional services and will be critical in achieving the greatest benefit for First Nations and the CRD.

3. **Focus On Action**

    - Strengthened and more inclusive governance structures across First Nations and CRD political leadership that is rooted in the recognition and

implementation of Indigenous rights, incorporates UNDRIP/DRIPA within an economic framework and incorporates the Truth and Reconciliation Calls to Action will support enhanced collaboration, coordination and accountability.

- Ongoing engagement at a staff level with First Nations, Provincial/Federal partners as appropriate and other potential partner organizations will help to ensure CRD actions and activities are in-step with a dynamic and changing environment.

5.0 Defining the Problem- Issues and Challenges in First Nation Economic Development

In a National context, the emerging **100 billion dollar National annual Indigenous economy agenda** is framing the potential of Indigenous economic growth and this growth is a key outcome of reconciliation.

It is in this context of the emerging potential of Indigenous economic growth, that the need to examine the current barriers and challenges in advancing the identified recommendations becomes important. Identifying the internal strengths and weaknesses to mobilize CRD economic resources, creating appropriate policies, understanding the business development needs and decision-making systems are all important outcomes in establishing feasibility for a CRD First Nations Economic Development Partnership Model.

Of particular note, the following identifies some of the current overarching challenges Nations experience both within their own economic development process and within the relationship to the CRD:

a) The absence of First Nation inclusion in plans and strategies within the CRD and the municipalities, and no direct connection or structure between regional planning processes for economic growth and First Nations.
b) The absence of the requirement for consent for the CRD's delivery of activities affecting the land/resource base.
c) Costs of water services are a barrier to First Nations. For reasons outside of control of First Nations, many are only able to access water at a retail rate and not the more affordable wholesale rate. This limits the Nations from being able to turn water provision to an economic activity with the possibility of generating own-source revenue through charging 'lift' to on-reserve residential, commercial, and/or industrial activities.
d) There is a need for increased advocacy from CRD in engaging in tri-lateral level discussions with First Nations, the Province and the Federal Government on joint

issues of which the CRD also has a part. The CRD can play an advocacy role in some areas in collaboration with the First Nation communities.

e) Modern treaties have a strong economic component that can and will affect the CRD. Opportunities for enhanced communication to the CRD on upcoming modern treaty negotiation developments that may have impact on lands, parks and other structures is important to consider.
f) The communication and engagement process to First Nations in regard to the CRD's land acquisition activities and process has not met their expectations.
g) Lack of First Nation specific focused land or resource policies within the CRD.
h) Lack of transportation systems to/from some of the community's reserves is a significant barrier to economic development and employment.
i) Need to establish a process to connect CRD's economic opportunities with First Nation skilled employees as well as ensuring education and training programs to support skills development that can match CRD opportunities.
j) Need to develop understanding of the existing CRD infrastructure such as docks, moorage, parks etc. and how this has impacted First Nations ways of being, access, and treaty rights.

6.0 CRD First Nation Economic Opportunity Scan

This report identifies overarching economic themes within services that reflect the current situation, strengths, and weaknesses of both First Nations and the CRD, and serves to help identify specific areas, activities or services where the CRD can focus on supporting the economic interests of First Nations.

It is important to note that in order for the economic development potential of the CRD's various services to be fully explored, the enabling corporate infrastructure including the development or amendment of various policies, strategies, training programs and governance initiatives would also need to be examined. It was not within the scope of this report to undertake these pieces of work, but rather to highlight the connection between areas of economic development potential for First Nations and CRD specific tools and processes. The recommendations detailed further in the report include the specific CRD-wide components that will help to create additional economic development potential through CRD services and activities.

The specific CRD services identified reflect expressed interests by First Nations and will help CRD staff to focus efforts where they align with First Nations' capacity and where there is opportunity for follow-up and action. In the existing services and programs that the CRD delivers, this project identifies focus areas that establish a structure or process for First Nation economic inclusion.

It is important to consider that this report provides a high-level overview of the potential intersections between CRD activities and services and First Nations' economic interests. As First Nations continue to develop their own specialties and economic areas of focus, the CRD will need flexibility to explore various opportunities alongside First Nations.

An important component to consider is the relationship between broader corporate activities such as legal services, human resources, communications, etc. and how those services play a critical role in supporting the identification of an economic opportunity for First Nations in a specific service. In other words, in some instances the tools needed to create opportunities within a specific division are better utilized at a corporate-level, which can then help to support additional actions or activities within a particular division. The following figure details the relationship between the corporate infrastructure and support required to enable maximizing the opportunities for First Nations at the service level.

Within the service areas identified in Figure 2, the Nations have expressed interest in opportunities that establish training and education programs and employment readiness. Core CRD service areas such as site maintenance, resource/system management, site expansions and preparation, clearing in restoration areas, connecting research with Indigenous knowledge, cultural monitoring, recreation activities, security, driving, horticultural areas, sewer, watershed stewardship roles, cultural tours, fire prevention/management and cultural activities all offer areas for relationship and process development.

CRD SERVICES AND PROGRAMS WITH FIRST NATIONS ECONOMIC POTENTIAL

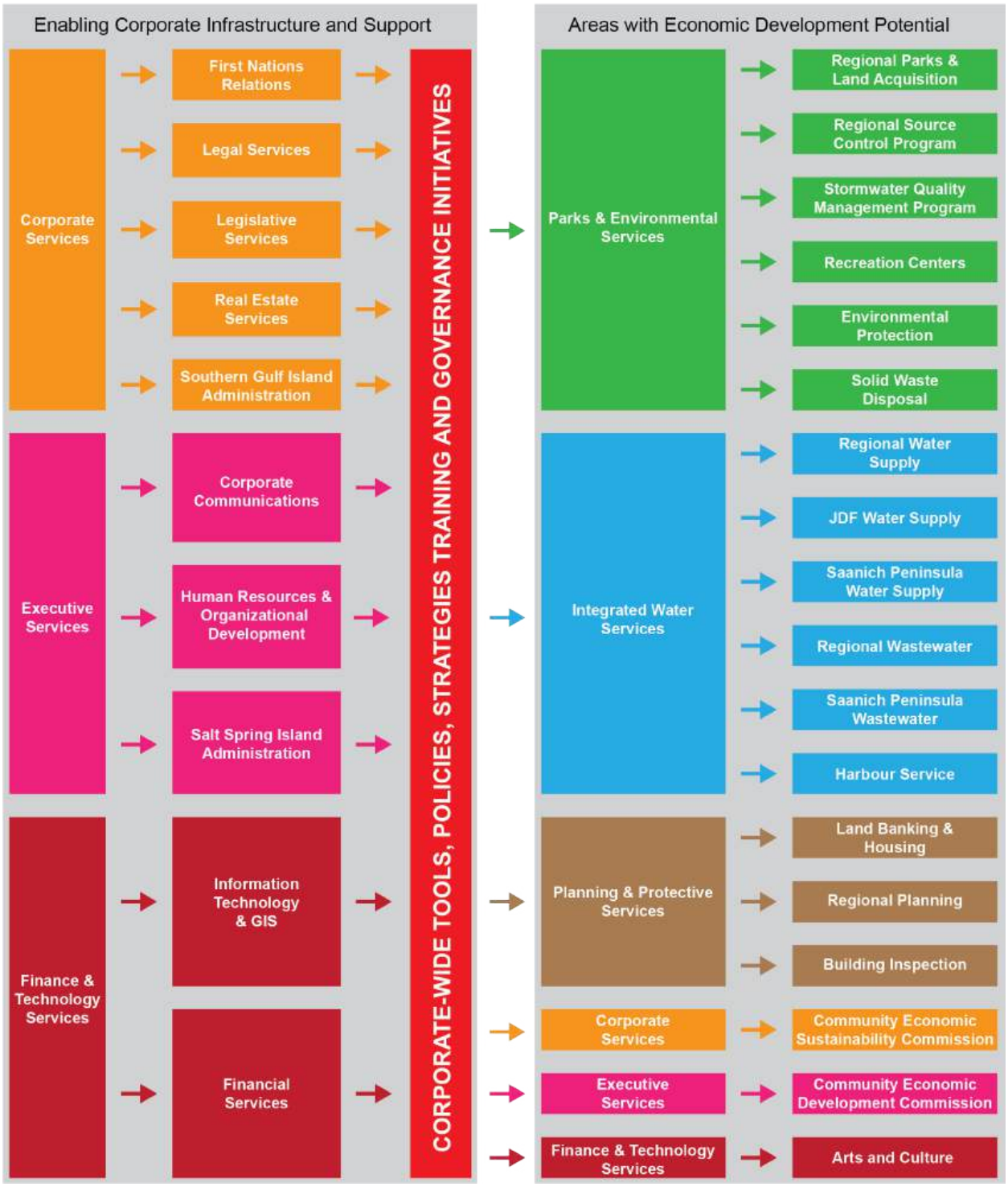


Figure 2 – Strategic Opportunities within current CRD Services

6.1 Enabling Corporate Infrastructure and Support

Three CRD departments have been identified as critical to building various tools, policies, strategies, training programs and governance initiatives that will provide a more robust foundation from which CRD staff will better be able to engage First Nations to examine economic development potential within specific service or activity areas.

Corporate Services

Corporate Services plays a critical role in providing professional advice and expertise related to a variety of services and functions of the CRD. In total, there are five divisions within Corporate Services that will have an important role in supporting the development and implementation of a First Nations Economic Development Partnership Model.

First Nations Relations	• Advance CRD Board Priorities • Support other CRD departments in advancing economic reconciliation or related works • Directly engage and support other departments in engaging First Nations • Build capacity within CRD of working effectively with First Nations
Legal Services	• Review and support development of contracts and service agreements • Support amendments to or development of policies, procedures, and bylaws related to engaging First Nations on economic opportunities • Enhance or update CRD Procurement Policy as needed to better support awarding of CRD works to First Nations
Legislative Services	• Support efforts towards more inclusive governance • Support amendments to bylaws or committee and commission terms of reference as needed
Real Estate Services	• Support and/or manage the appraisal, acquisition, and disposal of property interests • Develop and manage leases with First Nations where applicable

Southern Gulf Island (SGI) Administration	• Facilitate and coordinate actions and activities on SGI where these activities interest with First Nations' interests • Support the exploration and identification of collaborations and partnerships with First Nations as they may relate to the ongoing work of the SGI Economic Sustainability Commission

Executive Services

In addition to those divisions within Corporate Services, Executive Services will also play an important role in supporting the CRD to implement a First Nations Economic Development Partnership Model through providing professional advice to other departments and division across the organization.

Corporate Communications	• Support the CRD in working to share information and opportunities through various channels that aligns with First Nations' interests
Human Resources and Organizational Development	• Provide leadership, consultation, guidance, and professional support to corporate efforts to better recruit and retain Indigenous Peoples
Salt Spring Island Administration	• Facilitate and coordinate actions and activities taking place on Salt Spring Island where these activities interest with First Nations' interests • Support the exploration and identification of collaborations and partnerships with First Nations as they may relate to the ongoing work of the Salt Spring Island Community Economic Development Commission

Finance and Technology Services

Finance and Technology Services also plays an important role in working to develop enhanced infrastructure that will enable other departments to effectively identify and engage First Nations in various economic development initiatives.

IT & GIS	• Engage and support efforts to develop Information Technology tools and strategies in line with economic reconciliation activities and projects
Financial Services	• Work in support of identifying more effective procurement and contracting approaches with First Nations

6.2 Areas with Economic Development Potential

The following areas were identified as core elements within the economic reconciliation model that the CRD can jointly develop with First Nations. Each of these planning areas has an interconnection between the social, economic, and environmental aspects within the development of the CRD First Nation economic model.

Parks and Environmental Services

Interests in Parks and Environmental Services was expressed by almost every First Nation engaged though this project. One of the challenging aspects of identifying the intersections between First Nations economic interests and CRD programs and services is the fact that First Nations interests are rooted in the significant social, cultural, and economic ties to the land that stretches back to time immemorial. Often an interest articulated by a First Nation stretches across multiple services or extends beyond any particular jurisdiction. With this in mind, this project has identified the following areas of opportunity that are within the purview of regional government:

Governance	• Parks and natural assets management • Land acquisition process engagement
Human Resources	• Employment opportunities within Regional Parks • Affirmative action for hiring and contracting opportunities • Cultural Monitors engaged on CRD works • Employment opportunities at Hartland • Guardian Stewardship Initiative
Communications	• Enhanced/additional recognition of territories • Connect CRD and parks users to First Nations' presence and cultural importance of areas • Share land acquisition process and/or areas of interest with First Nations
Operations	• Invasive species management and monitoring activities • Better processes for notification of First Nations' hunting activities on CRD lands
Resourcing	• Work with First Nations on the creation of an Ecosystem Service Fee • Explore benefits to Nations from operations at Hartland

Integrated Water Services

First Nations have indicated that water and wastewater service provision could provide a considerable economic development opportunity, provided they are able to access these services at a wholesale rate. It is important to note that there are ongoing conversations with a number of Nations relating to water and wastewater servicing and the potential for working with the Nations to leverage these services into Nation-led economic opportunities. It is the intention of this Economic Development Partnership Model to build on this established work, develop a replicable corporate approach to negotiating with each Nation and provide a timeline to develop a more thorough review of the CRD's services with the intention of supporting greater equity in the Nations' ability to access services and the resulting economic opportunities.

Two other elements have been identified by the Nations that touch on aspects of Integrated Water Services. First, additional employment or contracting opportunities relating to watershed operations including cultural monitoring works or the procurement of services is an area where there may be considerable potential to support First Nations' economic interests. Though not raised by First Nations through this specific project, CRD staff have signaled that First Nations have previously expressed an interest in interisland transportation activities. It is understood that there is no current CRD service that could support this work, and there would likely need to be significant upfront investment to explore this type of economic opportunity. However, there may be potential partnerships that could be explored or considered where First Nations could lead a business planning process, and this may be an area of further opportunity for the CRD.

Human Resources	• Employment opportunities within watersheds • Affirmative action for hiring and contracting opportunities • Cultural Monitors engaged on CRD works • Guardian Stewardship Initiative
Communications	• Enhanced/additional recognition of territories
Operations	• Additional inclusion on infrastructure planning, construction activities and docks maintenance • Interisland transportation[1] • Training on wastewater treatment plant and water infrastructure operations
Resourcing	• Water and wastewater connectivity and rates

[1] Please note this was not raised by the Nations through this work. However, CRD staff wish to acknowledge that First Nations have identified this as a possible opportunity in previous discussions.

Planning and Protective Services

- First Nation focused Fire Service Agreements with municipalities- align CRD activities with these agreements
- Lands and land use/management within the CRD

Finance and Technology Services

- Tourism – there is a strong interest in Indigenous culture and arts
- CRD/First Nation annual economic development planning and prioritization

CRD-Wide

- CRD procurement policy- increase access to contracting opportunities for First Nations
- CRD First Nation focused hiring policies to increase employment opportunities for First Nations
- Develop a CRD lands profile of traditional territories- maps of CRD lands in First Nation territories, parks, assets and designations
- Roads issues with Nations access for hunting/fishing
- Acknowledging and bringing visibility to the former villages sites within CRD
- Cultural monitoring and archeological activities- joint collaboration protocols
- CRD and First Nations shared decision- making frameworks in relation to CRD lands.

Other – Non CRD

- Foreshore jurisdiction issues
- First Nation's participation in spill response systems
- Transportation linking First Nations to urban centers and across Southern Gulf Islands and Salt Spring Island

7.0 Indigenous Economic Development Partnership Model

The following model has been developed looking specifically at the relationship between:

- Social/cultural, environmental and economic characteristics of each First Nation;
- Identified principles underpinning model development; and,
- Consideration of strategic opportunities with CRD programs and services.

The heart of the model includes the CRD, First Nations and other partners working collaboratively. This acknowledges that at the core of advancing First Nation economic

opportunities, the interests of multiple parties should be considered equitably and in ways that support a clear understanding of each potential partner's inputs towards a specific opportunity. Inputs from all potential partners may include the following as a baseline:

1. **Financial Contributions** that could include loans and/or grants for capital or operational expenditures;
2. **Capacity Development** within the workforce for both First Nations and CRD staff;
3. **Information Technology** infrastructure development;
4. **Service or Opportunity Demand** that aligns or reflects First Nations capacity and interest; and,
5. **Advocacy and Lobbying** in support of First Nations - led projects.

Having multiple participants at the core of the Indigenous Economic Development Partnership Model allows for clear expectations around anticipated inputs and outcomes within the context of each economic development opportunity and each First Nation's social/cultural, environmental and economic context.

It is important to reflect on the identified inputs from potential partners within the context of the underpinning principles detailed earlier in this report. Fundamentally, this model expresses a need for partnerships to be at the core of identifying initiatives in support of economic reconciliation. It is within that context that the CRD can then determine its appropriate role in supporting inputs. Capacity development is a critical area where the CRD can, and should, look to meaningfully support economic reconciliation. Generally speaking, capacity development contains two key components. First, the CRD can establish an approach to systematically working to reduce unintended barriers to First Nations recruitment and retention though examining its own processes through the lenses of equity, diversity, and inclusion. It is understood there is an ongoing process to begin this important work, but the specific context surrounding Indigenous employment and capacity should be explored.

Service and/or opportunity demand is another area where the CRD can play an important role as a partner in advancing economic reconciliation. The CRD provides critical regional, sub-regional and local services to more than 418,000 residents across the capital region. This presents an opportunity for the CRD to examine its existing approaches and identify where it can engage First Nations through its procurement process, or by working to understand where it could indicate a commitment of a certain volume of service demand in those areas that align it First Nations' interests and/or capacity.

The final area where the CRD can provide critical input into a potential economic reconciliation partnership is related to advocacy and lobbying. The CRD has an

advocacy strategy designed to support the organization in clearly committing its priorities, and using its collective voice to leverage change where and when needed to support the advancement of the approved 2019-2022 Board Priorities. As First Nations Reconciliation has been identified as a Board Priority, there is considerable space to engage external stakeholders though any combination of primary, secondary, or operational level advocacy that supports First Nations in working with the CRD and others to advance their economic interests.

The next section of the model includes the following key components that are outlined so as to support greater focus in taking a CRD-wide and an action-oriented approach:

1. The CRD's Statement of Reconciliation simultaneously informs and guides activities related to inclusive governance and project processes, as well as the development and interpretation of specific initiatives detailed within the CRD's Corporate Plan;
2. Governance structures and project processes provide opportunities for more inclusive discussions regarding areas of opportunity, and further refinement of partner inputs and expectations; and,
3. The CRD's Corporate Plan identifies services and strategies to support the organization's four year vision. The document serves as a road map to enable staff to align work with the corporate vision of achieving exemplary environmental stewardship, a dynamic and vibrant economy, and an inclusive, caring society.

The core elements of the Indigenous Economic Development Partnership Model, based on input from First Nations and the intersection of these interests and CRD services, include:

- Parks and Environmental Services;
- Planning and Protective Services;
- Finance and Technology Services;
- Integrated Water Services; and,
- Corporate-wide initiatives that, in addition to supporting the services identified above, advance specific projects and activities.

Having the appropriate policies in place, along with an implementation strategy that identifies the necessary tools, is essential to supporting the CRD in working to realize opportunities for partnership in support of Indigenous economic development. These must work in conjunction with the divisional Service Plans and the related Initiative Business Cases that will map out annual allocation of resources on projects/activities, and the relationship to the CRD's Corporate Plan.

Actions and outcomes are established based on the contents of the Service Plans and the available policy and tools, and are informed on the consideration of the three underpinning principles: appropriate role of the CRD, flexibility in approach, and action-orientation. This component of the model reinforces the importance of this work taking place in a way that acknowledges the interconnectedness of the social/cultural, environmental, and economic characteristics of each First Nation and the interplay of those characteristics with various CRD services, activities, and initiatives.

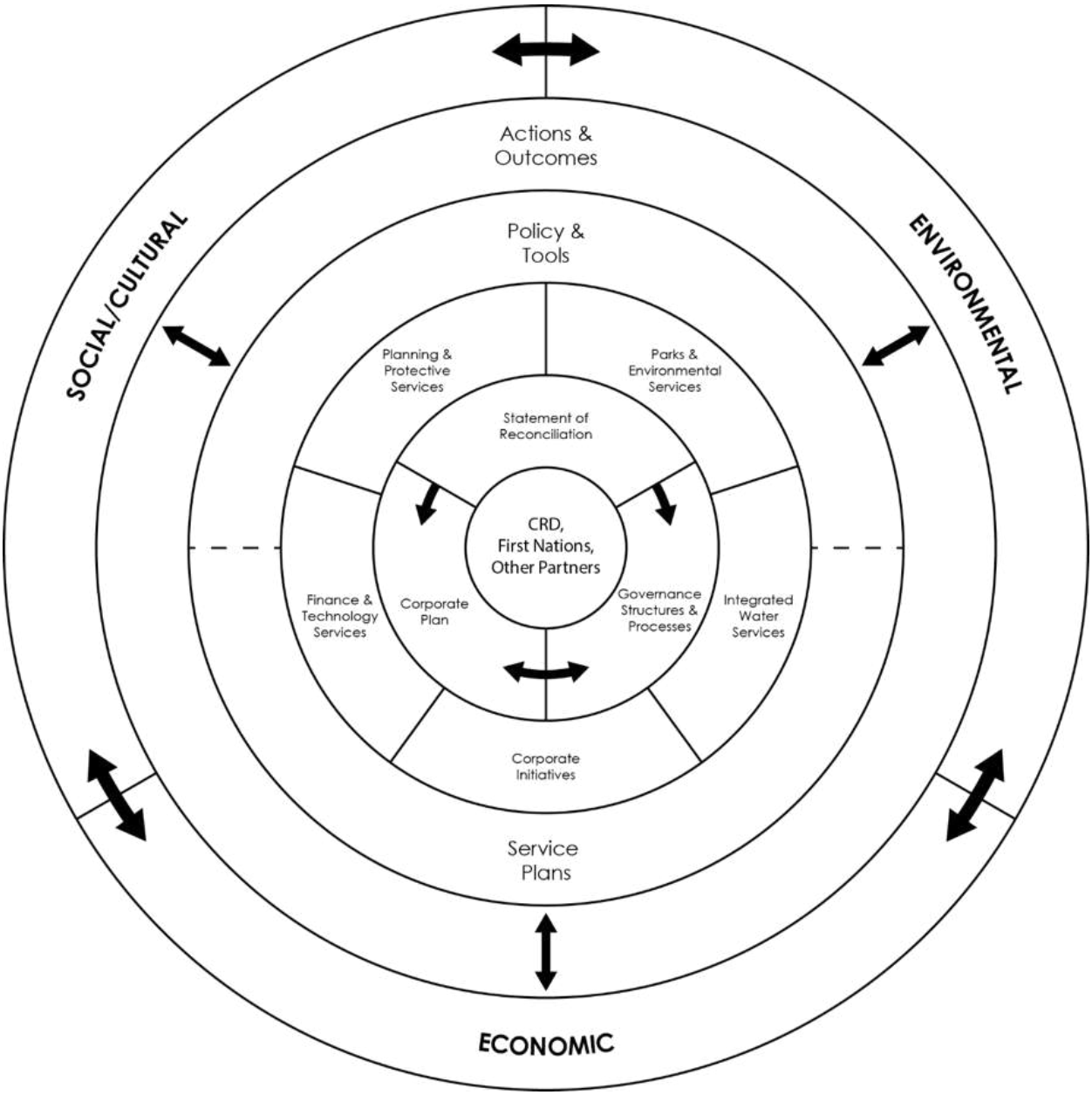


Figure 3 – Indigenous Economic Development Partnership Model

In a practical sense, the development of this model has supported the identification of both priorities for action within the corporate CRD context, as well as a range of short, medium, and long-term actions intended to support enhanced advancement in working to support the economic interests of First Nations.

The model itself, places CRD, First Nations, and other potential partners at the core, and then maps out how specific areas of opportunity can be explored, and actions identified that consider the uniqueness of each Nation and of each opportunity.

It is important to note that this model sets out a series of actions that seek to establish additional CRD capacity to support First Nations' economic interests, while simultaneously creating the flexibility to explore emerging opportunities as they come forward. Building CRD capacity while also allowing for exploration and adaptation moving forward, will be critical in the effective implementation of this model in the years to come.

8.0 Planning Priorities within The CRD's Management/ Operation/Governance Structure and Approach

The following actions and their corresponding timeline targets begin to set the CRD on a path towards meaningful economic reconciliation with First Nations. One of the important pieces to consider as the CRD looks to begin implementing the Indigenous Economic Development Partnership Model is that this work will require a multi-pronged and corporate-wide approach. In other words, many of the identified actions are interconnected, and successful implementation will require the identified suite of actions forward in an incremental way.

Goal 1:	**Increased opportunities for First Nations employment across CRD**			
	Objective 1a:	**Increase opportunities for Indigenous employment**		
		Action 1a(1):	Partner on supporting mentorship/shadow short-term employment opportunities	2020
		Action 1a(2):	Engage in Indigenous Internship Program	2021
		Action 1a(3):	Develop a CRD Indigenous Employment Strategy that is complementary to the Diversity and Inclusion Framework to specifically increase the participation of Indigenous Peoples	2022
		Action 1a(4):	Adopt Indigenous Employment Target(s) based on Indigenous Employment Strategy	2022
	Objective 1b:	**Support a more inclusive employment environment**		
		Action 1b(1):	Develop and implement a Cultural Confidence Program for all CRD Staff	2021
		Action 1b(2):	Explore opportunities for tailored training for those CRD staff in management roles	2022

Goal 2:	**Support First Nations in having a better awareness of CRD opportunities and activities**			
	Objective 2a	**Streamline communications to First Nations**		
		Action 2a(1):	Develop First Nations Communications Plan	2020
		Action 2a(2):	Prepare enhanced communication materials tailored to First Nations interests	2021
		Action 2a(3):	Build First Nations Economic Opportunity portal to highlight CRD procurements	2021
	Objective 2b	**Establish more robust communication channels with First Nations**		
		Action 1b(1):	Engage First Nations to identify interest in developing a Community Engagement Hub	2023
Goal 3:	**Work towards greater inclusivity of First Nations in CRD governance and decision-making**			
	Objective 3a:	**Increase engagement of First Nations in CRD decision-making**		
		Action 3a(1):	Allow for First Nations representation at the CRD Board, CRD Board Committees and Commissions	2020
		Action 3a(2):	Identify opportunities to support First Nation's staff capacity to receive referrals and support leadership in participating at CRD tables	2021
	Objective 3b:	**Work more collaboratively with First Nations**		
		Action 3b(1):	Establish a joint annual Economic Development planning process	2022
Goal 4:	**Support greater equity for First Nations in participating in and accessing services and resources across the region**			
	Objective 4a:	**Establish updated Service Agreements with First Nations for water and wastewater**		
		Action 4a(1):	Identify inequity in First Nations access to water at a wholesale rate	2020
		Action 4a(2):	Engage municipal partners, where needed, to review the feasibility of providing water to First Nations through the Regional Water Supply Service or at a rate equivalent to that service's wholesale rate.	2021
		Action 4a(3):	Engage Nations and prioritize efforts to enter into service agreements for water and/or wastewater	2022
	Objective 4b:	**Increase proportion of economic opportunities that go to First Nations**		
		Action 4b(1):	Amend CRD Procurement Policy to include Social Procurement Values	2021
		Action 4b(2):	Develop First Nations Skills Index and Service Database	2022
	Objective 4c:	**Increase First Nation's role in stewardship of land and water**		
		Action 4c(1):	Establish Cultural Interpretation Program	2022
		Action 4c(2):	Work with First Nations to identify interest in and support for establishing a CRD-wide Guardian Program	2023
	Objective 4d:	**Express support and/or endorsement of First Nations-led initiatives and activities**		
		Action 4d(1):	Develop a First Nations Initiative Endorsement Policy	2021
	Objective 4e:	**Establish partnership focused on land and/or water transportation**		

		Action 4e(1):	Undertake assessment of partnership potential for supporting an interisland transportation operation	2023
		Action 4e(2):	Undertake assessment for partnership potential for on-demand bussing service with First Nations	2024

9.0 Conclusion

This is a time of economic reconciliation. As the CRD goes through an exercise of locating its leadership in the economic reconciliation process, new opportunities are emerging that support the development of the structures, processes, and outcomes to substantiate First Nation economic outcomes.

The intention of this report is to lay the foundation for the CRD to move forward on the development of a structure and process to move the Indigenous economic reconciliation relationship forward with constructive, progressive actions. Determining the strength of actions for Indigenous inclusion within the CRD will require addressing the existing current structure and processes, understanding the need for engagement, and strategic design to ensure the targeted economic outcomes are achieved. Another important purpose is to help the CRD planning process to focus on economic priorities.

Furthermore, identifying the strategic pivot towards economic inclusion within the current practices and programs allows the space for new actions/processes as foundational to this model.

Appendix A- Resources

The following are important resources in consideration in the further development of a CRD First Nation Economic Model

- CRD Statement of Reconciliation: https://www.crd.bc.ca/about/what-is-crd/statement-of-reconciliation
- Special Task Force on First Nations Relations Final Report: https://www.crd.bc.ca/docs/default-source/crd-document-library/plans-reports/first-Nations/stf-finalreport2018.pdf?sfvrsn=dd11f0ca_6
- Bill 41: https://www.leg.bc.ca/parliamentary-business/legislation-debates-proceedings/41st-parliament/4th-session/bills/first-reading/gov41-1
- New BC Treaty Policy: https://www2.gov.bc.ca/assets/gov/british-columbians-our-governments/indigenous-people/aboriginal-Peoples-documents/recognition_and_reconciliation_of_rights_policy_for_treaty_negotiations_in_bc_aug_28_002.pdf

Appendix B- Project Process

This project builds upon the work of the Capital Regional District's (CRD) Special Task Force on First Nations Relations which was established to recommend more inclusive models of governance and decision-making between the CRD and First Nations governments. The work of the Task Force's term was extended to 2018 with a broadened mandate to explore ways the CRD can engage in reconciliation. The Task Force recommended that the Board direct staff to undertake a feasibility study for an Indigenous Economic Development Partnership Model to be considered by the incoming Board.

This project set out to engage the nine First Nations within the capital region with populated reserve lands to consider feasibility options and strategies for economic reconciliation and inclusion.

This specific project scope includes the following deliverables:

1. Establish an initial scan of current regional, sub-regional, and local-level CRD services and identify specific areas of opportunity.
2. Meeting with Nations within the CRD to assess opportunities and identify feasibility for the development of an Indigenous Economic Development Partnership Model
3. Undertake an initial feasibility for the development of an Indigenous Economic Development Partnership Model.
4. Conduct analysis to develop initial recommendations to establish an environment of economic reconciliation to reduce barriers and challenges that support a corporate environment more open to Indigenous inclusion.
5. Provide a written report with findings and recommendations that includes concrete actions and approaches in supporting reconciliation through economic development

The project team was able to meet with eight out of the nine Nations and listened to the current barriers around economic development, current relationship with the CRD, and the potential for actions for First Nation economic inclusion within the existing management/governance practices.

Appendix C Economic Reconciliation

Economic reconciliation aims to create meaningful partnerships and mutually beneficial opportunities based on a holistic, values-driven approach to attaining community economic prosperity. This shared prosperity approach draws on the values of the community to inform the structures, processes, and environments to stimulate action towards community resilience.

Traditional economic development tends to emphasize individual material wealth, often at the expense of community relationships or the health of the physical environment. This contradicts notions of oneness as expressed by Indigenous Peoples through the concept of 'Namwayut – We Are All One.

As a community-led and community defined process, economic reconciliation in any particular community will reflect the values of that community. Reconciliation Canada is piloting a process in which it serves as a facilitator, partnering with communities to coordinate various threads supporting economic reconciliation.

What is Economic Reconciliation?

Economic reconciliation is for all Peoples in Canada. It seeks to engage an entire community in an inclusive process of developing shared understanding and agreed-upon values. All people have an opportunity to learn from each other.

Economic reconciliation stimulates concrete action. Although the specific goals and outcomes will be unique to each community, economic reconciliation aims for concrete actions such as creating businesses, modifying the built environment, and strengthening institutional capacity to enhance shared prosperity. It is not merely a theoretical exercise.

Economic reconciliation builds upon local heritage and positions communities within broader contexts. The benefits of economic trade at regional and international levels are widely recognized. Economic reconciliation builds on local strengths to forge strong paths within a larger community.

Economic reconciliation employs a holistic view of prosperity. Material prosperity is an important dimension of prosperity. However, material wealth, including how it is generated and spent, is placed within the context of community wellbeing and values.

Structure and Process

Engage in dialogue to revitalize relationships, increase understanding of shared histories, and explore the meaning of reconciliation.

In the first step, a Reconciliation Dialogue Workshop, participants engage within their community to gain a deeper understanding of personal stories and shared histories. This allows participants to build resilient and mutually beneficial relationships, explore shared pathways to reconciliation, and to develop reconciliation action plans.

Develop plans in line with community values.

Participants deeply reflect on their values, consider their practical implications, and take steps to implement change. Plans and progress harmonize with local values such that they meaningfully and holistically contribute to community wellbeing.

Strengthen local institutions and develop entrepreneurial capacity.

By expanding the capacity of local institutions to function effectively, and the ability of individuals to identify opportunities, design and execute business plans, communities are better able to mobilize their energies towards desired, effective ends.

Maintain ongoing reflection of plans and progress.

Ongoing reflection on plans and progress allows the community to reinforce inclusive participation from many community members in order to forge a New Way Forward.

Outcomes

Economic reconciliation is a form of reconciliation in action. It encourages material prosperity within the context of a holistic approach that is consistent with the notion of 'Namwayut – We Are All One." The work of reconciliation is multifaceted and ultimately influences every aspect of life. Economic reconciliation works towards building opportunities for all Peoples to achieve their full potential and shared prosperity.

Source: https://reconciliationcanada.ca/programs-initiatives/economic-reconciliation/

Making a difference...together

REPORT TO REGIONAL HOUSING TRUST FUND COMMISSION
MEETING OF FRIDAY, SEPTEMBER 25, 2020

SUBJECT **Michigan Redevelopment Project**

ISSUE SUMMARY

A recommendation to the Capital Regional District (CRD) Board is needed in response to an application from the Regional Housing First Program (RHFP) Partnership for a $570,000 grant from the Regional Housing Trust Fund (RHTF) to support 38 units of affordable rental housing within a proposed development at 330 Michigan Street, located in the City of Victoria.

BACKGROUND

On February 26, 2019, the RHTF Commission approved the following resolution:

> *That the Regional Housing Trust Fund Commission suspend the receipt of Letters of Intent for non-RHFP projects until allocations for all qualified Regional Housing First Program (RHFP) projects have been approved by the Commission.*

In December 2015, the CRD approved a resolution supporting the borrowing of up to $30 million (M) to establish the RHFP to meet the needs of chronically homeless individuals. The Vancouver Island Health Authority (Island Health) has agreed to provide health supports to tenants as required. In 2020, the CRD, through an Alternative Approval Process, approved an additional $10M in funding for the program.

Since that time, the CRD has partnered with BC Housing Management Commission and Canada Mortgage and Housing Corporation to obtain matching grants of $40M each to create a capital pool totaling $120M, to build 400 units of housing to be rented at the provincial income assistance shelter rate ($375/month) to address the needs of people experiencing chronic homelessness in the region. Under the mixed-market model, the combined $120M could leverage up to 2,000 units of housing, with a value of up to $600M.

Project Description

Michigan Square is a 62 unit affordable housing development located on 5,074 square metres of land in James Bay, Victoria. The land is currently owned by the Capital Region Housing Corporation (CRHC). The redevelopment will construct 97 new affordable units within two 4-storey apartment buildings (53 units and 44 units), reuse the existing parkade structure and retain an existing townhouse complex with nine units. The project is anticipated to begin construction in March 2021 with occupancy in spring 2023. This application focuses on only the 53 unit building, which will be funded through the RHFP.

The project will include 15 units at provincial income assistance rates under the RHFP. The remaining 38 units within the building are the focus of the $570,000 grant request through the RHTF. The breakdown of affordability levels within the building are as follows: 28% Shelter Rate, 23% Affordable and 49% Near-Market. The 38 affordable and near market units are considered affordable within the RHTF Guidelines as well as BC Housing definitions[1]. All units meet the

[1] Low and Moderate Income Limits https://www.bchousing.org/glossary#L

definition of affordable under the RHFP Definitive Agreement. Table 1 provides a more detailed summary of the project unit structure.

Table 1 – 53 Unit Michigan Square Building: Unit Summary

Unit Type	Number	Rental Criteria	Rent Level	Income Level
RHFP Units				
Studios	3	Shelter Rate	$375	Provincial Income Assistance Shelter Rate
One Bedroom	12	Shelter Rate	$375	Provincial Income Assistance Shelter Rate
Sub Total (RHFP)	**15**			
Affordable Rental (For RHTF Grant Approval)				
One Bedroom	8	Affordable	$1,250	$30,500 - $51,905
Two Bedrooms	4	Affordable	$1,800	$50,500 - $79,128
Two Bedrooms	20	Near Market	$2,000	$56,000 - $113,040
Three Bedrooms	6	Near Market	$2,480	$56,000 - $113,040
Sub Total (RHTF)	**38**			
TOTAL	**53**			

Evaluation Comments
The RHTF Application was reviewed by the RHTF Advisory Committee on July 15, 2020 and received a favourable score of 214 out of a possible 235 points. The RHTF Advisory Committee recommends the RHFP Partnership receive a grant of $570,000 to support the Michigan Square Redevelopment project.

ALTERNATIVES

Alternative 1
The Regional Housing Trust Fund (RHTF) Commission recommends to the Capital Regional District Board:
That a grant in the amount of $570,000 to the Capital Region Housing Corporation be approved to support the development of 38 units of affordable rental housing at 330 Michigan Street, Victoria, subject to meeting the terms of the RHTF Grant Funding agreement.

Alternative 2
That the Regional Housing Trust Fund Commission provide Capital Regional District staff with alternative direction.

IMPLICATIONS

Financial Implications
The status report of the RHTF service provided in Table 2 demonstrates that the fund has the capacity to fulfill this request. If all three of the applications presented to the Commission in 2020 are approved, the fund balance will be approximately $767,000 to support future projects.

Table 2 – RHTF Service Financial Status

Current RHTF Status	**Amount**
Current RHTF Service Surplus	$3,100,000
2020 Requisition	$1,000,000
Sub Total	$4,100,000
Committed to Other Projects	
Croftonbrook	($408,000)
Cedar Grove	($600,000)
West Park Lane	($660,000)
Sub Total	($1,668,000)
Total Available in 2020 for New Projects	$2,432,000
Projects Proposed for 2020	
Michigan Square Redevelopment	($570,000)
Charters	($330,000)
Drennan & Sooke	($765,000)
Total Remaining in RHTF	**$767,000**

Social Implications
This project will provide 15 units of independent housing to help address the needs of people experiencing chronic homelessness in the region. Providing a grant to support the development of the 38 affordable rental units will help address the needs of low and moderate income populations as defined by the RHFP Definitive Agreement, many of whom continue to experience substantial hardship within the current rental market. Despite the impact of the COVID-19 pandemic, there is evidence that the rental market continues to experience low vacancy rates, with the lowest cost rental units showing the lowest vacancy rates.

Service Delivery Implications
Management and operation of these additional units of housing will be the responsibility of the CRHC and increases in service delivery demands are being facilitated through the CRD's usual corporate and budget planning processes.

CONCLUSION

The RHTF Commission has limited Letters of Intent and applications for grants to RHFP projects. The CRHC, through the redevelopment of Michigan Square, is providing an opportunity to expand its existing affordable housing stock and include units at provincial assistance shelter rates to address chronic homelessness. The mixed-market approach outlined in the application aligns with the RHFP model. The proponent's experience and long history in the development and operation of affordable housing makes this an appropriate project to be funded.

RECOMMENDATION

That the Regional Housing Trust Fund (RHTF) Commission recommends to the Capital Regional District Board:
That a grant in the amount of $570,000 to the Capital Region Housing Corporation be approved to support the development of 38 units of affordable rental housing at 330 Michigan Street, Victoria, subject to meeting the terms of the RHTF Grant Funding Agreement.

Submitted by:	John Reilly, MSW, RSW, Manager Housing Planning, Policy and Programs
Concurrence:	Kevin Lorette, P. Eng., MBA, General Manager, Planning & Protective Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT(S)

Appendix A: Michigan Square Application for Funding
Appendix B: Regional Housing Trust Fund Program Policy Guidelines

Michigan Square

330 Michigan Street, Victoria, BC

Regional Housing Trust Fund Application



JULY 7, 2020

CRHC
The Capital Region's Housing Corporation

Submitted by:

Christine Culham, Senior Manager, Regional Housing, Capital Regional District

John Reilly, Manager, Housing Planning Policy & Programs, Capital Regional District

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APPENDICIES

Appendix A: Certificate of Incorporation

Appendix B: Organization Structure

Appendix C: Site Plan and Design

Appendix D: Detailed Capital and Operating Budget - Proforma

Appendix E: Regional Housing First Program (RHFP) Framework

Appendix F: RHFP Partnering Agreement

Appendix G: Auditor's Letter of Opinion

Capital Regional Housing Trust Fund
Application for Funding

Sponsor Information:

Name of Society:	Capital Region Housing Corporation
Mailing Address:	631 Fisgard St. Victoria BC, V8W 1R7
Telephone:	250-381-6422
Date of Incorporation:	December 10, 1982
CRA Charity Number:	100799642RT001



Contact Information:

Project Manager:	Paul Kitson
Title:	Manager, Planning & Development Capital Region Housing Corporation
Telephone:	250-360-3364
Email:	pkitson@crd.bc.ca

Proposal Summary:

In partnership with the Regional Housing First Program, Capital Region Housing Corporation is in the process of obtaining municipal approvals to re-develop Michigan Square, a mixed-income affordable rental community with 97 new housing units within two new four-storey residential buildings. Only one of the new buildings, containing 53 units, is requesting consideration for RHFP funding.

This project aims to create a range of affordable and appropriate housing options that meet the needs of individuals who are experiencing chronic homelessness, with a priority for housing indigenous, youth, women fleeing violence, seniors, adults with disabilities, working individuals and families with low to moderate incomes within the Capital Region.

The Capital Region Housing Corporation is here-by requesting a contribution of $570,000 from the Regional Housing Trust Fund which includes $15,000/door for the creation of 38 affordable units in The City of Victoria.

Provided below is a breakdown of the unit types and rent levels anticipated within the entire 53 unit building.

Unit Type	Number	Rental Criteria	Rent Level
Studio	3	Shelter rate	$375
One bedroom	12	Shelter rate	$375
One bedroom	8	Affordable	$1,250
Two bedroom	4	Affordable	$1,800
Two bedroom	20	Near Market	$2,000
Three bedroom	6	Near Market	$2,480
TOTAL UNITS:	**53**		

Development Team:

The project team will be led by Paul Kitson, Manager of Planning & Development, Capital Region Housing Corporation. The design-tender project will include the following individuals:

Architect: Rob Whetter, AICP, LEED
dHK Architects

Landscape Architect: Bev Windjack, MBCSLA, AALA CSLA,ASLA, LEED, PSCertER
LADR Landscape Architects Inc.

Construction management will be undertaken by CRHC, with an anticipated target occupancy date of Spring 2023.

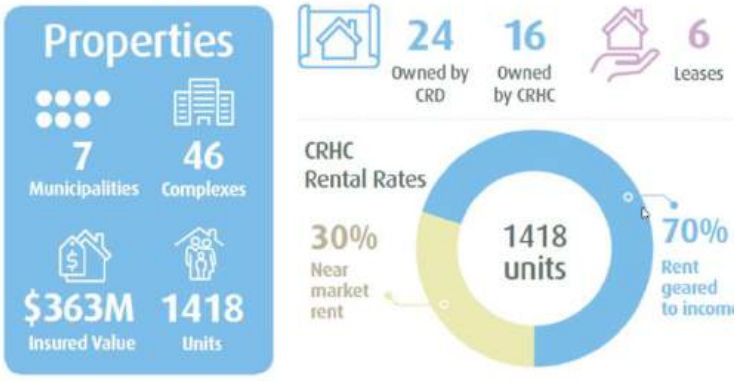
Society Capacity

Capital Region Housing Corporation (CRHC)

The CRHC is a wholly owned subsidiary of the Capital Regional District (CRD). The Corporation includes a team of 46 staff and is governed by a Board of Directors comprising of directors from the Capital Regional District Board. CRHC's Board is committed to improving and expanding housing opportunities in the years to come.

The CRHC has been adding to its current housing stock and also prioritizing which properties will be renewed and which ones could be redeveloped. The CRHC owns 47 properties across 7 municipalities with over 1500 units.

As the largest social housing provider in the capital region, the CRHC delivers affordable, attractive, inclusive, sustainable housing. The CRHC provides low and moderate income families with safe, suitable homes that remain affordable as their lives and families change and grow. The CRHC also provides affordable housing for low-income seniors and people living on government disability pensions.



The CRHC values honesty, integrity, reliability and openness. The CRHC works collaboratively with stakeholders, community partners and tenants to build safe, vibrant and accessible communities where tenants can feel a sense of pride and belonging.

Partnerships

The CRHC has a long history of partnering with organizations where CRHC provides housing and the partnering organizations provides supports. Through these partnerships, the CRHC developed the "Supports in Social Housing (SSH)" program. CRHC holds these agreements with Island Health, Community Living, Pacifica Housing, The Cridge Centre for the Family, Our Place, and the Aboriginal Coalition to End Homelessness.

The Regional Housing First Program units' tenants are chosen through the Coordinated Access and Assessment (CAA) process. The CAA is a partnerships between BC Housing, Island Health and CRD in collaboration with non-profit housing providers.

SSH agreements will be established with Support Providers for the tenants that are placed into Michigan Square through the CAA process.

Current & Ongoing CRHC Affordable Housing Projects

Westview – 73 Units (2020)



Hockley – 120 Units (2020)



Caledonia - 154 Units (2023)



Spencer – 130 Units (2020)



West Park – 152 Units (2021)



Michigan Square - 97 Units (2023)



CRHC Organizational Structure

The CRHC Senior Staff and CRHC Board of Directors are responsible for the implementation of successful projects. There are 24 board members on the CRD and CRHC boards, including representation from each municipality within the capital region. Appendix B outlines those individuals, their roles and relevant years of experience.

Responding to the current housing affordability crisis is one of the most significant challenges facing the capital region today. As the sector has worked to respond to existing and emerging housing needs, the CRD has been an important partner through the programs and services offered by the CRHC, the Regional Housing First Program and the Housing Planning and Programs division.

The capital region is experiencing a rental availability and affordability crisis. A vacancy rate of 1.0% has created upward pressure on rents resulting in fewer housing choices for low to moderate income households and increasingly worsening affordability at all income levels. Even with the strong rental housing starts across the capital region in recent years, the creation of new purpose-built rental housing stock is extremely vulnerable to external market forces including changes in interest rates and other factors such as Covid-19.

There is growing demand for affordable rental units within the region as income levels do not keep pace with rental rates. Many chronically homeless people are employed, but do not earn a Living Wage to afford the high costs of rent within the region. A Point in Time Count on March 15 2018 identified 1,525 individuals experiencing homelessness, which has increased by 10.6% since the 2016 count was last undertaken. Of those respondents, nearly 56% were chronically homeless, 32% were currently employed and 68% identified the cost of rent as a barrier to accessing housing.

Figure 1: Rental Targets and Demand Estimate by Income Range 2016-2038

Income Range	Threshold (% of Area Median Income)	Annual Income	Affordable Monthly Rental Target	2016 Income Distribution	Rental Unit Demand (Estimate to 2038)
Very low	< 30%	Less than $20,000	Less than $500	11%	4,564
Low	30% to 50%	$20,000 to $35,000	$500 to $875	13%	5,124
Low to Moderate	50% to 80%	$35,000 to $55,000	$875 to $1,375	15%	7,419
Moderate and above	Above 80%	Over $55,000	More than $1,375	61%	17,060
Total Estimated Rental Demand				**100%**	**34,167**

Source: Calculated based on the 2015 Median Household Income for the capital region reported by Statistics Canada in the 2016 Census

Geographic Area

Michigan Square is a 60 unit affordable housing complex located at 330 Michigan Street and 333 Superior Street in the James Bay neighbourhood of Victoria, BC. The lands are currently owned by the Capital Region Housing Corporation (CRHC) and contain four buildings that have experienced severe water damage and require extensive renovation or replacement.

Figure 1: Michigan Square Existing Site Plan

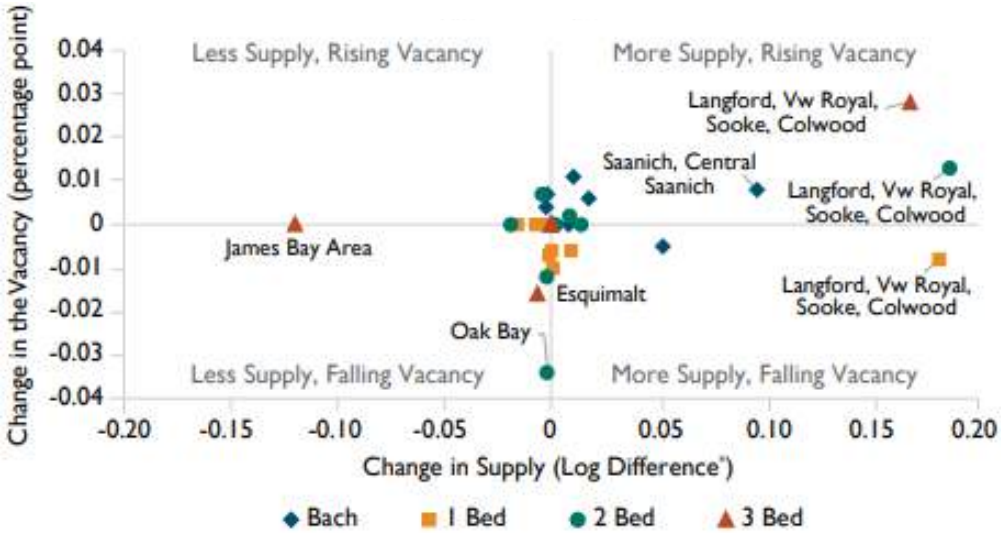


The lands are within close-proximity to transit and a wide variety of amenities and the *'James Bay Large Urban Village'* on Menzies Street. The City of Victoria's Official Community Plan identifies a Growth Management plan to strategically locate forty percent of population growth and intensification within Town Centres and Villages, and within close walking distance.

The James Bay Neighbourhood Plan identifies an objective to create appropriate affordable housing to meet the needs of a rich diversity of residents. The proposed redevelopment will house residents with a variety of income levels, ages and family types. Within the current 53 units identified for redevelopment, 41 of those are occupied and will require interim tenant relocation.

James Bay is ideally suited for affordable housing redevelopment, which on average has a higher cost of average rent and lower supply of rental units than elsewhere in the Region.

Figure 2: Change in Vacancy & Supply in Metro Victoria



Housing Concept



Michigan Square is a proposed affordable housing redevelopment that will see the construction of 97 new units to create a sustainable mixed-market community. There are two new four-storey buildings envisioned atop an existing parkade structure. One of the buildings has received provisional approval through the Regional Housing First Program (RHFP), whereby 15 new units will be rented at the shelter rate of $375/month to those experiencing chronic homelessness who can live independently without supports. Additionally, 12 units will be offered at affordable rents to those earning low to moderate incomes, and 26 units will be offered at near market rents for those with moderate to high incomes. This project will bring a total of 53 new affordable units to the City of Victoria, including 7 new accessible units for those tenants with disabilities. Please see Appendix C for site plans and design.

In addition to retaining 9 stacked townhouse units, the 4-storey apartments will feature a variety of unit sizes, a universal design for ease of mobility, in-suite laundry, 70 underground parking stalls, 131 secure bicycle storage and charging stations for electric vehicles. There is an indoor 1400 square foot amenity room with direct access to an outdoor amenity space containing lush landscaping, pathways and rain barrels for water collection and reuse.

Situated within the developed area of James Bay, there are numerous old-growth trees that will be retained to provide shade and a new community garden planned for residents to enjoy. Within the shared central courtyard, there are ample seating areas, benches and a new playground structure.

Building Size and Design

The new buildings will be built to BC Building Code (BCBC 2018) and will be designed to ensure it is at least 10% more energy efficient and have at least 10% less greenhouse gas emissions than similar building built to the same code.

Building size (sq.ft.)	7122 square metres
Building description	Two 4 storey wood frame buildings
Building amenities	Laundry, common area, bicycle storage, electric chargers
Number of units	97 (2 buildings: 53 & 44 units)
Parking	70 underground parkade
Bicycle Parking	142
Total site size	5074.1 square metre (1.25 ac)
Floor space ratio	1.56

Municipal Approvals

The land is zoned R3-2 Multiple Dwelling District, which supports the new building design with the Submission of a Development Permit with Variances for building setbacks and site coverage. The DP received a recommendation to proceed to public hearing at a Committee of the Whole meeting in February 2020; however, the public hearing was delayed due to Covid. The public hearing is currently scheduled to occur on August 6, 2020. Building permits will be required and construction will commence in Spring 2021, with an anticipated completion date of Spring 2023.

Unit mix

This project aims to create a range of affordable and appropriate housing options that meet the needs of individuals experiencing homelessness as well as low to moderate income households within the Capital Region. Tenants for the RHFP units will be chosen from the Coordinated Access and Assessment waitlist system operated by BC Housing, Island Health and the CRD targeting individuals experiencing chronic homelessness. Through the Greater Victoria Coalition to End Homelessness Community Plan, the community has agreed to prioritize Indigenous, Youth and Women Fleeing Violence so as the housing is reflective of the populations in need.

Unit Type	Number	Rental Criteria	Rent Level
Studios	3	Shelter rate	$375
One bedroom	12	Shelter rate	$375
One bedroom	8	Affordable	$1,250
Two bedroom	4	Affordable	$1,800
Two bedroom	20	Near market	$2,000
Three bedroom	6	Near market	$2,480

TOTAL UNITS: 53

Capital Budget

The estimated total project cost for Michigan Square is $38,403,402 and the 53 Unit Building requesting funding through the RHFP has a total project cost of $20,983,302. The average unit cost per unit is $395,911. The below budget provides a high level overview. Please see Appendix D for a detailed capital budge.

Total Project Cost for 53 Units	
Soft Costs	$6,816,918
Hard Costs	$12,156,172
Contingency	$2,010,212
Total Project Costs	**$20,983,302**
Equity Contributions for 53 Units	
CRHD equity	$1,000,000
CRHC Land Equity	$2,976,742
Existing Foundation Value	$546,392
Victoria Housing Reserve Fund (VHRF)	$1,020,00
RHFP Contribution	$4,500,000
Regional Housing Trust Fund	$570,000*
Total Equity Contributions	**$10,613,134**
Financing for 53 Units	
Mortgage serviced by CRHC operations	**$10,370,168**

*Approval pending.

For funding partnership agreement terms please see: Appendix D: Regional Housing First Program - Framework
Appendix E: Partnership Agreement
Appendix F: Definitive Agreement

Mortgage Assumptions

Mortgage takeout financing will be obtained by Capital Region Housing Corporation in May 2023 following receipt of the occupancy permit. BC Housing will make arrangements with National Housing Act approved lenders to obtain low interest rates and favorable terms through a competitive tender and selection process.

Interest Rate	4.25%*
Amortization Period	35yrs
Term	10yrs
Take out date	May 2023
GST	None
Debt Service Ratio	1.10

***Based on BC Housing's lending forecast.** https://www.bchousing.org/partner-services/funding-opportunities-for-housing-partners/community-partnership-initiative

Operating Budget

High Level- Operating Budget

REVENUE	
Rental Income	$932,460
Less 2% residential loss contingency	($18,649)
Total Project Revenue	$913,811
EXPENSES	
Operating Expenses	$262,579
Replacement Reserve contribution	$45,792
Debt Servicing	$551,482
Total Project Expenses	$859,853
NET CASH FLOW	$53,958

CRHC has been operating housing for over 35 years in the capital region. CRHC currently manages over 1,400 units of housing. CRHC has annualized preventative maintenance programs, unit inspections, portfolio wide service contracts and 5 year capital plans for all of its properties. See Appendix D for a detailed Operating Budget.

An Auditor's Statement of Finances can be found in Appendix H.

High Level Schedule

A high-level project schedule has been provided below. Construction is anticipated to commence in Spring 2021, completed within 24 months in Spring 2023 with occupancy occurring in May 2023.

Phase	Timeline	Detailed Activities
Development Phase	August 2020	Development Permit with Variances Approved
	December 2020	Building Permit Application
	January 2020	Final Project Commitment/Financing/Tender
Construction Phase	March 2021	Demolition
	May 2021	Construction commences
Occupancy Phase	January 2023	Tenant Selection
	April 2023	Construction completion
	May 2023	Mortgage Takeout
	May 2023	Full Operation Commences

Sustainability Features

- The building and suites will be built to the specifications of both BC Housing and National Housing strategy standards. The construction will be in compliance with Step 3 of the Energy Step Code.
- A professional mechanical engineer & sustainability specialist will create an energy model to demonstrate that the project achieves a minimum 10% decrease in energy consumption and greenhouse gas (GHG) emissions over the same project designed to the requirements of the 2015 National Energy Code for Buildings (NECB)
- The building footprint does not require damage to the environment or ecosystems. There are existing large healthy trees that will be retained.
- It is an infill project in an underdeveloped site located in a neighborhood within an already densely populated centralized urban location with strong pre-existing infrastructure and walkable amenities that is experiencing an affordable rental housing crisis.
- There is excellent access to public transit and walkable to neighbourhood amenities.
- There will be secure bicycle, scooter parking and electric bicycle charging stations
- There will be charging stations for electric vehicles
- There will be controlled exterior lighting to reduce light pollution for surrounding neighbours.
- The heritage house is intended to be preserved and the parkade will be retained, which limits significant excavation, shoring, concrete and demolition work.
- Landscaping will replace unhealthy or compromised trees and include drought-tolerant, non-invasive, indigenous plant species. A community garden will allow access to fresh, organically grown produce.

Appendix A: Certificate of Incorporation

CANADA
PROVINCE OF BRITISH COLUMBIA

NUMBER
257647

Province of British Columbia
Ministry of Consumer and Corporate Affairs
REGISTRAR OF COMPANIES

COMPANY ACT

Certificate of Incorporation

I HEREBY CERTIFY THAT

CAPITAL REGION HOUSING CORPORATION

HAS THIS DAY BEEN INCORPORATED UNDER THE COMPANY ACT

GIVEN UNDER MY HAND AND SEAL OF OFFICE
AT VICTORIA, BRITISH COLUMBIA,
THIS 10TH DAY OF DECEMBER, 1982

L. G. HUCK
DEPUTY REGISTRAR OF COMPANIES

Appendix B: CRHC Organization Structure

CRHC Senior Staff

Name	Title	Role & Responsibilities	Years of Experience
Robert Lapham	Chief Administrative Officer	Responsible for the overall operations of the CRD and CRHC	35 years
Kevin Lorette	General Manager	Responsible for management of Planning and Protective Services, including the CRHC	25 years
Christine Culham	Senior Manager	Responsible for the management and strategic direction of Regional Housing Service, including the CRHC	20 years
John Reilly	Manager, Regional Housing First Program	Responsible for management of the Regional Housing First Program	25 years
Paul Kitson	Manager, Planning & Development	Responsible for the management of redevelopment and pursuing new development projects and municipal approvals	13 years
Kimberly Lemmon	Senior Project Coordinator, Planning & Development	Responsible for the project management, planning, development & municipal approvals for all CRHC re-development & new development projects	13 years
Sharon Grigg	Manager, Operations	Responsible for the ongoing operations of the CRHC	20 years
Nathaniel Morbey	Financial Analyst	Responsible for the financial administration and planning of the CRHC	10 years
Andy Orr	Senior Manager, Communications	Responsible for the management of CRD communications, including the CRHC	25 years
Stephen Henderson	Manager, Real Estate Services	Responsible for the procurement of CRD and CRHC real estate	15 years

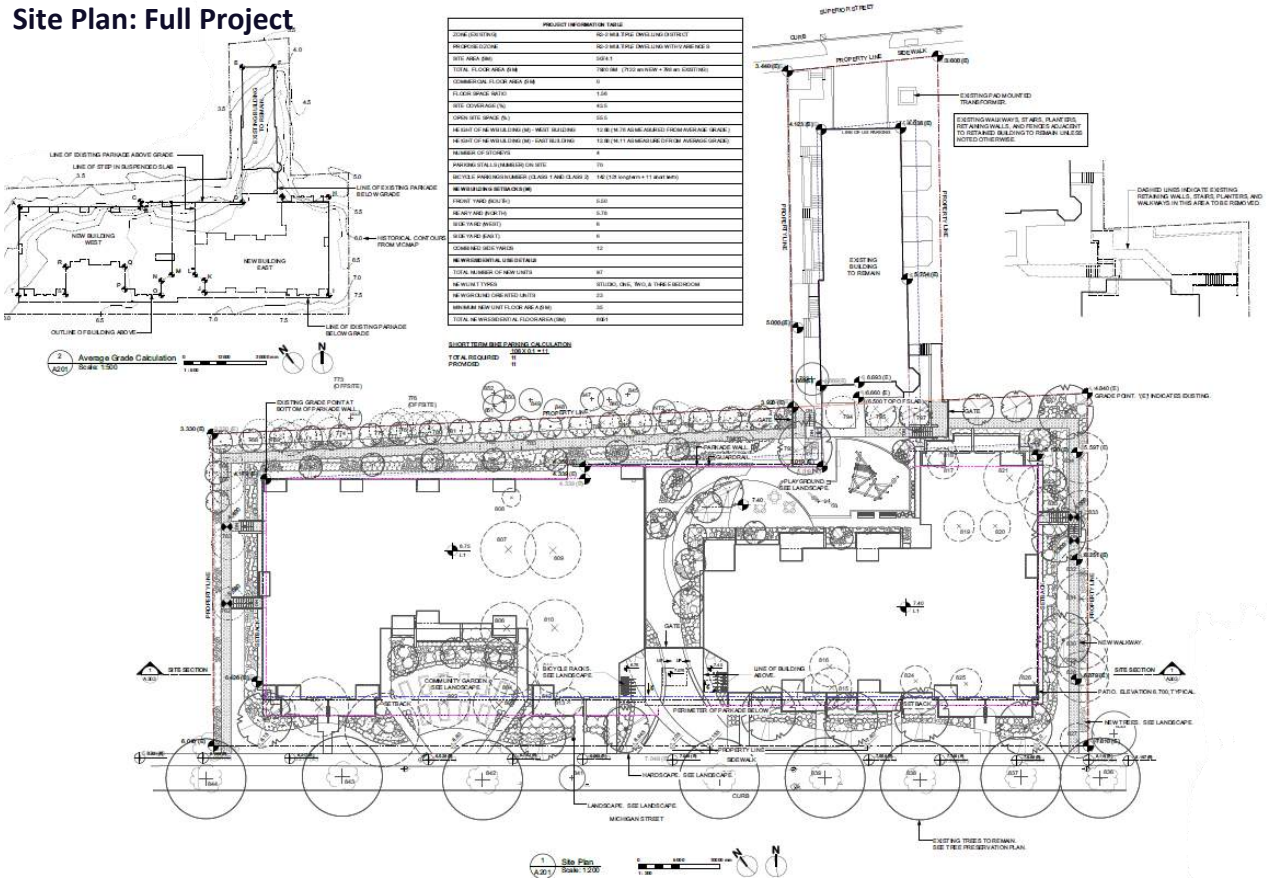
CRD/CRHC Board of Directors

There are 24 members of the CRD Board and CRHC Board. Below are the chairs of each Board of Directors.

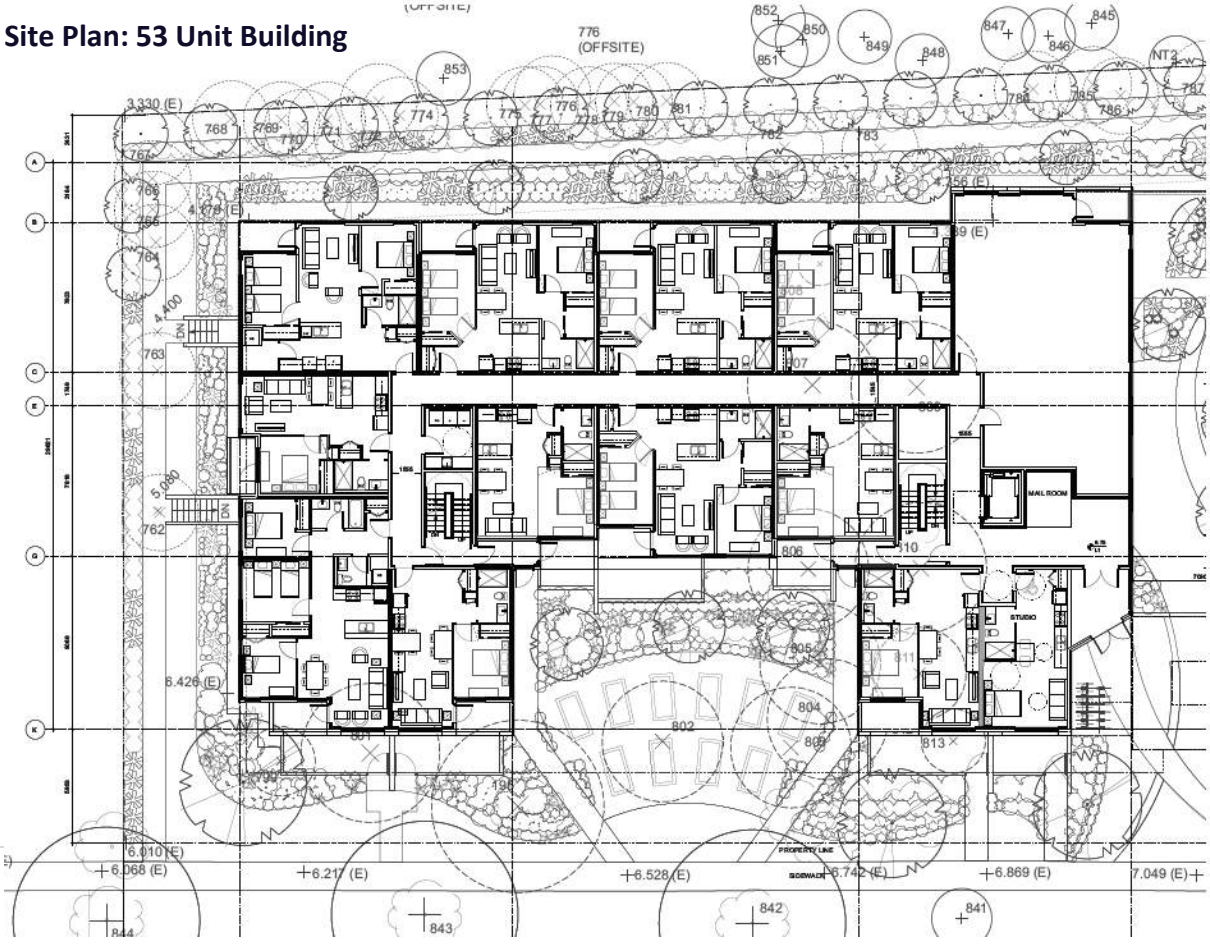
Name	Role	Municipal Representation
Lisa Helps	CRHC Chair	City of Victoria, Mayor
David Screech	CRHC Vice-Chair	Town of View Royal, Mayor
Colin Plant	CRD Chair, CRHD Vice Chair	District of Saanich, Councillor
Denis Blackwell	CRD Vice Chair, CRHD Chair	City of Langford, Councillor

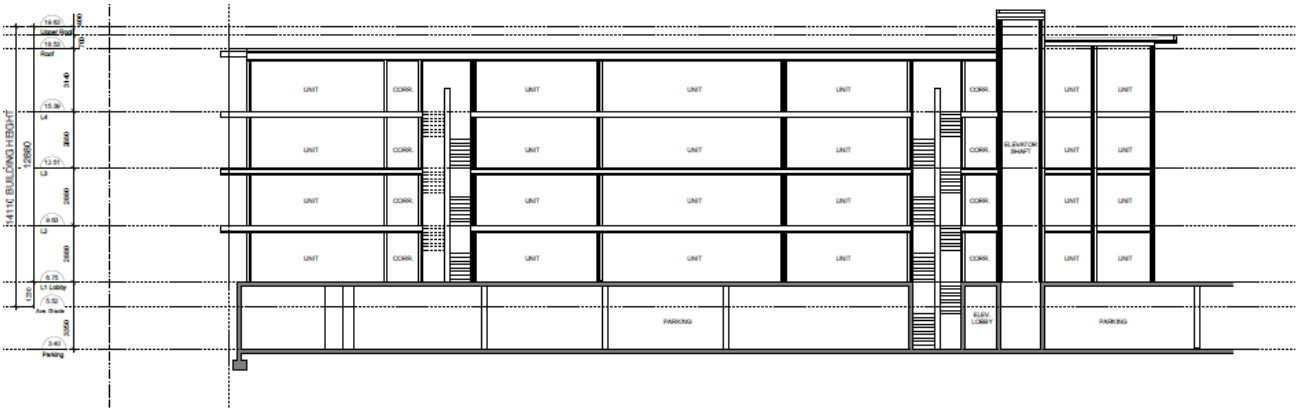
Appendix C: Site Plan and Design

Site Plan: Full Project

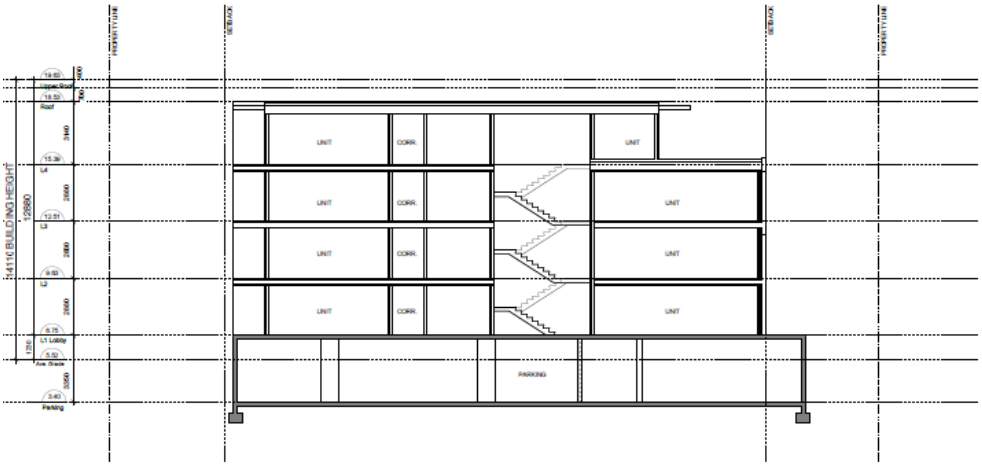


Site Plan: 53 Unit Building





1 A301 Secton 1 - West Building
Scale: 1:100



2 A301 Secton 2 - West Building
Scale: 1:100



1 A401 South Elevation / WestBuilding
Scale: 1:100





Perspective - Birds Eye



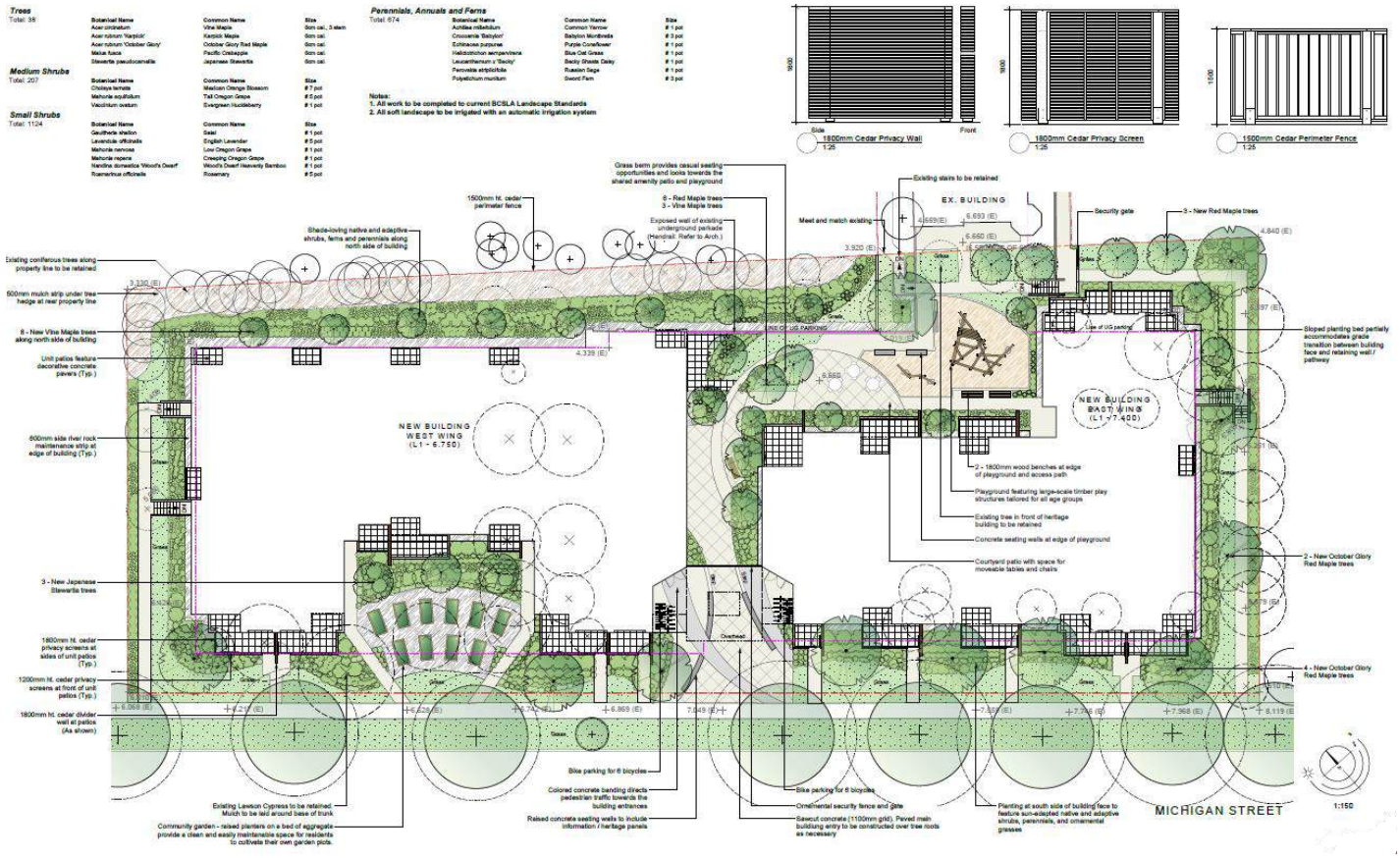
Perspective – Street View



Perspective - Courtyard



Perspective – Street View





1 A-405 South Elevation
Scale: 1:150



2 A-405 North Elevation
Scale: 1:150

Appendix D: Detailed Budget - Proforma

	Units	PUPM	1	2	3	4	5	7	8	9	10
REVENUE											
Studio Unit (Shelter Rate)	3	$375	13,500	13,703	13,908	14,117	14,328	14,761	14,983	15,208	15,436
One Bedroom (Shelter Rate)	12	$375	54,000	54,810	55,632	56,467	57,314	59,046	59,932	60,831	61,743
One Bedroom (Affordable)	8	$1,250	120,000	121,800	123,627	125,481	127,364	131,213	133,181	135,179	137,207
Two Bedroom (Affordable)	4	$1,800	86,400	87,696	89,011	90,347	91,702	94,473	95,891	97,329	98,789
Two Bedroom (Near Market)	20	$2,050	492,000	499,380	506,871	514,474	522,191	537,974	546,044	554,234	562,548
Three Bedroom (Near Market)	6	$2,480	178,560	181,238	183,957	186,716	189,517	195,245	198,174	201,147	204,164
Total Units	53		944,460	958,627	973,006	987,601	1,002,415	1,032,713	1,048,204	1,063,927	1,079,886
Parking			-	-	-	-	-	-	-	-	-
Mortgage Subsidy			-	-	-	-	-	-	-	-	-
			944,460	**958,627**	**973,006**	**987,601**	**1,002,415**	**1,032,713**	**1,048,204**	**1,063,927**	**1,079,886**
MINUS: Vacancy Allowance			(18,889)	(19,173)	(19,460)	(19,752)	(20,048)	(20,654)	(20,964)	(21,279)	(21,598)
Effective Gross Income	-	-	**925,571**	**939,454**	**953,546**	**967,849**	**982,367**	**1,012,059**	**1,027,240**	**1,042,649**	**1,058,288**
EXPENSES											
Administration & Overhead		102.00	64,872	66,494	68,156	69,860	71,607	75,232	77,112	79,040	81,016
Maintenance/Caretaker		90.00	57,240	58,385	59,552	60,744	61,958	64,462	65,751	67,066	68,407
Insurance		60.00	38,160	39,114	40,092	41,094	42,121	44,254	45,360	46,494	47,657
Property Taxes		51.86	32,983	33,808	34,653	35,519	36,407	38,250	39,206	40,187	41,191
Service Contracts		5.00	3,180	3,260	3,341	3,425	3,510	3,688	3,780	3,875	3,971
Building and Grounds Maintenance		35.00	22,260	22,817	23,387	23,972	24,571	25,815	26,460	27,122	27,800
Garbage		9.00	5,724	5,867	6,014	6,164	6,318	6,638	6,804	6,974	7,148
Water		32.00	20,352	20,861	21,382	21,917	22,465	23,602	24,192	24,797	25,417
Hydro, Gas		28.00	17,808	18,253	18,710	19,177	19,657	20,652	21,168	21,697	22,240
MINUS: Gross Operating Costs			**262,579**	**268,857**	**275,287**	**281,871**	**288,614**	**302,592**	**309,834**	**317,251**	**324,847**
NOI Before Replacement Reserve			662,992	670,597	678,259	685,978	693,753	709,467	717,406	725,397	733,441
Reserves for Replacement		72.00	(45,792)	(45,792)	(45,792)	(45,792)	(45,792)	(45,792)	(45,792)	(45,792)	(45,792)
NOI After Replacement Reserve			**617,200**	**624,805**	**632,467**	**640,186**	**647,961**	**663,675**	**671,614**	**679,605**	**687,649**
Bank Loan Principal	$10,370,168										
Total Debt Service	(563,713)		(563,713)	(563,713)	(563,713)	(563,713)	(563,713)	(563,713)	(563,713)	(563,713)	(563,713)
DCR			(1.09)	(1.11)	(1.12)	(1.14)	(1.15)	(1.18)	(1.19)	(1.21)	(1.22)
Net Cash Flow After Debt Service			**53,487**	**61,092**	**68,755**	**76,473**	**84,248**	**99,963**	**107,901**	**115,893**	**123,936**

Appendix E: Regional Housing First Program - Framework

Regional Housing First Program

PROGRAM FRAMEWORK

October 2016

Making a difference...together

BC HOUSING

INTRODUCTION

In May 2016, the Capital Regional District (CRD)/Capital Regional Hospital District (CRHD), the Vancouver Island Health Authority (Island Health), BC Housing, and the Provincial Rental Housing Corporation (PRHC) entered a Partnering Agreement to facilitate the creation of sustainable affordable rental housing in the capital region, with an emphasis on the needs of individuals experiencing homelessness. BC Housing has made available $30 million from the Provincial Investment in Affordable Housing (PIAH) program, matched by $30 million made available by the CRD/CRHD and all three partnering organizations have agreed, through this combined investment, to create the Regional Housing First Program (RHFP). The total $60 million in capital funding will be approved through the Regional Housing First Program.

Through RHFP, BC Housing and CRD will invest $60M to develop and acquire new affordable housing units to be owned by CRD or PRHC and operated by successful project proponents or non-profit partners. In addition, CRD and BC Housing will seek partnership opportunities to further increase the supply of affordable rental housing within the capital region. This will be achieved by leveraging contributions from others along with the Province's capacity to provide construction and mortgage financing at reduced rates.[1]

Projects developed through RHFP must be able to operate without any ongoing operating subsidies from the CRD or BC Housing. Projects will typically apply a mixed-income approach and be situated toward the independent range of housing options, with a portion of units in each project targeted to individuals experiencing homelessness. Priority will be given to projects that include a portion of units that rent at provincial Income Assistance Rates. While support services are not included in these projects, proponents must demonstrate the interest and capacity to accommodate some individuals who require supports that are provided or funded by third parties, such as Island Health or other community partners.

PRINCIPLES

The following principles guide how BC Housing and the CRD implement and administer the program and their relationship with partners and government.

1. **Affordable housing is established in the capital region, including units targeted for individuals experiencing homelessness who may or may not require supports.**
2. **Sustainability**
    a) Developments will be financially sustainable without additional financial assistance from BC Housing or CRD.
    b) BC Housing and CRD consider environmentally sustainable practices a priority and encourages commitments to this end.
3. **Consistency with regional and community priorities and plans**
    a) Community and local/regional government support for the project should be evident.
    b) Projects should be consistent with any Official Community Plans and strategies.
4. **Project partners are expected to maximize their equity contribution to projects**

[1] BC Housing's capability to provide financing to facilitate the development of affordable rental housing for eligible households is enacted through provincial regulation. See: *Ministry of Lands, Parks and Housing Act*, R.S.B.C. 1979, http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/11_490_79: BC Housing Management Commission Regulation

5. **Transparent and accountable operations**

   a) BC Housing and CRD will employ fair and consistent processes when evaluating and selecting projects.

   b) Project partners will maintain reliable and consistent records and fulfill reporting obligations to CRD and BC Housing.

PROGRAM PURPOSE

Goal: To create a range of affordable and appropriate housing options that address the needs of people experiencing homelessness, as well as create affordable and appropriate housing options for low to moderate income households in the capital region.

Objective: Increase the supply and broaden the range of affordable rental housing in the capital region.

Outputs:

1. Equity contributions from BC Housing and CRD for the development and acquisition of PRHC owned or CRD owned units.
2. Interim construction and take-out financing for eligible non-profit partnership projects.
3. Operator/Operating Agreements established with the proponent or non-profit partner managing approved housing projects.
4. New affordable rental units created in the capital region.

Outcomes:

1. More low and moderate income households living in affordable, appropriate housing, including individuals who were previously experiencing homelessness.
2. Affordable housing is operated successfully over the expected life of the developments without operating subsidies or supplemental funding from CRD or BC Housing.

Indicators:

1. Number of new units created or leveraged for eligible households.
2. Number of Operator/Operating Agreements established with non-profit housing partners.

FUNDING

Equity Contributions

BC Housing and CRD administer equity contributions through the purchase of affordable rental housing units to be owned by PRHC or CRD[2]. These units are then operated by the proponent or their non-profit partners. PRHC or CRD owned units may comprise 100% of the project, or be located within a larger project that includes units owned by partners (i.e. strata units).

Project Partner Contributions

Partnerships are encouraged to leverage additional units and further increase the affordability of

[2] PRHC or CRD ownership interest is required for RHFP funds, such as fee simple, a registered long-term leasehold interest in the land and building or other forms of ownership acceptable to BC Housing and CRD. Depending on the project, BC Housing or CRD may elect to directly manage these units.

housing units. Partner contributions may include capital funding, land or other equity contributions. Partners may be non-profit housing providers, government agencies, the private sector or other community organizations.

Financing[3]

BC Housing may provide interim construction financing for the development of affordable housing, including new construction or acquisition and renovation of existing buildings to preserve affordability. Interim financing may be approved up to 100% of the cost to complete the affordable housing project.

BC Housing may also help eligible non-profit housing partners obtain take-out financing for non-profit-owned units. BC Housing will make arrangements with NHA approved lenders to obtain low interest rates and favourable terms through a competitive tender and selection process conducted and approved by BC Housing. All approved BC Housing take-out loans will have Canada Mortgage and Housing Corporation (CMHC) loan insurance.

Depending on the type of project, BC Housing will typically require the following security registered on title where take-out financing is provided:

- Execution and registration of BC Housing's standard mortgage security package, and
- A Section 219 restrictive covenant.

Security considerations will vary from project to project. However, the project partner must have a mortgageable interest in the property.

PROJECT ELIGIBILITY

BC Housing, Island Health, and CRD will consider proposals for funding through an open proposal call for submissions. The evaluation of submissions will be based on proponent and project eligibility, need and demand, lending criteria and available financing.

The following minimum eligibility requirements must be met[4]:

1. The site must be located in the capital region and be suitable for affordable housing.
2. Housing must be for Low and Moderate income households and may include a portion of Income Assistance Rate Units for individuals experiencing homelessness.
3. The project partner must present a clear business case for the project, including a demonstrated ability to maintain the proposed rents over time without any operating subsidies or grants for capital repairs/replacements from either CRD or BC Housing.
4. The non-profit project partner must own and control a mortgageable interest in the property if take-out financing is required.
5. The project partner will demonstrate present and future need and demand for affordable rental housing in the target community. Project partners should refer to the Need and Demand Study Document template for the recommended approach for all units within the project (see https://www.bchousing.org/partner-services/non-profit-training-resources/resources-a-z).
6. The project partner is encouraged to bring equity to the development in the form of cash, grants, municipal reductions, subordinated debt, or unencumbered land.
7. Non-profit project partners must:

[3] Financing is subject to BC Housing's Lending Criteria.

[4] BC Housing and CRD may require additional guarantees or security in certain cases as they deem appropriate.

a) Be incorporated under the laws of British Columbia or Canada.[5]
b) Ensure their constitution and bylaws meet BC Housing requirements.
c) Demonstrate the capacity to manage project construction and operate the affordable housing development as intended.

While all project partners must meet the minimum eligibility requirements, priority will be given to projects that include a portion of units that rent at Income Assistance rates. The CRD or BC Housing may also prioritize projects based on available equity contributions, financing and other determining factors as indicated below:

- Greater need and demand/community impact
- Greater affordability
- Larger equity contribution
- Geographic location

KEY PROGRAM ELEMENTS

The RHFP model is based on a mixed-income approach. Projects will typically include a combination of *Affordable Rental Units* and *Income Assistance Rate Units*.

Income Assistance Rate Units

Income Assistance Rate units are rented at rates equal to the maximum shelter component of Income Assistance. To be eligible, individuals must be identified as requiring housing through a BC Housing and CRD approved housing application system that assesses the needs of people experiencing homelessness in the region.

Affordable Rental Units

The rent structure for Affordable Rental units will vary depending on the characteristics of the particular project, the tenant population served, and whether or not funding from other sources is layered into the project. Rents may be structured as affordable market rents, fixed rents, and may include some rent-geared-to income units where feasible.

Rents must not exceed the Affordable Market Rent, set at the average market rent based on CMHC's rental market or housing report, or an alternative based on local community conditions, as agreed by BC Housing.

Low and moderate income households are eligible for Affordable Rental Units. The income threshold used to define low and moderate income households depends on the number of bedrooms in the unit.

- **Units with two or more bedrooms:** Low and moderate income households are those whose gross household income does not exceed the median income for families with children, as determined by BC Housing from time to time.[6]
- **Units with less than two bedrooms:** Low and moderate income households are those whose gross household income does not exceed the median income for families without children, as determined by BC Housing from time to time.[7]

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[5] *Ministry of Lands, Parks and Housing Act*, R.S.B.C. 1979: http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/11_490_79: BC Housing Management Commission Regulation.

[6] BC Housing determines this figure using data released by Statistics Canada - Income Statistics Division: *T1 Family File - Median Income for British Columbian Couple Families (With Children)*. For 2016, this figure is $67,540.

[7] BC Housing determines this figure using data released by Statistics Canada - Income Statistics Division: *T1 Family File - Median Income*

For projects involving a mix of unit sizes, the corresponding income threshold will be applied to each unit.

Agreements

Housing providers must enter into an applicable agreement with CRD and/or BC Housing for the operation of the development[8]:

1. For PRHC or CRD owned units, the housing provider will enter in to an operator agreement with the owner to operate the units.
2. For non-profit owned units, the housing provider will enter in to an operating agreement with BC Housing to provide affordable housing for low and moderate income households.

Design Guidelines

Projects are encouraged to meet or exceed the BC Housing Design and Construction Guidelines (http://www.bchousing.org/publications/BCH-Design-Guidelines-Construction-Standards.pdf). CRD and provincially funded units must meet high standards of environmental sustainability, including low GHG emissions. Certifications may include LEED, R2000, Passive House, or other equivalent.

ROLES AND RESPONSIBILITIES

BC Housing / CRD

- Evaluating project proposals.
- Providing equity contributions or facilitating financing.
- Providing technical assistance and advice.
- Monitoring and evaluating the success of the program.

Project Partners

- Coordinating the design and construction of developments.
- Day to day operations and management of the housing, including the provision of property management services.
- Identification and selection of tenants, including verification of their income.
- Periodic reporting to CRD and/or BC Housing as specified in the operating agreement.
- Ensuring the financial viability and long term operating success of the housing.

MONITORING AND REPORTING

Monitoring ensures program compliance and minimizes risk to all stakeholders: residents, project partners and BC Housing.

BC Housing's and CRD's main interests are:

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for British Columbian Couple Families (Without Children). For 2016, this figure is $96,170.

[8] Where no housing provider is initially identified, CRD or BC Housing may, at their discretion, either select a housing provider or elect to directly manage the project's operations.

- Targeted households are being housed.
- Affordable rents are maintained.
- Construction standards and value for money are met.
- Developments are financially viable with no operating subsidies from BC Housing.
- Buildings are maintained to an appropriate standard for their expected lifespan.
- Project partners meet contractual obligations.

From time to time, the project partner is required to submit a report, using a template provided by BC Housing and/or CRD, addressing these key requirements:

- Current financial statements.
- Current rent levels.
- Household incomes at move-in.

An on-site visit by BC Housing and/or CRD staff may occur from time to time, dependent on any issues arising and/or where financial and operating risks are considered to be greater.

SIGN-OFF

The RHFP Program Framework requires final sign-off by the CRD Chief Administrative Officer and Manager of Bylaw and Contract Administration and BC Housing Vice-Presidents of Development and Asset Strategies and Corporate Services.

Capital Regional District
Chief Administrative Officer
Robert Lapham

Capital Regional District
Manager, Bylaw and Contract Services KRISTEN MORLEY

BC Housing
Vice President Development and Asset Strategies

BC Housing
Vice President, Corporate Services

Appendix F: RHFP – Partnering Agreement

PARTNERING AGREEMENT

THIS AGREEMENT, dated for reference the 5th of May, 2016 is made

BETWEEN:

CAPITAL REGIONAL DISTRICT
625 Fisgard Street
Victoria, BC V8W 1R7
("**CRD**");

AND:

CAPITAL REGIONAL HOSPITAL DISTRICT
625 Fisgard Street
Victoria, BC V8W 1R7

("**CRHD**");

AND:

BRITISH COLUMBIA HOUSING MANAGEMENT COMMISSION,
#1701, 4555 Kingsway
Burnaby, BC, V5H 4H8

("**BC Housing**");

AND:

PROVINCIAL RENTAL HOUSING CORPORATION,
#1701, 4555 Kingsway
Burnaby, BC, V5H 4H8

("**PRHC**");

AND:

VANCOUVER ISLAND HEALTH AUTHORITY
1952 Bay Street
Victoria, BC V8R 1J8

("**Island Health**");

Collectively ("the **Parties**")

WHEREAS:

A. BC Housing has responsibility for furthering the objectives of providing affordable, suitable and adequate housing for British Columbians, and carries out housing initiatives and housing programs;

B. PRHC, on behalf of BC Housing, acquires, leases, disposes of, and otherwise deals with provincially owned social housing properties and leases residential properties to non-profit societies and co-ops.

C. CRD has a mission to serve the public, and build a vibrant, liveable and sustainable region by delivering local, regional and sub-regional services for residents of the Capital Regional District, including the provision of affordable, suitable and adequate housing in association with its related corporate entities.

D. CRHD works with Island Health and other community partners to expand, improve and maintain health-care facilities in the Capital Region. Facilities are categorized as community based.

E. CRD and CRHD acquire, lease, dispose of, and otherwise deal with regionally owned social housing and residential supportive housing properties and lease properties to non-profit societies.

F. Island Health has a mission to provide health care services through innovation, teaching and research and is committed to quality and safety – creating healthier, stronger communities.

G. CRD in association with CRHD, BC Housing and Island Health wish to work together to facilitate the creation of supportive and affordable rental housing in the Capital Regional District through an initiative known as the Regional Housing First Program (the "Program") pursuant to the terms of this Agreement;

H. In order that the Parties meet their respective objectives, each of BC Housing and the CRD, in association with CRHD, are prepared to equally contribute a maximum of $30,000,000 for an aggregate fund of up to $60,000,000 to be used to make Equity Contributions to Approved Projects. Island Health may provide health support services to Island Health clients residing in Program facilities, subject to available funding and priorities.

BACKGROUND:

BC Housing and the Province of BC have partnered with the CRD, in association with the CRHD, to provide capital funding in the amount of up to $30 million each for a total of $60 million. The capital funding will be used to make Equity Contributions in Affordable Rental Housing units, with ownership interests to be held by the PRHC and the CRD, in association with the CRHD. The capital funding of $30 million made available by BC Housing stems from the Provincial Investment in Affordable Housing (PIAH) Program, where BC Housing is reinvesting proceeds from the transfer of properties owned by PRHC to non-profit housing societies. Reinvesting these proceeds into the development of new Affordable Rental Housing allows BC Housing to partner with non-profit societies, government agencies, and the private sector and community organizations through the PIAH Program. The capital funding of $30 million made available by the CRD and CRHD stems from the Regional Housing First Initiative (RHFI).

Prior to issuing a call for proposals in accordance with section 1.4 of this Agreement, the Parties will participate in a process mapping exercise to better understand how individuals accessing affordable housing (referred to as "Clients") move through the housing continuum as well as access health support services. Through the process mapping, the Parties will develop the Regional Housing First Program Community Plan (the "Community Plan") which will guide how the Program will be implemented to create new Affordable Rental Housing units in the Capital Region. The Community Plan will be developed in partnership with the Greater Victoria Coalition to End Homelesness.

Island Health will align its existing mental health and substance use continuum of services with the Community Plan, and will align its services with new affordable housing opportunities in a cost effective manner.

1. DESCRIPTION OF THE AGREEMENT

1.1 Purpose

The purpose of the Agreement is to facilitate the creation of sustainable and Affordable Rental Housing in the Capital Regional District in as many communities within the Capital Regional District as possible, with Island Health providing health support services as required to clients residing within agreed upon Approved Projects, subject to Island Health's available funding and resources.

1.2 Commitments of the Parties

BC Housing and CRD, in association with the CRHD, will make Equity Contributions in Approved Projects up to $30,000,000 in equal shares totalling up to $60,000,000, as and when determined in accordance with this Agreement.

In alignment with the Community Plan, Island Health will have access to a proportion of Affordable Rental Housing units created by the Program for Island Health Clients who will reside in the units. Clients will be individuals who will be referred by Island Health and who have been assessed as capable of living safely within the affordable housing service model with the necessary supports provided.

The Parties will jointly develop and agree upon the Community Plan by August 31, 2016. The Parties will review and update the Community Plan on an annual basis prior to the annual calls for proposals to ensure that the Community Plan continues to meet the needs of the capital region.

1.3 Application of Capital Funds

In accordance with the Community Plan and this Agreement, Equity Contributions will be used to purchase Affordable Rental Housing units in Approved Projects, with the Equity Contributions comprising 100% of the units of an Approved Projects, or a portion thereof.

1.4 Calls for Proposals

The CRD, BC Housing and Island Health will issue an annual call for proposals for Projects, aligned with the Community Plan, commencing in September 2016. Calls for proposals will be issued annually for the Term of the Agreement until such time as all the capital funding has been allocated to Approved Projects.

1.5 Information Meetings

The CRD, BC Housing and Island Health will host annual information meetings ("Information Meetings") via WebEx so that communities within the Capital Regional District are able to discuss the proposal process prior to the proposal submission date.

1.6 Eligible Projects

BC Housing, PRHC and CRD, in association with the CRHD, will make Equity Contributions in Approved Projects ("Approved Projects"). To be eligible for approval, the Project Proponent must demonstrate its proposed development (the "Project") is one that meets all of the following criteria:

a) It must provide Affordable Rental Housing;

b) The Affordable Rental Housing units must be located within the Capital Region;

c) It must meet a need identified in the Community Plan; and,

d) It must be capable of providing Affordable Rental Housing units for potential Clients of Island Health.

1.7 Project Proponents

Project Proponents must be a local government, non-profit housing society, co-operative, private sector entity or a combination of any two or more such entities and must be based in the Province of BC.

Notwithstanding the foregoing, a Project Proponent involving a private sector entity will only be eligible for consideration if the Project meets the provisions of the *Local Government Act* that relate to the provision of assistance by a local government to an industrial, commercial or business undertaking.

1.8 Project Evaluation

The CRD, BC Housing and Island Health will form a committee (the "Project Selection Committee") comprised of an equal number of representatives from each party to jointly review Project proposals received as a result of a proposal call under section 1.4. The determining evaluation criteria for Project proposals will include, but will not be limited to, the following:

a) demonstration by the Proponent that the Project meets a need identified in the Community Plan;

b) contributions to the Project by the Project Proponent (such as donation of land, waiver of development cost charges, or equity from project partners);

c) demonstration by the Project Proponent of a clear business case for the Project, including demonstrated ability to maintain affordable rents over time and demonstration that Projects will be sustainable without governmental operating subsidies, or grants for capital repairs and replacements.

d) demonstration of the capacity of the proponent to manage project construction and

e) capacity to manage eventual operation of Affordable Rental Housing units

f) suitability of the proposed site for Affordable Rental Housing units ;and

g) demonstration by the Project Proponent of a willingness and capacity to house individuals with mental health and substance use issues.

1.9 Project Approval and Payment of Commitments

Approved Project Proponents will be advanced funds once a Project has been approved by the Project Selection Committee, in accordance with the applicable procurement process of each of the Parties, and a contribution agreement has been executed by the Parties with the Approved Project Proponent.

1.10 Project Size and Pacing

The Parties agree that in accordance with the Community Plan, no less than 300 Affordable Rental Housing units will be jointly and equally funded through this Agreement. The Parties will reasonably attempt to maximize the number of Affordable Rental Housing units created through this Program.

1.11 Project Financing

BC Housing will consider providing interim financing to Approved Project Proponents in accordance with its customary lending criteria. BC Housing may also in accordance with its customary lending criteria, provide take-out financing to Approved Projects owned by non-profit housing societies or co- operatives.

2. COMMUNICATIONS

2.1Communications Protocol and Engagement Plan

The CRD, BC Housing and Island Health will take a joint approach to all communications and community engagement. The CRD, BC Housing and Island Health will by June 1, 2016 develop a communications protocol and a community engagement plan (the "Communications Protocol and the Community Engagement Plan") to introduce the Program to communities in the Capital Regional District, invite Project proposals, announce the selection of Approved Projects, manage all communications related to the Program, publicize the completion of construction of Approved Projects and ensure each of CRD, CRHD, BC Housing and Island Health is recognized as participants of the Projects. The CRD acknowledges that Island Health and BC Housing have obligations to acknowledge the contribution of the governments of British Columbia and Canada, and to act in accordance with the communications protocols set forth by the both these levels of government.

2.2 Joint Approval of Communications

All written communications relating to this Agreement, which are intended to be broadly disseminated to the public, must be approved by each of the CRD, BC Housing and Island Health in advance of publication (i.e., News Releases) in accordance with the communications protocols outlined above.

2.3 BC Housing, CRD, and Island Health Contributions to be Recognized

BC Housing will enter into agreements with the Approved Project Proponents for the development and operation of the Approved Projects and will be responsible for monitoring the construction and operation of the Approved Projects funded through this Agreement. The CRD will also enter into agreements with the Approved Project Proponents for the development and operation of the Approved Projects and security of its equity contributions. BC Housing will ensure that for so long as it maintains contractual rights with respect to a Project, the CRD and Island Health's contribution to the Approved Project will be acknowledged in all promotional and written materials relating to the Approved Project, in accordance with the Communications Protocol and Community Engagement Plan.

3. MONITORING AND TRANSFERS

3.1 Housing Operating Agreements and Security

Upon Project Approval,

a) BC Housing and PRHC will enter into their standard agreements and arrangements with the Approved Project Proponent in a form and containing terms which are acceptable to the CRD and Island Health, which will include an operating agreement/operator agreement and a covenant relating to the use of the property for sustainable or Affordable Rental Housing in favour of PRHC and an option to purchase the property in the event of a breach by such entity of the negative covenant or the operating agreement; and

b) The CRD and CRHD will enter into its standard agreements and arrangements with the Approved Project Proponent in a form and containing terms which are acceptable to BC Housing and PRHC and Island Health, which may include, but will not be limited to, an operating agreement and covenant relating to the use of the property for supportive or Affordable Rental Housing in favour of the CRD.

3.2 Reporting

All Parties will have the right to review construction progress reports and regular operational reports received by any party subject to this agreement from Approved Project Proponents, or prepared by any party on projects. All Parties will also have the right to request reports at any time on status of the Approved Projects they have funded, including occupancy, revenue and expenses, capital improvement reserves.

4. CONTRIBUTIONS

All funds provided by the CRD, in association with the CRHD, and BC Housing under this Agreement will be advanced to Approved Project Proponents as Equity Contributions. Island Health will provide health services on an as needed basis, based on Client need.

5. CONFIDENTIALITY AND PUBLIC DISCLOSURE

5.1 Confidentiality – CRD and CRHD Information

BC Housing, PRHC and Island Health will keep any information about CRD and CRHD which is otherwise not available to the public confidential, unless required by law to release such information. BC Housing, PRHC and Island Health will not disclose the information without the prior written approval of CRD or CRHD, unless the disclosure is required by law, in which case BC Housing, PRHC and Island Health will notify CRD and CRHD prior to any release.

5.2 Confidentiality – BC Housing and PRHC

The CRD, CRHD and Island Health will keep any information about BC Housing and PRHC which is otherwise not available to the public confidential, unless required by law to release such information. The CRD,CRHD and Island Health will not disclose the information without the prior written approval of BC Housing and PRHC, unless the disclosure is required by law, in which case the CRD,CRHD and Island Health will notify BC Housing and PRHC prior to any release.

5.3 Confidentiality – Island Health Information

The CRD, CRHD, BC Housing and PRHC will keep any information about Island Health which is otherwise not available to the public confidential, unless required by law to release such information. The CRD, CRHD, BC Housing and PRHC will not disclose the information without the prior written approval of Island Health, unless the disclosure is required by law, in which case the CRD, BC Housing and PRHC will notify Island Health prior to any release. In addition, all privacy and confidentiality provisions of Island Health clients are subject to standard FIPPA provisions.

5.4 Freedom of Information and Protection of Privacy Act (British Columbia)

Each of the Parties is a public body with duties and obligations under the *Freedom of Information and Protection of Privacy Act* (British Columbia) and may be required by law to disclose information relating to the Program, any Projects or the other Parties. Each of the Parties agrees that any part of this Agreement may be disclosed by any other Party to the public in furtherance of the disclosing Party's public purposes. In addition, all privacy and confidentiality provisions of Island Health clients are subject to standard FIPPA provisions.

6. INSURANCE

BC Housing will require that all Approved Project Proponents maintain insurance coverage for general public liability and property damage for each Approved Project including claims for bodily injury, death or property damage, arising out of the construction or operation of any Approved Project, all in amounts and coverage and with insurers as are reasonable having regard to the nature of the Approved Project and all risks associated with the Approved Project, and that BC Housing and CRD, as applicable, are named as additional insured parties on such insurance.

7. TERM

The term of this Agreement will commence on the date of its execution and will expire on March 31, 2021 (the "Term").

8. DISPUTE RESOLUTION

The Parties have entered into this Agreement in good faith. The Parties agree to provide frank, candid and timely disclosure of all relevant facts, information and documents relating to this Agreement. The parties shall attempt to resolve any disputes by mutual agreement and may submit the dispute to senior management of the Parties for resolution, if required.

9. GENERAL PROVISIONS

9.1 Waiver or Modification

The waiver by a Party of any failure on the part of the other Parties to perform in accordance with any of the terms or conditions of this Agreement is not to be construed as a waiver of any future or continuing failure, whether similar or dissimilar. No amendment, modification or waiver of any condition of this Agreement or consent to any departure therefrom will be effective unless it is in writing.

9.2 Time

Time is of the essence in this Agreement and will be calculated in accordance with the provisions of the *Interpretation Act*.

9.3 Further Assurances

The Parties to this Agreement will do, execute and deliver or will cause to be done, executed and delivered all such further acts, documents and things as may be reasonably required for the purpose of giving effect to this Agreement.

9.4 Assignment

None of the Parties may assign this Agreement or its interest herein or any part hereof except with the prior written consent of the other Parties.

9.5 Entire Agreement

This Agreement constitutes the entire agreement between the Parties with respect to its subject matter and supersedes all previous agreements and understandings among the Parties with respect to the subject matter hereof, and there are no oral or written agreements, promises, warranties, terms, conditions, representations or collateral agreements whatsoever, express or implied, other than those contained in this Agreement.

9.6 Legal Fees

Each of the parties will pay its respective legal, accounting and other expenses incurred in connection with this Agreement and any documents executed pursuant to this Agreement

9.7 Relationship of the Parties

Nothing contained in this Agreement or the relationship of the Parties shall be construed as in any sense creating a partnership among or between the Parties. Neither Party has any authority to act for or to assume any obligation of responsibility on behalf of the other. Nothing in this Agreement shall constitute or shall be

deemed in any way to create an agency, partnership or joint venture relationship between the Parties or to create any fiduciary relationship between them.

9.8 Law Applicable

This Agreement is to be construed in accordance with and governed by the laws applicable in the Province of British Columbia

9.9 Counterparts

This Agreement may be validly executed in counterparts and via facsimile. Copies shall have the same force and effect for all purposes as an ink-signed original.

IN WITNESS WHEREOF CRD, CRHD, PRHC BC Housing and Island Health have executed and delivered this Agreement.

CAPITAL REGIONAL DISTRICT by)

its authorized signatories in the presence) of:

)

)

Witness Name)

SONIA SANTAROSSA)

)

)

625 FISGARD ST.)

VICTORIA, BC V8W 2S6

Witness Address

)

)

ROBERT LAPHAM

Title: CAO

CAPITAL REGIONAL HOSPITAL DISTRICT by its authorized signatories in the presence of:

Witness Name
SONIA SANTAROSSA

625 FISGARD ST.
VICTORIA, BC V8W 2S6

Witness Address

NAME: ROBERT LAPHAM
Title: CAO

BRITISH COLUMBIA HOUSING COMMISSION by its authorized signatories in the presence of:

Witness Name Shelley Travis

NAME: Shayne Ramsay
Title: CEO

NAME:

Title:

Witness Address
625 Fisgard St.
Victoria, BC V8W 2S6

PROVINCIAL RENTAL HOUSING CORPORATION by its authorized signatories in the presence of:

)

)

Witness Name)

)

)

)

Witness Address

VANCOUVER ISLAND HEALTH AUTHORITY by its authorized signatories in the presence of:)

)

)

)

)

Witness Name

SONIA SANTAROSIA

)

)

)

625 FISGARD ST, VICTORIA, BC V8W 2S6

Witness Address

NAME: Shayne Ramsay

Title: President

NAME:

Title:

NAME:

Title:

NAME: Brendan Carr

Title: CEO

APPENDIX - Definitions:

In this Agreement, the following terms have the following meanings:

"**Affordable Rental Housing**" means rental housing which is modest in terms of floor area and amenities, based on household needs and community norms, is tenanted by low and moderate income families, and is priced at or below average market housing rents based on CMHC's rental market or housing report or an alternative based on local community conditions as agreed by BC Housing such as household income limits and rents priced as affordable by those receiving a disability pension or social assistance;

"Approved Projects" means those Project proposals that have received Project Approval by the Project Selection Committee;

"**Commitments**" means the commitments of CRD, BC Housing and Island Health pursuant to Section 1.2 of this Agreement;

"**Communications Protocol and the Community Engagement Plan**" has the meaning assigned in Section 2.1;

"Community Plan" means the plan that will be developed in accordance with this Agreement to guide the implementation of the Program.

"Equity Contributions" means the monetary funds, or a contribution of real property valued at the current market rate, contributed to construct or acquire Affordable Rental Housing units in exchange for an ownership interest by the Provincial Rental Housing Corporation (PRHC) and/or the CRD in an Approved Project.

"**Funded Commitments**" means at any time aggregate contributions by CRD, BC Housing and Island Health, in accordance with the CRHD, to the Program pursuant to this Agreement;

"**Low and Moderate Income**" means a gross household income that doesn't exceed the median income, as determined by BC Housing from time to time. For families with children BC Housing determines this figure using data released by Statistics Canada – Income Statistics Division: *TI*

Family File – Median Income for British Columbian Couple Families (With Children). For families without children BC Housing determines this figure using data released by Statistics Canada – Income Statistics Division: *TI Family File – Median Income for British Columbian Couple Families (Without Children)*.

"**Project Selection Committee**" has the meaning assigned in Section 1.8;

"**Project Proponent**" means the sponsor and operator of a Project who has submitted a proposal for funding in accordance with the Program.

"**Projects**" has the meaning assigned in Section 1.6;

"**Project Approval**" means the approval of a Project by the Project Selection Committee; and

"**Information Meeting**" has the meaning assigned in Section 1.5.

Appendix G: Auditor's Opinion

KPMG LLP
St. Andrew's Square II
800-730 View Street
Victoria BC V8W 3Y7
Canada
Telephone 250-480-3500
Fax 250-480-3539

INDEPENDENT AUDITORS' REPORT

To the Shareholder of the Capital Region Housing Corporation

Opinion

We have audited the financial statements of the Capital Region Housing Corporation (the Corporation), which comprise:

- the statement of financial position as at December 31, 2018
- the statement of operations for the year then ended
- the statement of changes in net assets and remeasurement gains and losses for the year then ended
- the statement of cash flows for the year then ended
- and notes to the financial statements, including a summary of significant accounting policies

(Hereinafter referred to as the "financial statements").

In our opinion, the accompanying financial statements present fairly, in all material respects, the financial position of the Corporation as at December 31, 2018, and its results of operations, its changes in net assets and remeasurement gains and losses, and its cash flows for the year then ended in accordance with Canadian public sector accounting standards.

Basis for Opinion

We conducted our audit in accordance with Canadian generally accepted auditing standards. Our responsibilities under those standards are further described in the "Auditors' Responsibilities for the Audit of the Financial Statements" section of our auditors' report.

We are independent of the Corporation in accordance with the ethical requirements that are relevant to our audit of the financial statements in Canada and we have fulfilled our other ethical responsibilities in accordance with these requirements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

DRAFT

KPMG LLP is a Canadian limited liability partnership and a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative ("KPMG International"), a Swiss entity. KPMG Canada provides services to KPMG LLP.

Responsibilities of Management and Those Charged with Governance for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with Canadian public sector accounting standards, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the Corporation's ability to continue as a going concern, disclosing as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Corporation or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Corporation's financial reporting process.

Auditors' Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditors' report that includes our opinion.

Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Canadian generally accepted auditing standards will always detect a material misstatement when it exists.

Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of the financial statements.

As part of an audit in accordance with Canadian generally accepted auditing standards, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion.

  The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Corporation's internal control.

- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.

KPMG LLP is a Canadian limited liability partnership and a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative ("KPMG International"), a Swiss entity. KPMG Canada provides services to KPMG LLP.

- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Corporation's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditors' report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditors' report. However, future events or conditions may cause the Corporation to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

Chartered Professional Accountants

Victoria, Canada

April 10, 2019

DRAFT

KPMG LLP is a Canadian limited liability partnership and a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative ("KPMG International"), a Swiss entity. KPMG Canada provides services to KPMG LLP.

Regional Housing Trust Fund
Program Policy Guidelines

In March 2005, the Capital Regional District (CRD) launched the Regional Housing Trust Fund (RHTF) Program in response to a priority identified in the Regional Housing Affordability Strategy (RHAS). This priority identified that fundamental to the success of the RHAS was the establishment of the RHTF.

PROGRAM OVERVIEW AS IDENTIFIED IN CRD BYLAW 3266

The fund was established by the CRD for the purpose of providing capital funding:

1. To assist in the acquisition, development and retention of housing that is affordable for those households in the region with low or moderate household incomes;

2. To facilitate social and economic investment in affordable housing;

3. To assist people in core housing need, primarily those in the lowest two quintiles of regional household income as established in the most recent Canada Census; and,

4. To facilitate achieving the strategic directions outlined in the CRD's Regional Growth Strategy.

CRD PARTICIPATING AREAS

The participating areas are: Metchosin, View Royal, Victoria, Central Saanich, Saanich, North Saanich, Esquimalt, Oak Bay, Sooke, Sidney, Highlands and the Electoral Areas of Salt Spring Island and Southern Gulf Islands.

Funds raised from the participating areas shall be used to contribute to projects in the eligible participating areas that include funds from other partners, such as, contributions from senior governments and other housing stakeholders, including non-profit societies, corporations and individuals.

WHO CAN APPLY

Eligible applicants include:

- regional non-profit housing societies
- private developers, landlords and individuals

The RHTF encourages partnerships between non-profit housing societies and the private development industry, with the ownership and ongoing operations of the project by the non-profit housing society.

ELIGIBLE PROJECTS

The primary purpose of the RHTF funding is capital grant to:

- encourage the initiation of affordable rental housing development
- encourage leveraging and funding partnerships with other government funding agencies, private development industry, community agencies and individuals
- to assist in the retention of existing or construction of new affordable housing
- provide affordable rental accommodations for tenants within prescribed income targets

Tenants of the project will have rights under the *BC Residential Tenancy Act*.

The priority of RHTF funding for the period 2017-2021 is as follows:

> *That funds will be targeted to proposed affordable housing projects within approved Regional Housing First Program projects for the period 2017-2021.*

The 2019 Housing Income Limits (HILs) for Victoria as adopted by CMHC and BC Housing.

Bachelor	*= $42,500*
One Bedroom	*= $42,500*
2 Bedroom	*= $56,000*
3 Bedroom	*= $75,500*
4+ Bedroom	*= $84,500*

FUNDING ASSISTANCE

Assistance is in the form of a grant that does not have to be repaid if the recipient agrees to the terms and conditions of a 20-year funding agreement.

Applications are considered for affordable housing proposals that have a minimum of 5 to 1 leveraging of funding.

Funding requests will be considered for applications ranging in amounts from $5,000 to $15,000 per unit.

APPLICATION PROCESS AND PROCEDURE

1. The proponent submits a Letter of Intent to the RHTF Administrator.
2. The Administrator presents the Letter of Intent to the RHTF Commission, which recommends the proponent proceed with a full application, or not.
3. Proponent provides an application package to the Administrator for review and final completion.
4. The Administrator presents the application package to the RHTF Advisory Committee for evaluation and scoring. A recommendation is made to the RHTF Commission to grant funds to the proponent, request further information from the proponent or reject the application.
5. The RHTF Commission reviews the Advisory Committee's recommendation(s) and, if in agreement, makes a recommendation to the CRD Board of Directors to fund the RHTF grant.
6. The CRD Board of Directors votes on the recommendation to fund the grant.

CONTACT:

RHTF administrative services are provided by the CRD Housing Planning and Programs.

John Reilly
Manager, Housing Planning and Programs
625 Fisgard Street, Victoria, BC
Tel 250-360-3081

Jerry Michael
Administrative Coordinator, Housing Planning and Programs
625 Fisgard Street, Victoria, BC
Tel 250-360-3652

B) Capital Regional Housing Corporation staff provided an overview of the Michigan Square project and answered questions from commissioners.

CRD staff were given the opportunity to review Staff Reports relevant to each of the three proposals including examination of current financial capacity of the RHTF.

MOVED by Commissioner David Screech, **SECONDED** by Commissioner Gary Holman
That the Regional Housing Trust Fund (RHTF) Commission recommends to the Capital Regional District Board: That a grant in the amount of $765,000 to M'akola Housing Society be approved to support the development of 51 units of affordable rental housing at 2075 Drennan Street and 6418 Sooke Road, Sooke, subject to meeting the terms of the RHTF Grant Funding agreement.

CARRIED

MOVED by Commissioner David Screech, **SECONDED** by Commissioner Lynda Hundleby
That the Regional Housing Trust Fund (RHTF) Commission recommends to the Capital Regional District Board: That a grant in the amount of $330,000 to M'akola Housing Society be approved to support the development of 22 units of affordable rental housing at 2170 Charters Road, Sooke, subject to meeting the terms of the RHTF Grant Funding agreement.

CARRIED

MOVED by Commissioner David Screech, **SECONDED** by Commissioner Barbara Fallot
That the Regional Housing Trust Fund (RHTF) Commission recommends to the Capital Regional District Board: That a grant in the amount of $570,000 to the Capital Region Housing Corporation be approved to support the development of 38 units of affordable rental housing at 330 Michigan Street, Victoria, subject to meeting the terms of the RHTF Grant Funding agreement.

CARRIED

6. MOTION TO CLOSE THE MEETING in accordance with the *Community Charter*, Part 4, Division 3, Section 90(1)(e) "the acquisition, disposition or expropriation of land or improvements, if the council considers that disclosure could reasonably be expected to harm the interests of the municipality."

MOVED by Commissioner Lynda Hundleby, **SECONDED** by Commissioner Bob Thompson
That the meeting be closed.

CARRIED

The meeting was closed at 10:22am and resumed in open session at 10:24am.

7. ROUND TABLE

Commissioners held a round table to share information on housing in their respective municipalities and electoral areas.

Making a difference...together

REPORT TO REGIONAL HOUSING TRUST FUND COMMISSION
MEETING OF FRIDAY, SEPTEMBER 25, 2020

SUBJECT **2170 Charters Road**

ISSUE SUMMARY

A recommendation to the Capital Regional District (CRD) Board is needed in response to an application from M'akola Housing Society (MHS) for a $330,000 grant from the Regional Housing Trust Fund (RHTF) to support 22 units of affordable rental housing within a proposed development at 2170 Charters Road, located in the Sooke.

BACKGROUND

On February 26, 2019, the RHTF Commission approved the following resolution:

> *That the Regional Housing Trust Fund Commission suspend the receipt of Letters of Intent for non-RHFP projects until allocations for all qualified Regional Housing First Program (RHFP) projects have been approved by the Commission.*

In December 2015, the CRD approved a resolution supporting the borrowing of up to $30 million (M) to establish the Regional Housing First Program (RHFP) to meet the needs of chronically homeless individuals. The Vancouver Island Health Authority (Island Health) has agreed to provide health supports to tenants as required. In 2020, the CRD, through an Alternative Approval Process, approved an additional $10M in funding for the program.

Since that time, the CRD has partnered with BC Housing Management Commission and Canada Mortgage and Housing Corporation to obtain matching grants of $40M each to create a capital pool totaling $120M, to build 400 units of housing to be rented at the provincial income assistance shelter rate ($375/month) to address the needs of people experiencing chronic homelessness in the region. Under the mixed-market model, the combined $120M could leverage up to 2,000 units of housing, with a value of up to $600M.

Project Description

The Charters Road development is a 75 unit affordable housing development located in Sooke. The proposal has MHS as operator. Currently MHS manages over 1,600 affordable housing units across British Columbia which target a variety of tenant groups. The development will construct 75 new affordable units in one 4-storey structure. The project is anticipated to begin construction in early 2021.

The 75 unit project will include 15 units at provincial income assistance rates under the RHFP. To facilitate 22 units of affordable rental units the project is requesting $330,000 through the RHTF. The breakdown of affordability levels within the building are as follows: 20% Shelter Rate, 29% Median Market and 51% Near-Market. The rents proposed for the 22 studio and one-bedroom Median Market units align with the RHTF Guidelines and all units meet the definition of affordable under the RHFP Definitive Agreement. Table 1 provides a more detailed summary of the project unit structure.

Table 1 – 2170 Charters Road: Unit Summary

Unit Type	Number	Rental Criteria	Rent Level	Income Level
Studio	15	Shelter Rate	$375	Income Assistance (<$15K/year)
Studio	1	Median Market	$1,000	$71,810 or less
One Bedroom	21	Median Market	$1,300	$71,810 or less
Two Bedrooms	27	Near Market	$1,800	$108,000 or less
Three Bedrooms	11	Near Market	$2,125	$108,000 or less
TOTAL	**75**			

Evaluation Comments
The RHTF Application was reviewed by the RHTF Advisory Committee on July 15, 2020 and received a favourable score of 211 out of a possible 235. The RHTF Advisory Committee recommends M'akola Housing Society receive a grant of $330,000 to support the development of 2170 Charters Road.

ALTERNATIVES

Alternative 1
The Regional Housing Trust Fund RHTF) Commission recommends to the Capital Regional District Board:
That a grant in the amount of $330,000 to M'akola Housing Society be approved to support the development of 22 units of affordable rental housing at 2170 Charters Road, Sooke, subject to meeting the terms of the RHTF Grant Funding agreement.

Alternative 2
That the Regional Housing Trust Fund Commission provide Capital Regional District staff with alternative direction.

IMPLICATIONS

Financial Implications
The status report of the RHTF service provided in Table 2 demonstrates that the fund has the capacity to fulfill this request. If all three of the applications presented to the Commission in 2020 are approved, the fund balance will be approximately $767,000 to support future projects.

Table 2 – RHTF Service Financial Status

Current RHTF Status	**Amount**
Current RHTF Service Surplus	$3,100,000
2020 Requisition	$1,000,000
Sub Total	$4,100,000
Committed to Other Projects	
Croftonbrook	($408,000)
Cedar Grove	($600,000)
West Park Lane	($660,000)
Sub Total	($1,668,000)
Total Available in 2020 for New Projects	$2,432,000
Projects Proposed for 2020	
Michigan	($570,000)
Charters	($330,000)
Drennan & Sooke	($765,000)
Total Remaining in RHTF	**$767,000**

Social Implications
This project will provide 15 units of independent housing to help address the needs of people experiencing chronic homelessness in the region. Providing a grant to support the development of the 22 affordable rental units will help address the needs of low and moderate income populations as defined by the RHFP Definitive Agreement, many of whom continue to experience substantial hardship within the current rental market. Despite the impact of the COVID-19 pandemic, there is evidence that the rental market continues to experience low vacancy rates, with the lowest cost rental units showing the lowest vacancy rates.

Service Delivery Implications
The use of the grant to achieve affordable housing units will be monitored through Regional Housing's annual reporting processes.

CONCLUSION

The RHTF Commission has limited Letters of Intent and applications for grants to RHFP projects. M'akola Housing Society, through the redevelopment of 2170 Charters Road, is providing an opportunity to expand the community's existing affordable housing stock and include units at provincial assistance shelter rates to address chronic homelessness. The mixed-market approach outlined in the application aligns with the RHFP model. The proponent's experience and long history in the development and operation of affordable housing makes this an appropriate project to be funded.

RECOMMENDATION

That the Regional Housing Trust Fund (RHTF) Commission recommends to the Capital Regional District Board:
That a grant in the amount of $330,000 to the M'akola Housing Society be approved to support the development of 22 units of affordable rental housing at 2170 Charters Road, Sooke, subject to meeting the terms of the RHTF Grant Funding Agreement.

Submitted by:	John Reilly, MSW, RSW, Manager Housing Planning, Policy and Programs
Concurrence:	Kevin Lorette, P. Eng., MBA, General Manager, Planning & Protective Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT(S)

Appendix A: Charters Application for Funding
Appendix B: Regional Housing Trust Fund Program Policy Guidelines

M'AKOLA HOUSING SOCIETY

Application for Regional Housing Trust Fund

Charters Project
British Columbia

June 30, 2020

June 30, 2020

John Reilly
Manager, Housing Planning and Programs
Regional Housing
Capital Regional District
625 Fisgard Street
Victoria, BC V8W 1R7

RE: Application for Regional Housing Trust Fund for the 'Sooke Charters Project'

Dear Review Committee:

M'akola is pleased to submit this response to CRD Regional Housing Trust Fund. The Project Team has reviewed the information contained in the application form.

The attached response demonstrates the Project Team's interest, capacity, and expertise to carry out the full scope of work needed to support the development of a new non-profit housing development. This includes working with all levels of government, streamlining the development and construction process, closely monitoring progress, and ensuring the financial feasibility of the project through to building completion and operations.

Please contact Kaela Schramm, Director of Projects and Planning at M'akola Development Services (MDS), by telephone or email if you have any questions regarding this proposal.

Sincerely,



Kevin Albers, CGA, CPA, CAFM, CIHCM
Chief Executive Officer
M'akola Group of Societies

This proposal is submitted by M'akola Development Services (MDS), on behalf of M'akola Housing Society (MHS), to respond to the **Application for Regional Housing Trust Fund**.

PROPOSAL CONTACT
Kaela Schramm, MEd, MUP, AICP, RPP
Director of Projects and Planning
M'akola Development Services
107-731 Station Ave.
Victoria, BC V9B 5R5
p. 778.265.9716
e. kschramm@makoladev.com

PROPONENT CONTACT
Kevin Albers, CPA, CGA, CAFM, CIHCM
Chief Executive Officer
M'akola Housing Society
104-550 Goldstream Ave.
Victoria, BC V9B 2W7
p. 250.940.2746
e. kalbers@makola.bc.ca

Capital Regional Housing Trust Fund

For Internal Use Only

Application for Funding

File #_____

1.1 Summary Information

Sponsor

Name of Society: M'akola Housing Society

Mailing address: 104-550 Goldstream Ave., Victoria, BC, V9B 2W7

Telephone: 250-590-0204 Fax: _____

E-mail address: kalbers@makola.bc.ca

Date of incorporation: February 5th, 1984

Canada Revenue Agency charity number: 13063 7903 RR 001

Contact person and position: Kevin Albers, CEO Telephone: 250-940-2746

Proposal Summary

Target clientele (tenants). Please indicate the client group(s) the Society wishes to serve and the number of units proposed (for example, supportive seniors, women in transition, persons with mental illnesses homelessness). If more than one group is being targeted, indicate the approximate number of units that will dedicated to each group.

Client Group (Tenants)	Number of Units	Income Target
Affordable market units	60	Low to Moderate Income ($71,810 or less for a studio to 1 bedroom and $107K or less for 2 bedroom+)
Deep Subsidy	15	Income Assistance (<$15K / yr)
Total	**75**	

Tenant Selection Process How will tenants be selected?

Tenants for the social assistance units will be chosen from the Coordinated Access and Assessment waitlist system operated by BC Housing, Island Health and CRD targeting individuals/couples who are currently housed in supportive/transitional housing who are able to live independently.

Tenants for the remaining affordable and near-market units will be marketed through craigslist and other market-based sources. Tenants will be selected based on income testing and meeting the above mentioned income thresholds. Individuals and families of Indigenous ancestry will be prioritized per the Society's mission and mandate.

If tenants are referred, where will the referral come from? N/A

Will tenancies be in accordance with the BC Residential Tenancy Act? Yes Explain:

All tenants will have the full rights and obligations under the RTA.

Development Team

Project manager: (contact) Kaela Schramm

Address: #107- 731 Station Ave, Victoria BC, V9B 5R5

Telephone: 778-265-7489 Fax:

Procurement strategy. Indicate if the Society has determined its strategy for acquisition, constructing/renovating the building and assembled a development team.

☒ Design-build

Developer: (contact) Horizon North

Address: 540 Athabasca Street West, Kamloops, BC V2H 1C4

Telephone: 250-828-7209 Fax:

Developer's architect: (contact) De Hoog Kierulf Architects

Address: 977 Fort Street, Victoria, BC, Canada, V8V 3K3

Telephone: 250-658-3367 Fax:

Service Delivery Strategy

Please indicate what services the tenants will need and how the Society will provide them. For example, if meal service is intended, explain whether the Society's own staff will prepare and serve them or whether the Society will contract with another entity to provide them. If the Society will be contracting out services, please identify potential delivery partners.

Tenants will live independently and not require supports. Tenants in the social assistance units placed through the Coordinated Access System, Island Health will deliver flexible, mobile services based on the individual needs of people living in the housing units.

If the Society has engaged a consultant to help set up the delivery of support services (or specify and negotiate services with third party providers), please give the contact information below.

Service delivery consultant: (contact) N/A

Address:

Telephone: Fax:

Target Occupancy Date

When would your proposed Project be ready for occupancy? March 31, 2021 (or as close to this date as possible)

2.1 Letter of Committal

Reference Appendix A which includes a copy of the Meeting Minutes whereby the MHS board approve a motion for the project.

3.1 Society Capacity

Sponsor Experience, Organization, and Development Team

Number of developments/programs managed: 63

Experience. Please summarize the Society's experience by listing the number of units of any housing owned or managed by the Society and any programs delivered by the Society.

MHS manages over 1,600 affordable housing units across British Columbia which target a variety of tenant groups including families, seniors/Elders, and singles.

Number of staff: over 100 (Full Time Equivalents)

Number of directors (board members): 10

Number of members who are not also directors: 1

Does your organization have any formal relationship with other community groups, for example a provision in your by-laws requiring membership by some directors in a "parent" organization? (Describe briefly if "yes".)

N/A

Does your organization have a historical relationship with other community groups? For example, was your organization founded by a service club?

N/A

Does your organization have a fund-raising committee, branch, or a relationship with a foundation?

No.

When was the last major capital project undertaken by the Society? Briefly describe its scope.

Braidwood - developed a 35-unit affordable housing complex in Courtenay, BC for low-income singles and those at risk of homelessness under the BC Housing IHI program. 731 Station phase 1 is a newly opened building with 60 units in Langford developed under the BC Housing Aboriginal PIAH program, it is currently just in the tenanting process.

Please summarize the Society's organization, using the format below. Add or delete "groups" as necessary.

Board/Committee Structure	**Number of Members and Chair or Board Liaison** (when applicable)	**Role** (brief description as appropriate)
General Membership	10 Positions– Chair (President) Bruce Parisian	All Board Members are Members of the society +1 honourary Elder.
Board of Directors	10 Positions– Chair (President) Bruce Parisian	Governance Board
Executive Committee	4 Positions- Chair (President) Bruce Parisian	President – Bruce Parisian Vice-President – David Seymour Treasurer – Carl Mashon Secretary – Roger Kishi
Nominating (or Recruiting) Committee	None	
Operations (or Services) Committee	None	
Finance (or Audit) Committee	4 Positions- Chair (President) Bruce Parisian	President – Bruce Parisian Vice-President – David Seymour Treasurer – Carl Mashon Secretary – Roger Kishi
Residents' Activities (or Liaison) Committee	None	
Development (or Special Projects) Committee	None	
Fundraising (or Community Liaison) Committee	None	
Volunteer Activities Committee	None	

Support Documentation: Society Experience, Organization, and Development Team

1. **Mandatory** Please provide a profile of your officers and directors including their roles (if they have particular responsibilities) and their relevant experience, skills and/or education.

   Reference Appendix B

2. **Mandatory** Please provide a profile of your senior staff including their roles and responsibilities and their relevant experience, skills and/or education.

   Reference Appendix B

3. **Mandatory** Please submit a copy of the Society's Certificate of Incorporation, constitution and by-laws or application for incorporation and draft constitution and by-laws.

   Reference Appendix C

4. **Mandatory** Please submit copies of the most recent auditor's letter of opinion with respect to the Society's financial statements, any recent management letters from the Society's auditor, and your financial statements for the most recent fiscal year for which they are available.

   Reference Appendix D

5. Please submit any contracts (including draft contracts), letters of agreement or other documents which establish a contractual relationship between the Society and its consultants and/or partners in the Proposal.

   Reference Appendix E - LOI with Horizon North

6. Please attach, if available, the Society's mission statement, history or any promotional material used for recruiting or fundraising.

   Reference Appendix F Society's mission statement and vision

4.1 Project Rationale: Business Case

Reference Appendix G

5.1 Housing Concept

The Development Permit Application designs and renderings are attached as Schedule C to this application. The design shows the unit layouts per floor, indoor and outdoor amenity space, and proposed landscaping.

Unit Type	**Bathroom**		**Kitchen**			
	Toilet/ Sink	3 Piece	Stove & Oven	Dishwasher	Washer Dryer	Regular Fridge
Studio		✓	✓			✓
One bedroom		✓	✓			✓
Two bedroom		✓	✓	✓	✓	✓
Three bedroom	✓	✓	✓	✓	✓	✓
Total	11	75	75	38	38 + accessible units	75

Table 1 – Charters: Unit Summary

Unit Type	Deep Subsidy (Chronic Homelessness)		Median Market Rent		Near-Market Rent (Affordable)		Total
Studio	$375	15 units	$1,000	1 units			
1-bedroom	$375	0 units	$1,300	21 units			
2-bedroom	$570	0 units			$1,800	27 units	**27 units**
3-bedroom	$660	0 units	n/a		$2,125	11 units	**11 units**
Total	**15 units**		**22 units**		**38 units**		**75 units**
Percentage	**20%**		**29%**		**51%**		**100%**

6.1 Society and Community Contributions

Sponsors must have in place broad community financial support for the proposed Project. Please summarize those contributions below, identifying the source and nature of the contribution. Include both capital contributions and ongoing operational contributions.

Source	**Description** (including any conditions)	**Capital**	**Operational** (per year)
Society	Equity contribution	$750,000	N/A
Municipal Government	To be determined	TBD	TBD
RHFP Partnership (CRD, CMHC, BC Housing)	A proportion of units will remain under PRHC ownership as a condition of this equity	$4,134,000	N/A
Federal Government Agencies	Rental Construction Financing Initiative	N/A	N/A
RHTF Funding Request	$15,000 per affordable (low to moderate income) unit * 22 units	$330,000	
	TOTAL	$5,214,000	N/A

Appendix A

Letter of Committal

Date: June 23, 2020

CRD Housing Trust Fund Commission
631 Fisgard Street
Victoria BC
V8W 1R7

Attention: Chair: RHTF Commission

Re: RHTF Application,

I, Kevin Albers am the Chief Executive Officer of M'akola Housing Society, the Proponent of the attached application. By a motion approved by the Society's Board of Directors on June 3, 2020 a copy of which is attached, I have the authority to make this application and bind and make representations for the Society. Through this application, we agree to all the terms and conditions of the Regional Housing Trust Fund operating agreement and we agree to be bound by statements and representations made in this application.

We understand that our application is subject to the *Freedom of Information and Protection of Privacy Act* under which applicants can request that Regional funded bodies such as Capital Region District release information on the allocation of Regional program funds. Records can be withheld if their disclosure would be harmful to the business interests of the Regional body or the party with which it is doing business; however, in the case of a dispute, the final decision is made by the Information and Privacy Commissioner.

We certify that neither the officers nor directors have any actual or potential conflict of interest between our interests and the interests of Capital Region District under this application process. We acknowledge that if a conflict exists Capital Region may, at its discretion, withhold consideration of our application. Further, we understand that the Board, President and staff of the Society may be required to execute a statutory declaration with respect to conflict of interest.

We authorize and consent to Capital Region District receiving and exchanging with others, any references provided in the Proposal, and with other persons with whom we have had dealings. We understand that such information may be a factor in the decision of Capital Region to enter into agreements for this application.

Society's legal name: M'akola Housing Society

Authorized Officer:  Date: June 23, 2020

Appendix C DUPLICATE

CANADA
PROVINCE OF BRITISH COLUMBIA

NUMBER

S-28370

Province of British Columbia
Ministry of Consumer and Corporate Affairs
REGISTRAR OF COMPANIES

SOCIETY ACT

Certificate of Incorporation

I HEREBY CERTIFY THAT

VICTORIA NATIVE INDIAN HOUSING SOCIETY

HAS THIS DAY BEEN INCORPORATED UNDER THE SOCIETY ACT

GIVEN UNDER MY HAND AND SEAL OF OFFICE

AT VICTORIA, BRITISH COLUMBIA,

THIS 6TH DAY OF FEBRUARY, 1984

L. G. HUCK
DEPUTY REGISTRAR OF COMPANIES

DUPLICATE

CANADA
'NCE OF BRITISH COLUMBIA

NUMBER

S-18870

Province of British Columbia
Ministry of Finance and Corporate Relations
REGISTRAR OF COMPANIES

SOCIETY ACT

Certificate

I HEREBY CERTIFY THAT

VICTORIA NATIVE INDIAN HOUSING SOCIETY

HAS THIS DAY CHANGED ITS NAME TO THE NAME

M'AKOLA HOUSING SOCIETY

GIVEN UNDER MY HAND AND SEAL OF OFFICE

AT VICTORIA, BRITISH COLUMBIA,

THIS 5TH DAY OF APRIL, 1988

B. BECKWITH
ASST. DEPUTY REGISTRAR OF COMPANIES

BRITISH COLUMBIA

CERTIFIED COPY
Of a document filed with the Province of British Columbia Registrar of Companies

CAROL PREST

CONSTITUTION

BC Society • Societies Act

NAME OF SOCIETY: **M'AKOLA HOUSING SOCIETY**

Incorporation Number:	S0018870
Business Number:	13063 7903 BC0001
Filed Date and Time:	March 7, 2018 12:13 PM Pacific Time

The name of the Society is M'AKOLA HOUSING SOCIETY

The purposes of the Society are:

The purpose of the Society is to provide appropriate and consistently affordable housing for Indigenous individuals and families of low and moderate income as defined by the National Housing Act.

Appendix E

M'AKOLA DEVELOPMENT SERVICES

May 26, 2020

Rick Welch
Horizon North
540 Athabasca Street West
Kamloops, BC V2H 1C4

VIA ELECTRONIC DELIVERY

Re: Modular Design Build Services for 2170 Charters Road, Sooke, BC

Dear Mr. Welch,

M'akola Development Services, on behalf of M'akola Housing Society, is pleased to provide this letter of intent to award modular design build services for the 2170 Charters Rd. Project to Horizon North Logistics Inc.

M'akola would like to engage your team and services for the construction term of this project. This letter confirms M'akola's intent to enter into a CCDC 14 Design-Build Stipulated Price Contract with the associated BC Housing Supplementary General Conditions (SGCs).

These items must be completed prior to the execution of a CCDC14 contract:

* Satisfactory pricing;
* Final construction and take-out financing commitment from BC Housing;
* Confirmation that all requirements of the contract are met, including proper WorkSafeBC and insurance documentation.

In the interim, we approve up to $100,000 in spending to get the project started as we work with BC Housing to get Preliminary Project Approval and project development funds allocated to this project.

We look forward to working with you on this project. Please contact Kaela Schramm should you have any questions in the interim.

Sincerely,

Kaela Schramm, Director of Projects and Planning
M'akola Development Services
102-550 Goldstream Ave., Victoria, BC V9B 2W7
p. 778.265.7489 I e. kschramm@makoladev.com

Appendix F

M'AKOLA HOUSING SOCIETY

VISION & MISSION



Our Vision

M'akola is a leader in providing appropriate and affordable homes for British Columbia's Indigenous communities.

Our Mission

Working with partners and mindful of Indigenous traditions, M'akola provides and maintains quality homes for British Columbia's Indigenous communities.

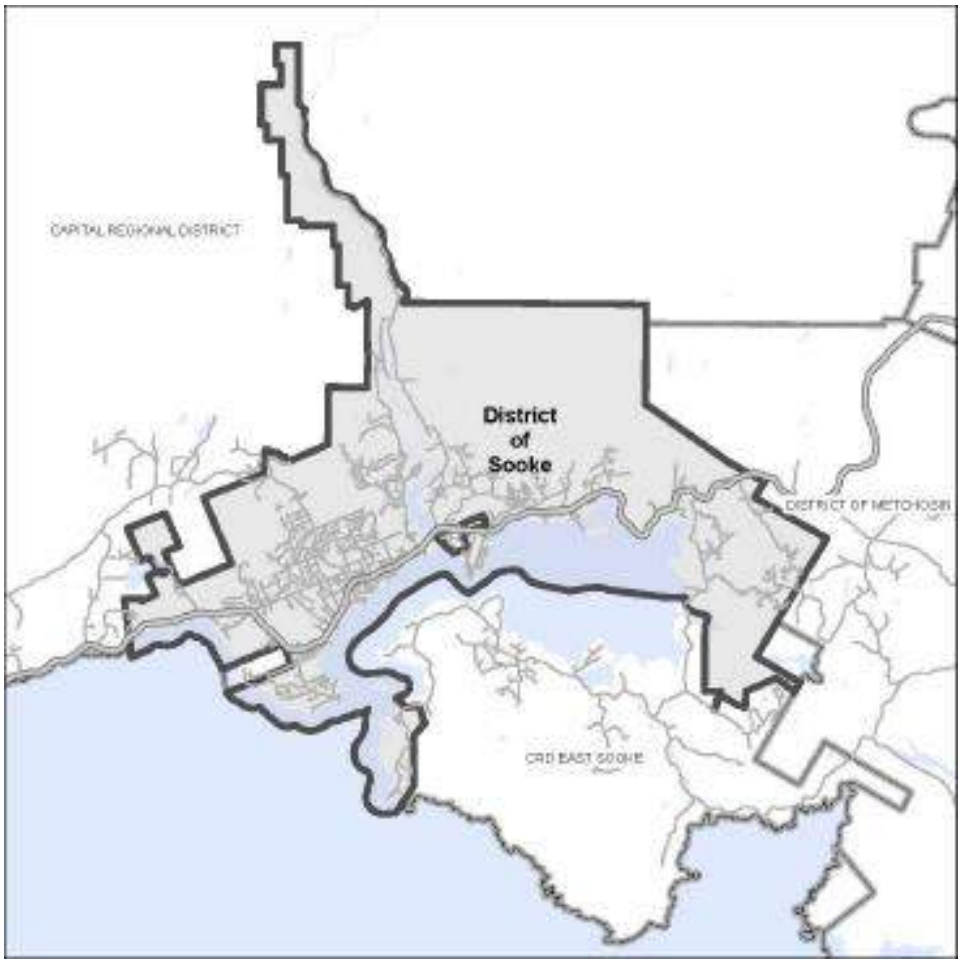
Appendix G

Project Rationale: Business Case

Please provide the business case for targeting the tenants whom the Society wants to serve. This would typically include:

1. The geographic area (“catchment area”) which the Society expects to serve:

The District of Sooke ("the District") is located on the southern point of Vancouver Island, on Canada's rugged west coast. Sooke is situated on the north shore of the Sooke Harbour and Basin. Sooke overlooks the Juan de Fuca Strait and Olympic Mountain range and encompasses approximately 5800 hectares of land. The District of Sooke is located within the Capital Regional District (CRD), approximately 45 kilometres from Greater Victoria along scenic Highway 14, also known as the Pacific Marine Circle Route, and is 20 kilometres west of the City of Langford.



2. The number of people from the target population living in the catchment area. Income data on the target population.

Roughly 17 percent of the total households in Sooke had an annual total income lower than $30,000 as compared to 19 percent for the CRD and 19 percent for the Province. The community presented a lower share of households (25 percent) with annual total income in the range of $30,000 to $59,999 as compared to 26 percent for the CRD; the municipality has a higher percent than the Province (24%).
The community displayed a higher share of households earning more than $60,000 per year (58 percent) than compared to the CRD (57 percent) and British Columbia (54 percent). Sooke has higher household incomes than the CRD and the Province, and the CRD's share of different household incomes closely mirrors the Province.
It should be noted that approximately 44 percent of the households in the community earn less than $60,000 per year. In addition, a significant proportion of these households are likely to be senior households (head of the household is 65 years and over) and retirees,
who are more likely to face housing suitability and affordability issues.

Household Income (2015)	#	%	#	%	#	%
Under $5,000	75	1%	3455	2%	43,415	2%
$5,000 to $9,999	70	1%	2210	1%	27,140	1%
$10,000 to $14,999	130	2%	5135	3%	55,745	3%
$15,000 to $19,999	190	4%	6730	4%	77,565	4%
$20,000 to $29,999	425	8%	13400	8%	151,065	8%
$30,000 to $39,999	460	9%	14200	9%	156,475	8%
$40,000 to $49,999	440	8%	14430	9%	155,170	8%
$50,000 to $59,999	395	8%	13590	8%	143,475	8%
$60,000 to $79,999	735	14%	23705	15%	255,195	14%
$80,000 to $99,999	700	13%	19705	12%	210,770	11%
$100,000 to $124,999	665	13%	18110	11%	198,140	11%
$125,000 to $149,999	430	8%	12490	8%	138,420	7%
$150,000 and over	530	10%	13120	8%	271,290	14%
	5,245	100%	160,280	100%	1,883,865	100%
Under $30,000	890	17%	30,930	19%	354,930	19%
$30,000 to $59,999	1,295	25%	42,220	26%	455,120	24%
$60,000 to $99,999	1,435	27%	43,410	27%	465,965	25%
$100,000 and over	1,625	31%	43,720	27%	607,850	32%

Table 9: Income Distribution - 2015 Source: Statistics Canada 2016 Census

3. Present living circumstances (home-owners, renters). The portion of income now being spent on housing.

Shelter-cost-to-income ratios	Sooke	CRD	BC
Owner and tentant households with household income greater than zero	5,225	166,925	1,832,420
Spending less than 30% of income on shelter costs	3,765 (72%)	119,385 (56%)	1,320,210 (72%)
Spending 30% or more of income on shelter costs	1,455 (28%)	47,540 (19%)	512,210 (28%)
Owner in non-farm; non-reserve private dwellings	4,085	105,280	1,242,600
Owner households with a mortgage	2,860 (70%)	58,957 (56%)	733,134 (59%)
Households spending 30% or more of its income is on shelter costs	899 (22%)	20,003 (19%)	260,946 (21%)
Median monthly shelter costs for owned dwellings ($)	$ 1,428	$ 1,156	$ 1,149
Median value of dwellings ($)	$399,454	$577,597	$500,874
Tenant households in non-farm; non-reserve private dwellings	1,155	61,905	592,825
Tenant households in subsidized housing	104 (9%)	7,429 (12%)	77,067 (13%)
Tenant households spending 30% or more of its income on shelter costs	554 (48%)	27,857 (45%)	254,915 (43%)
Median monthly shelter costs for rented dwellings ($)	$ 1,061	$ 1,003	$ 1,036

Table 17 provides the share of owner and tenant households spending 30 percent or more on housing in the District of Sooke, Capital Regional District and the Province. The table suggests that the households in Sooke paid a median monthly shelter cost of $1,428 for owner-occupied and $1,061 for tenant occupied units in 2016. These shelter costs are higher than the CRD and the Province. Also note that since 2016 rental rates have been shown to have risen.

The table suggests that the proportion of households spending 30 percent or more of its income on shelter in 2016 was:
Sooke: 22 percent of owner-households and 48 percent of tenant households

4. How the proposed rent and support service charges are affordable in comparison to the tenant's income and the local market.

This demographic overview may be supplemented by survey data on need and demand assembled by people working with the target group.

One of the most significant housing gaps for the District of Sooke is affordability. While Sooke is largely known to be a relatively affluent community, about a half of residents fail the affordability criteria for the 2-bedroom rental unit, which is the most common type of rental unit in Sooke. This suggests rising rents will likely put growing pressure on the housing market to provide residential products that are affordable at or below market value for roughly half of the households. On the other hand, the 31 percent of households that earn over $100,000 will demand residential products in line with the tastes and purchasing power of higher-income households depending on the type of household (i.e., young family, retired, couple-only, etc.).

Homeowners in Sooke (22 percent) are more likely than those in the Capital Regional District (19 percent) to be housing insecure and pay over 30 percent of their income to housing; unsurprisingly, renters in Sooke (48 percent) are also more likely to be housing insecure than in the Capital Regional District (45 percent). About 82 percent of Sooke residents are expected to be unable to afford a single-family detached home, the most common dwelling available in the community. One-person households and lone-parent households are the most vulnerable household types to being housing insecure and have difficulty affording any housing product except for manufactured home and also struggle to find affordable rental housing, particularly if lone-parent have different gendered children and require additional bedrooms. Couple-only families show the inability to afford most housing products except for manufactured homes. Considerable affordability issues are experienced across diverse types of households.

There is a current unmet need for social housing in Sooke, including homeless shelters and below-market affordable rentals. This includes:

- Roughly 60 homeless individuals have been served by homeless services organizations (not including any shelter services);
- 22 percent of households priced out of the lowest priced owner-occupied residential product (manufactured home); and,
- 23 percent of households priced out of a bachelor apartment in the rental housing market.

Urbanics conducted an online survey of the residents to gain additional insights related to housing needs in the District of Sooke. The survey received a combined total of 293 responses out of a population of roughly 13,060 in the study area. This represents a statistically significant sample size with a confidence level of 95 percent and a margin of error of 5.6 percent. Thus, findings from the survey can be expected to be representative of the housing needs in the study area.

What do you pay for housing per month, excluding utilities?

ANSWER CHOICES	..,.	**RESPONSES**
I don 't pay anything		**11.11%**
$1 - $500 per month		7.6 4 %
$501 - $1,000 per month		15.28%
$1,001 - $15 00 per month		**21.18%**
$1,501 - $2,000 per month		22.57%
$ 2,001 - $2,5 00 per month		7.99 %
$2,501- $31000 per month		4.51%
Over $3,000 per month		2.43%
I'd rather not say		7.29%

Appendix H

BC HOUSING

June 17, 2020

File: 94593/8722

M'akola Housing Society
104-550 Goldstream Avenue
Victoria, BC V9B 2W7

Via Email: kalbers@makola.bc.ca

Attention: Mr. Kevin Albers, Chief Executive Officer

Re: Regional Housing First Program
Provisional Project Approval to M'akola Housing Society for a project at 2170 Charters Road, Sooke

Dear Mr. Albers,

British Columbia Housing Management Commission ("BC Housing") is pleased to confer Provisional Project Approval ("PPA") to M'akola Housing Society (the "Society") for a 75-unit project (the "Project") at 2170 Charters Road, Sooke.

The Society is required to not issue any public statements regarding this Provisional Project Approval without the express approval of BC Housing, Capital Regional District and Canada Mortgage and Housing Corporation.

The requirements that the Society must meet to develop its submission into a complete proposal (the "Proposal") are described in Appendix A attached.

This letter does not constitute final approval of the Project as submitted by the Society, rather it sets out the requirements which the Society must meet to receive final approval (the "Project Commitment") from BC Housing.

All correspondence and inquiries regarding this Project should be directed to Marcio Silva, Development Manager, 778-452-5536, noting the BC Housing File Number 94593 and Project Reference 8722.

The completion of the Proposal and its submission to BC Housing will not in itself meet the conditions for Project Commitment. Each Proposal will be subject to a final review to confirm that it has substantially met BC Housing's requirements. Once Final Project Commitment and Capital Budget approval is granted by BC Housing's Executive Committee and Board of Commissioners, the Project will be eligible for interim construction financing, CMHC loan insurance, and the arrangement for take-out financing for the Project, in addition to funding in exchange for PRHC purchase of units.

Please have the authorized signing authority for the Society execute this letter, acknowledging that the Society has reviewed and accepted the terms of this Provisional Project Approval. Please return the fully executed letter to the attention of Tara Schmidt, Development Manager, BC Housing, no later than June 30, 2020.

We wish you success in developing your Project and we look forward to working with you.

Yours truly,

Malcolm McNaughton
Director, Regional Development
Vancouver Island Development Team
BC Housing

I (We) hereby acknowledge and accept that BC Housing has granted a PPA to M'akola Housing Society to develop 75 units of affordable rental housing under the Regional Housing First Program.

(Authorized Signing Officer) Kevin Albers, CEO
M'akola Housing Society

Attachments:

- Appendix A – Requirements
- Appendix B – Society Service Delivery Plan
- Appendix C – Other Attachments
    - Apprentice Report
    - Building Handover Guide
    - Conflict of Interest Guidelines for Directors and Officers of a Society and Statutory Declaration
    - Conflict of Interest for Housing Projects
    - Contractor's Waste Management Plan
    - Contractor's Waste Management Form
    - New Construction GST Checklist
    - Sample Operating Agreement
    - Sample Operator Agreement
    - Sample Section 219 Covenant
    - Design Build CCDC14 Supplementary General Conditions

Cc: Debra Webber, AHMA, Portfolio Manager
Kaela Schramm, M'akola Development Services, Director of Projects & Planning
Tara Schmidt, BC Housing, Development Manager
Jennifer Iten, BC Housing, Director, Finance & Operational Support Services

Home Office
1701 - 4555 Kingsway
Burnaby, BC V5H 4V8
Phone: 604 433-1711
Web: www.bchousing.org

DELIVERED BY EMAIL

May 4, 2020

Kevin Albers
M'AKOLA HOUSING SOCIETY
104-550 Goldstream Ave.
Victoria, BC
V9B 2W7

Dear Kevin Albers:

Re: Notice of Award
RFP # 1070-1920/163
Operator to Lead Design-Build & Operate

Thank you for responding to the BC Housing Request for Proposal for the Operator to Lead Design-Build & Operate project.

The evaluation panel has reviewed your proposal and we are pleased to inform you that M'akola Housing Society has been selected as the successful Proponent. However, the award is subject to the conclusion of successful Provisional Project, Board of Commissioner's and Final Project Approvals.

Please note, the Operator and Operating agreements must be executed prior to Final Project Approval.

Tara Schmidt will be in contact with you shortly to discuss next steps.

Respectfully,

Paul Lam
Supply Chain Management/Procurement Specialist
British Columbia Housing Management Commission

cc: Tara Schmidt

Schedule C



1 / A001 Location Plan
n.t.s.

PROJECT DESCRIPTION

CIVIC ADDRESS:
2170 CHARTERS ROAD
SOOKE, BC.

LEGAL DESCRIPTION:
LOT 1, PLAN EPP44547, SECTION 14, SOOKE LAND DISTRICT, EXCEPT PLAN EPP59378, THAT PART OF LOT 1 SHOWN ON PLAN EPP84965

REGISTERED OWNER
BC Housing — Tara Schmidt
1701-4555 Kingsway — tel: (604)439.4762
Burnaby, BC
V5H 4V8 — tschmidt@bchousing.org

ARCHITECT
dHKarchitects — Charles Kierulf
977 Fort Street — tel: 250.658.3367
Victoria, BC
V8V 3K3 — crk@dhk.ca

STRUCTURAL CONSULTANT
Skyline Engineering — Wade Griffen
380 - 4243 Glanford Avenue — tel: 250.590.4133
Victoria, BC
V8Z 4B9 — wgriffin@seng.ca

MECHANICAL CONSULTANT
AME Group — Marc Trudeau
200 – 638 Smithe Street — tel: (604)684.5995
Vancouver, BC
V6B 1E3 — marctrudeau@amegroup.ca

LANDSCAPE ARCHITECT
LADR Landscape Architects Inc — Megan Walker
3-864 Queens Avenue — tel: 250.598.0105
Victoria, BC
V8T 1M5 — mwalker@ladrla.ca

CIVIL CONSULTANT
Westbrook Consulting — Bruce Crawshaw
#115-866 Goldstream Avenue — tel: 250.391.8592
Victoria, BC
V9B 0J3 — bcrawshaw@wbrook.ca

GEOTECHNICAL
Ryzuk Geotechnical — Shane Moore
28 Crease Avenue — tel: 250.475-3131
Victoria, BC
V8Z 1S3 — shane@ryzuk.com

SURVEYOR
McElhanney — Glen Quarmby
500-3960 Quadra Street — tel: 778.746.7521
Victoria BC
V8X 4A3 — gquarmby@mcelhanney.com

ENVELOPE
Horizon North — Kevin Bruce
540 Athabasca Street W. — tel: (250)828.7245
Kamloops, BC — kbruce@horizonnorth.ca
V2H 1C4

SOOKE ZONING BYLAW SUMMARY

BUILDING DESCRIPTION:
4 STOREY RESIDENTIAL BUILDING

EXISTING ZONE: RM-2 Medium Density Multi Family 2

PROPOSED ZONE: SITE SPECIFIC

SITE AREA: 14,975 sq.m

FLOOR AREA:
Level 0: n/a
Level 1: 1,366 sq.m
Level 2: 1,317 sq.m
Level 3: 1,317 sq.m
Level 4: 1,317 sq.m

TOTAL PROPOSED: 5,317 sq.m

FLOOR SPACE RATIO: 0.35 : 1

LOT COVERAGE: 10.5%

GRADE OF BUILDING: 32.80 m (GEODETIC)
See Site Plan for Grade Calculation

HEIGHT OF BUILDING: 13.6 m

NUMBER OF STOREYS: 4 STOREYS

RESIDENTIAL PARKING: 80 stalls (incl. 2 visitor, 3 accessible)

BICYCLE PARKING: 70 (Class I) + 7-space covered rack at entry (Class II)

SETBACKS:
FRONT: 3.0 m
REAR: 4.5 m
SIDE: 3.0 m

SUITE COMPOSITION:

Studio:	16 suites @	35.5 sq. m =	536 sq. m
1 Bed / 1 Bath:	17 suites @	51.0 sq. m =	867 sq. m
1 Bed / 1 Bath - Accessible:	4 suites @	53.0 sq. m =	212 sq. m
2 Bed / 1 Bath:	23 suites @	70.0 sq. m =	1,610 sq. m
2 Bed / 1 Bath - Accessible:	4 suites @	75.0 sq. m =	300 sq. m
3 Bed / 1.5 Bath:	11 suites @	86.0 sq. m =	946 sq. m
TOTAL:	**75 SUITES**		**= 4,471 sq. m**

BUILDING CODE SUMMARY

REFERENCED DOCUMENT:
BRITISH COLUMBIA BUILDING CODE 2018 - PART 3

MAJOR OCCUPANCY CLASSIFICATION:
• GROUP C - RESIDENTIAL

BUILDING AREA (Footprint):
• 1,490 sq.m

BUILDING HEIGHT:
• 4 STOREYS

NUMBER OF STREETS FACING:
• 1

ACCESSIBLE FACILITIES:
• ACCESSIBLE ENTRANCE
• ACCESSIBLE PARKING STALLS
• ACCESSIBLE SUITES
• MOBILITY SCOOTER PARKING

CONSTRUCTION REQUIREMENTS:
• 3.2.2.51 GROUP C, UP TO 4 STOREYS SPRINKLERED
• MAXIMUM BUILDING AREA 1,800 SQ. M. IF 4 STOREYS
• COMBUSTIBLE OR NON-COMBUSTIBLE CONSTRUCTION WITH NOT LESS THAN 1 HOUR FIRE RESISTANCE RATING FOR FLOORS AND LOADBEARING WALLS 3.2.2.51(2)

LIST OF DRAWINGS

Architectural

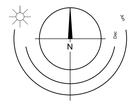
A001	Project Data
A100	Survey
A101	Architectural Site Plan
A201	Level 0 & Level 1 Floor Plans
A202	Level 2 - Level 4 Floor Plans
A301	Building Section
A401	Elevations

Landscape

L1.01	Landscape Plan

Civil

1 of 4	Site Grading Plan
2 of 4	Drain At Parking Plan and Profile
3 of 4	Rain Garden Plan and Profile
4 of 4	Exfiltration Trench Plan and Profile



Rev.	Date	Description
	31 OCT 2019	Issued For Development Permit
plot date	31 OCT 2019	drawing file: 1913.2 A200 Floor Plan.vwx
drawn by	rdc	checked by: crk
scale	n.t.s.	project number: 1913

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Nanaimo BC V9T 2K5
T 1-250-585-5810

project name
Charters Road - Sooke
2170 Charters Road
Sooke, BC

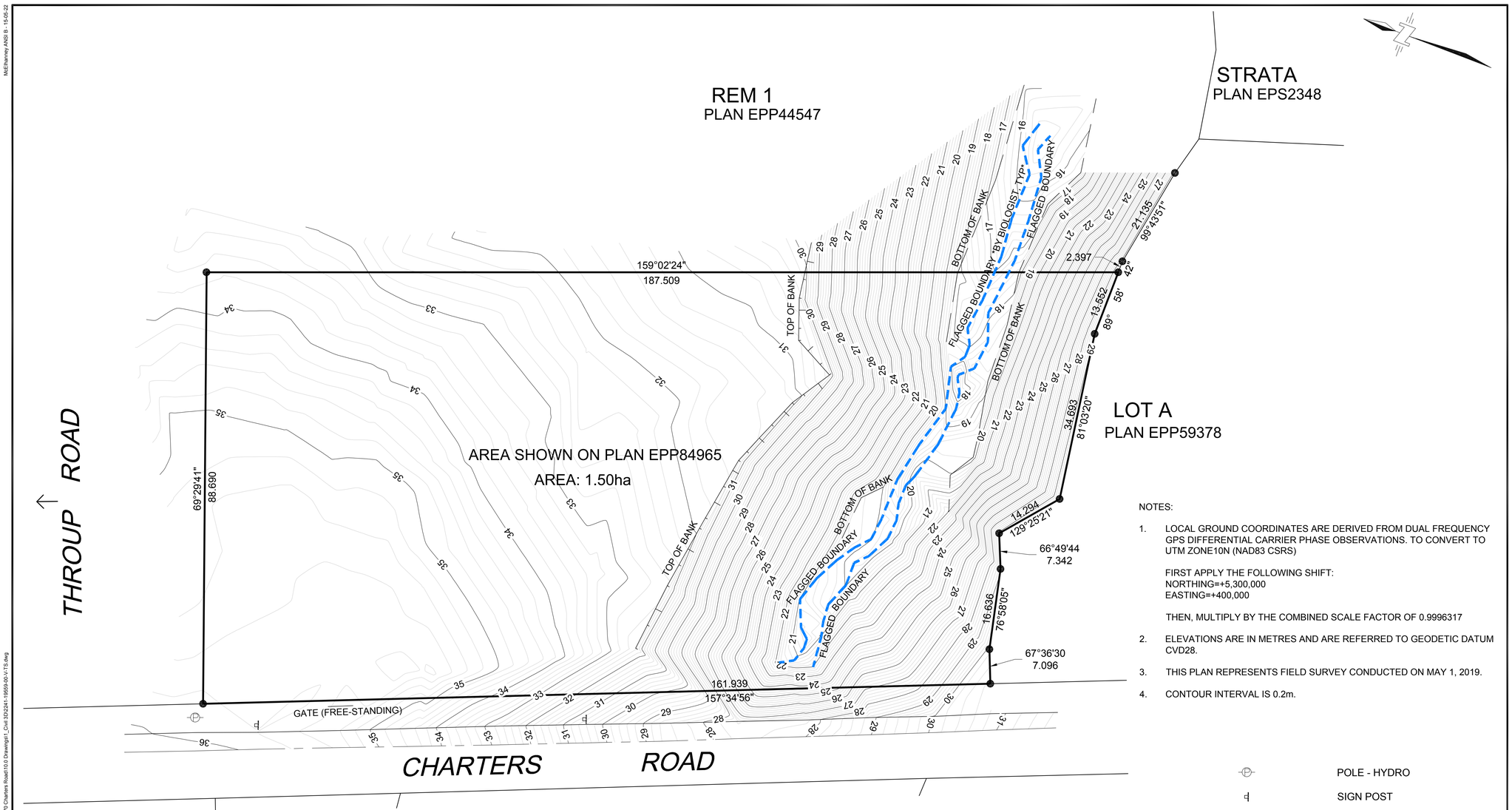
drawing title
Project Data

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drawing no. A001

revision no. -

McElhanney ANSI B - 15-05-22



NOTES:

1. LOCAL GROUND COORDINATES ARE DERIVED FROM DUAL FREQUENCY GPS DIFFERENTIAL CARRIER PHASE OBSERVATIONS. TO CONVERT TO UTM ZONE10N (NAD83 CSRS)

   FIRST APPLY THE FOLLOWING SHIFT:
   NORTHING=+5,300,000
   EASTING=+400,000

   THEN, MULTIPLY BY THE COMBINED SCALE FACTOR OF 0.9996317

2. ELEVATIONS ARE IN METRES AND ARE REFERRED TO GEODETIC DATUM CVD28.

3. THIS PLAN REPRESENTS FIELD SURVEY CONDUCTED ON MAY 1, 2019.

4. CONTOUR INTERVAL IS 0.2m.

POLE - HYDRO

SIGN POST

IRON PIN - FOUND

Rev	Date	Description	Drawn	Surv'd	App'd
0	2019-05-07	ORIGINAL ISSUE	LM	JC	GQ

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0 1:750 30

ORIGINAL DWG SIZE: ANSI B (11" x 17")

McElhanney
McElhanney Consulting Services Ltd.
Suite 500
3960 Quadra Street
Victoria BC
Canada V8X 4A3
Tel 250 370 9221

BC HOUSING MANAGEMENT COMMISSION

TOPOGRAPHIC PLAN OF
2170 CHARTERS RD

SOOKE, BC

Drawing No.
19559-00-V-1 TP

Project Number: 2241-19559-00
Rev.: 0

← DESTROY ALL PRINTS BEARING PREVIOUS REVISION

Rev.	Date	Description
	31 OCT 2019	Issued for Development Permit
plot date	31 OCT 2019	drawing file: 1913.2 A100 Site Plan.vwx
drawn by	RC	checked by: CN
scale	1:250	project number: 1913

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Nanaimo BC V9T 2K8
T 1-250-585-5810

project name: Charters Road - Sooke
2170 Charters Road
Sooke, BC

drawing title: Survey

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drawing no.: A100
revision no.: -

DATE: 2019-05-10, 13:52 FILE: X:\2241\Survey\Projects\19559-00 2170 Charters Road\10.0 Drawings\1_Civil 3D\2241-19559-00-V-TS.dwg

AVERAGE GRADE CALCULATION (in meters)					
GRADE POINT	DISTANCE	START	END	AVERAGE	TOTAL
A-B	22.10	32.50	32.50	32.50	718.25
B-C	12.60	32.50	32.50	32.50	409.50
C-D	4.00	32.50	32.30	32.40	129.60
D-E	68.30	32.30	33.80	33.05	2,257.32
E-F	10.40	33.80	33.80	33.80	351.52
F-G	7.10	33.80	33.80	33.80	239.98
G-A	78.10	33.80	32.50	33.15	2,589.02
TOTAL	202.60				6,695.18
			AVERAGE GRADE		33.05

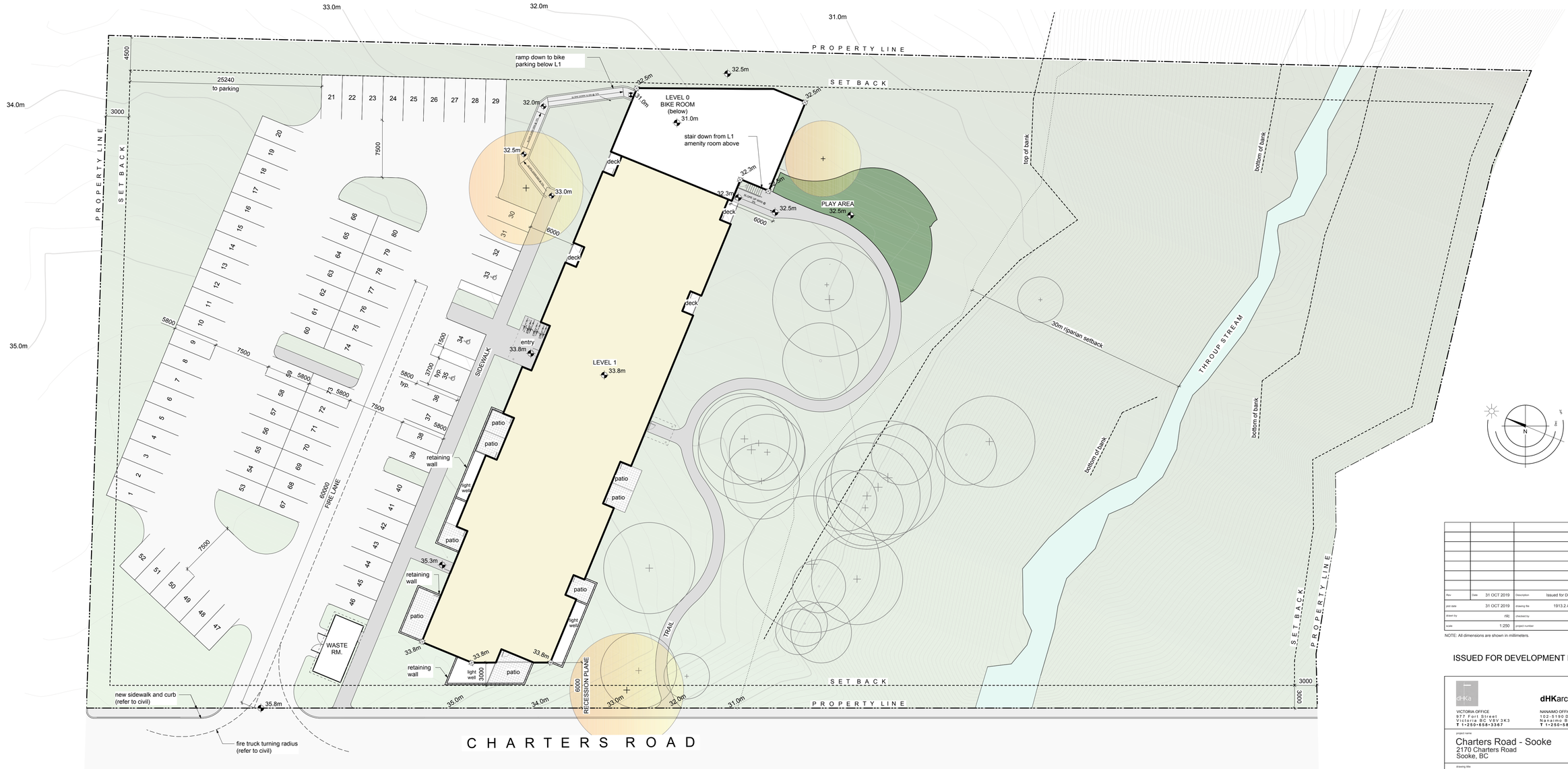
LEGEND

POTENTIAL TREE REMOVAL (REFER TO LANDSCAPE)

NEW ROADWAYS

NEW SIDEWALKS

NEW PATH



Rev	Date	Description
	31 OCT 2019	Issued for Development Permit
plot date	31 OCT 2019	drawing file: 1913.2 A100 Site Plan.vwx
drawn by	NC	checked by: CK
scale	1:250	project number: 1913

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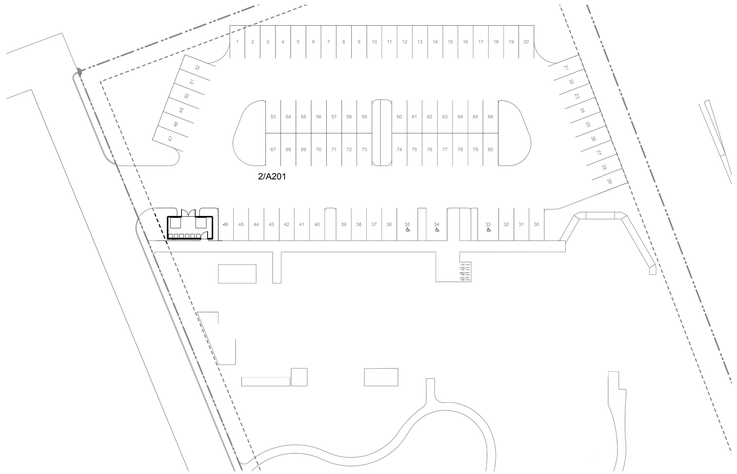
project name
Charters Road - Sooke
2170 Charters Road
Sooke, BC

drawing title
Architectural Site Plan

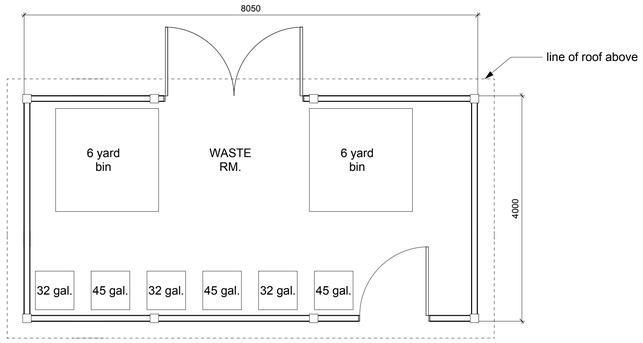
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drawing no. A101

revision no. -

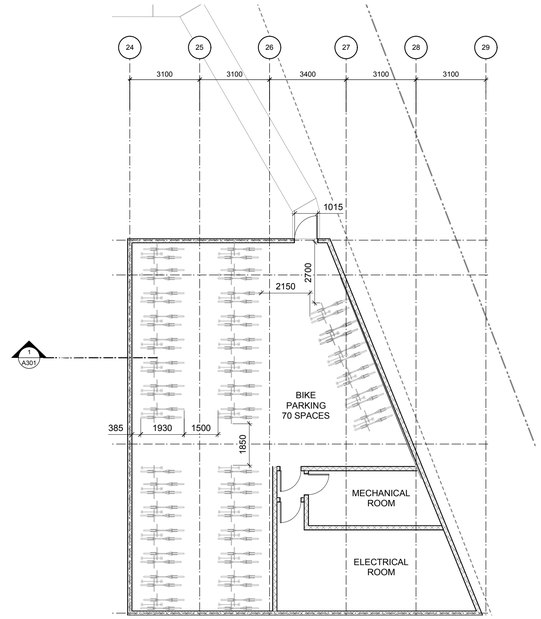


1 / A201 Garbage Room - Key Plan
Scale: 1:500



2 / A201 Garbage Room Plan
Scale: 1:50

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1 : 50

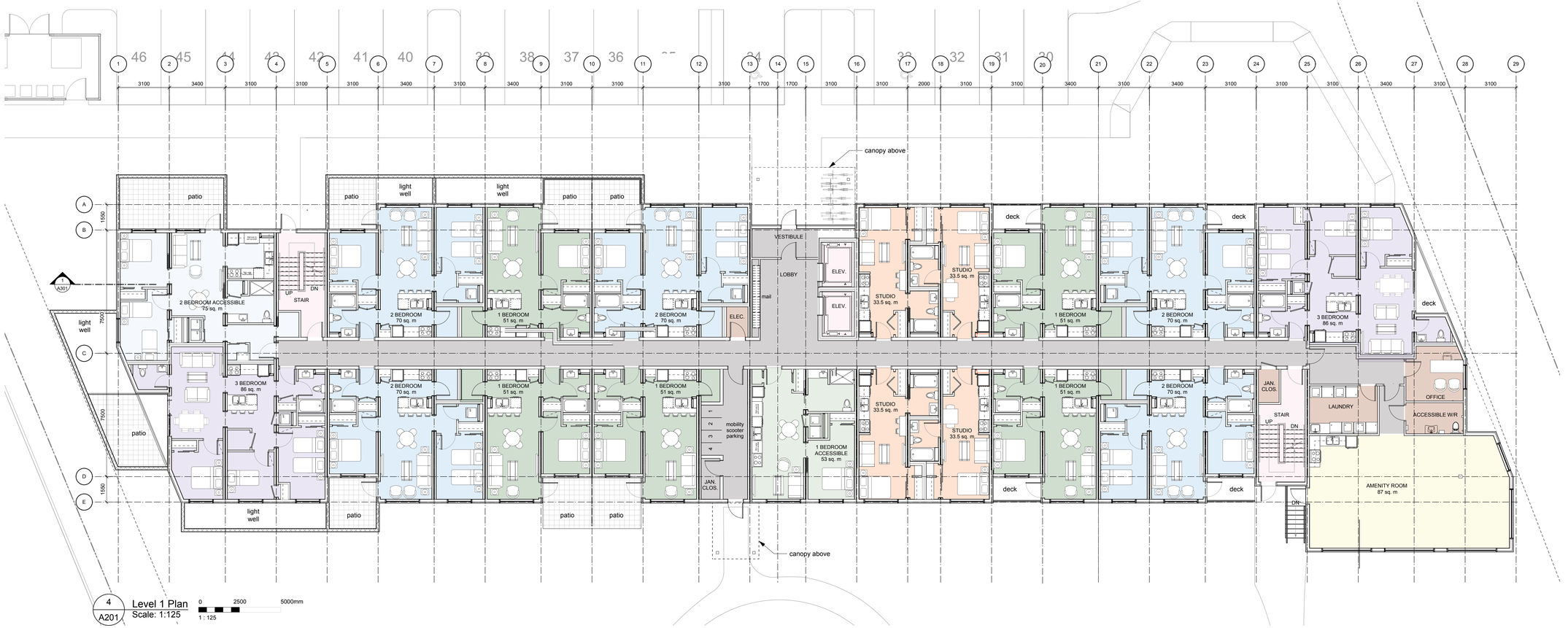


3 / A201 Basement Plan
Scale: 1:125

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1 : 125

ROOM NAME LEGEND

- STUDIO
- 1 BDR
- 1 BDR ACCESSIBLE
- 2 BDR
- 2 BDR ACCESSIBLE
- 3 BDR
- AMENITY
- SUPPORT
- CIRCULATION
- STAIR



4 / A201 Level 1 Plan
Scale: 1:125

0 2500 5000mm
1 : 125

Rev.	Date	31 OCT 2019	Description: Issued For Development Permit
plot date		31 OCT 2019	drawing file: 1913.2 A200 Floor Plan.vwx
drawn by		rsc	checked by: crk
scale		As Noted	project number: 1913

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Nanaimo BC V9T 2K8
T 1-250-585-5810

project name
Charters Road - Sooke
2170 Charters Road
Sooke, BC

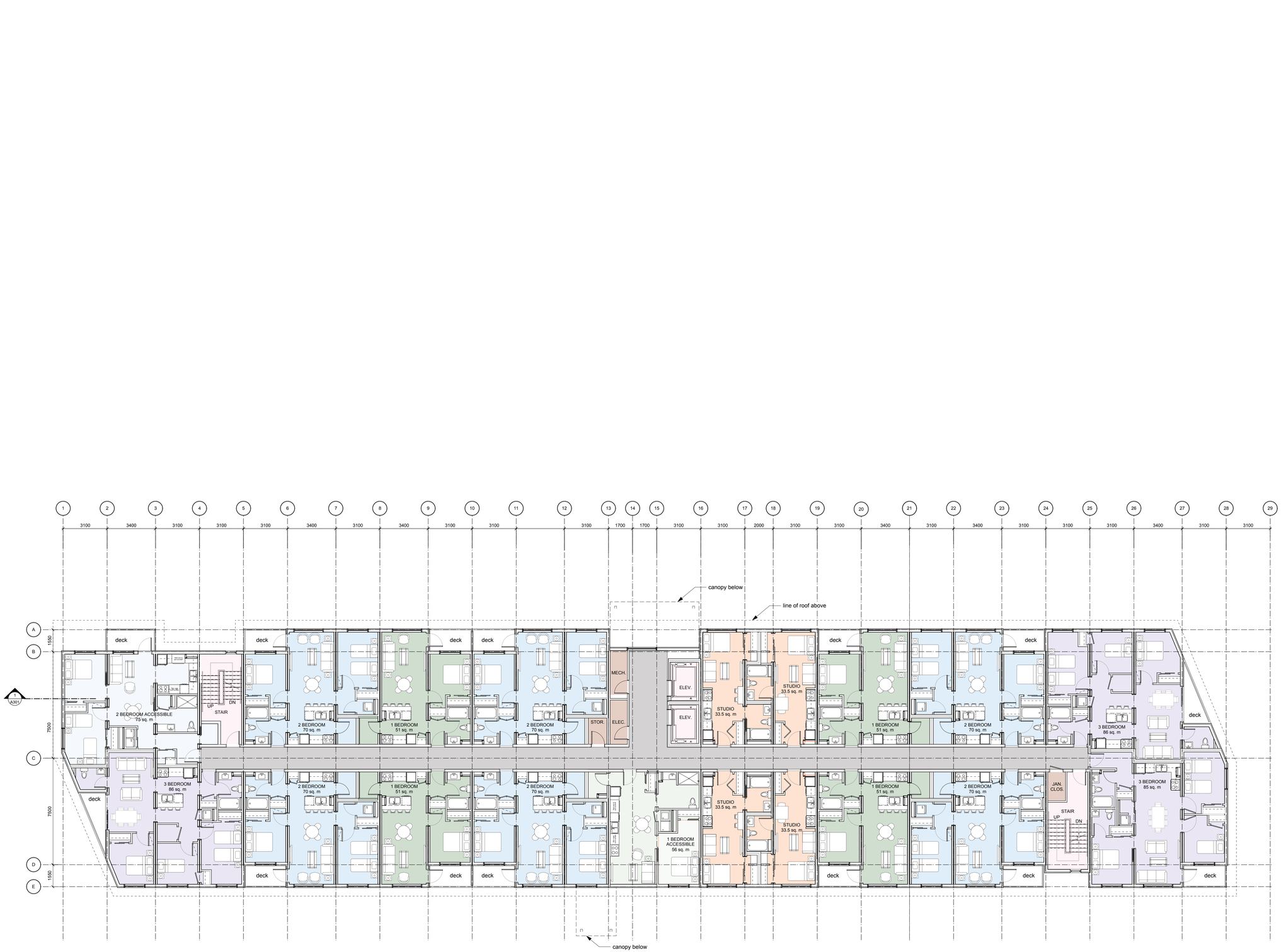
drawing title
Level 0 & Level 1 Floor Plans

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drawing no. A201
revision no. -

ROOM NAME LEGEND

- STUDIO
- 1 BDR
- 1 BDR ACCESSIBLE
- 2 BDR
- 2 BDR ACCESSIBLE
- 3 BDR
- AMENITY
- SUPPORT
- CIRCULATION
- STAIR



1 / A202 Level 2-4 Plan
Scale: 1:125

0 2500 5000mm
1 : 125

N

Rev	Date	Description
	31 OCT 2019	Issued For Development Permit

plot date	31 OCT 2019
drawing file	1913.2 A200 Floor Plan.vwx
drawn by	RC
checked by	DS
scale	1:125
project number	1913

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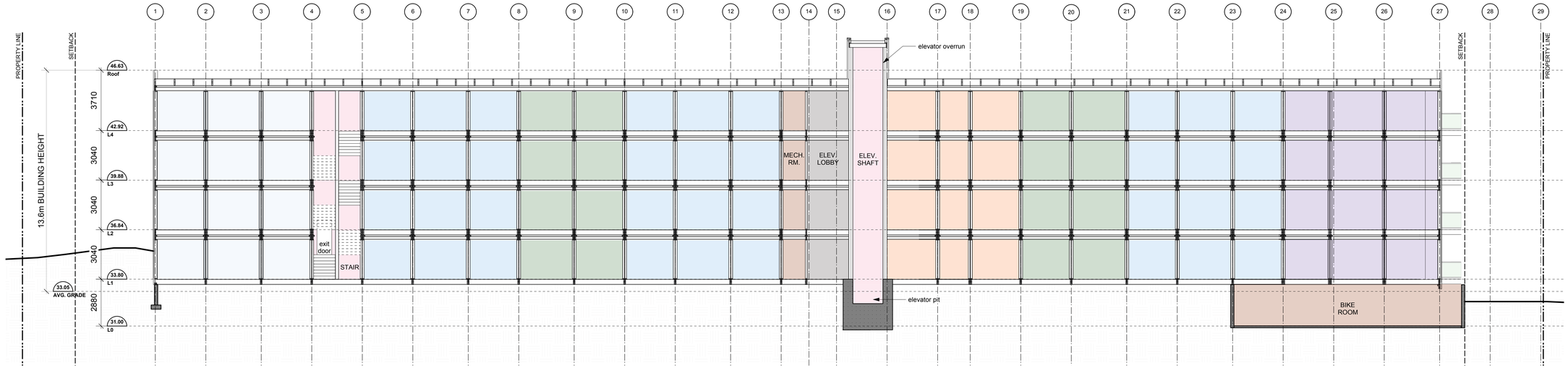
project name
Charters Road - Sooke
2170 Charters Road
Sooke, BC

drawing title
Level 2 - Level 4 Floor Plans

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revision no. -



1 / A301 Level 1 Plan
Scale: 1:125

0 2500 5000mm
1 : 125

ROOM NAME LEGEND

- STUDIO
- 1 BDR
- 1 BDR ACCESSIBLE
- 2 BDR
- 2 BDR ACCESSIBLE
- 3 BDR
- AMENITY
- SUPPORT
- CIRCULATION
- STAIR/ELEVATOR

Rev.	Date 31 OCT 2019	Description: Issued for Development Permit
plot date	31 OCT 2019	drawing file: 1913.2 A200 Floor Plans.vwx
drawn by:	rjc	checked by: raw
scale:	1:125	project number: 1913

NOTE: All dimensions are shown in millimeters.

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Nanaimo BC V9T 2K6
T 1-250-585-5810

project name
Charters Road - Sooke
2170 Charters Road
Sooke, BC

drawing title
Section

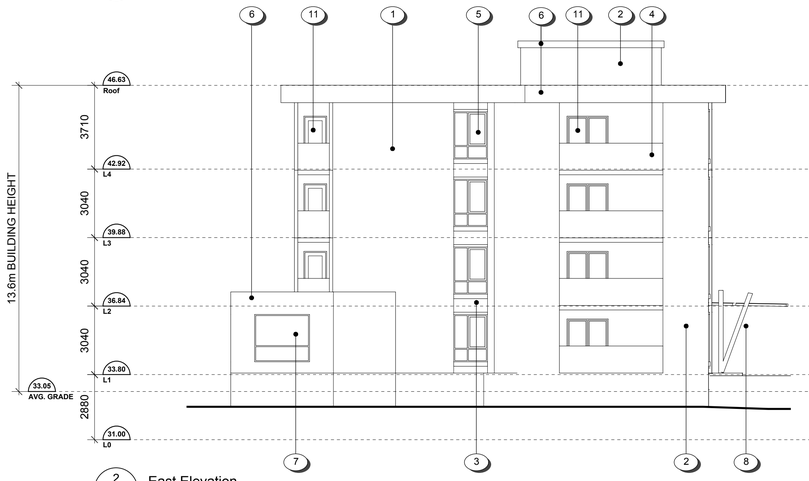
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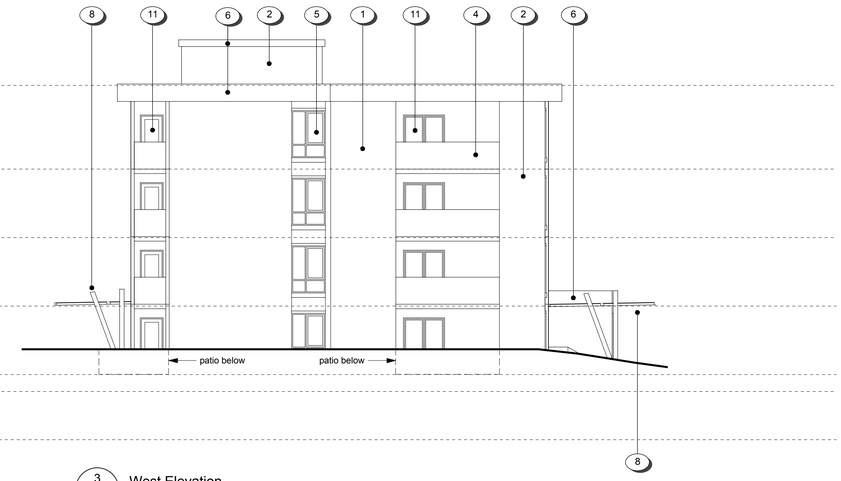
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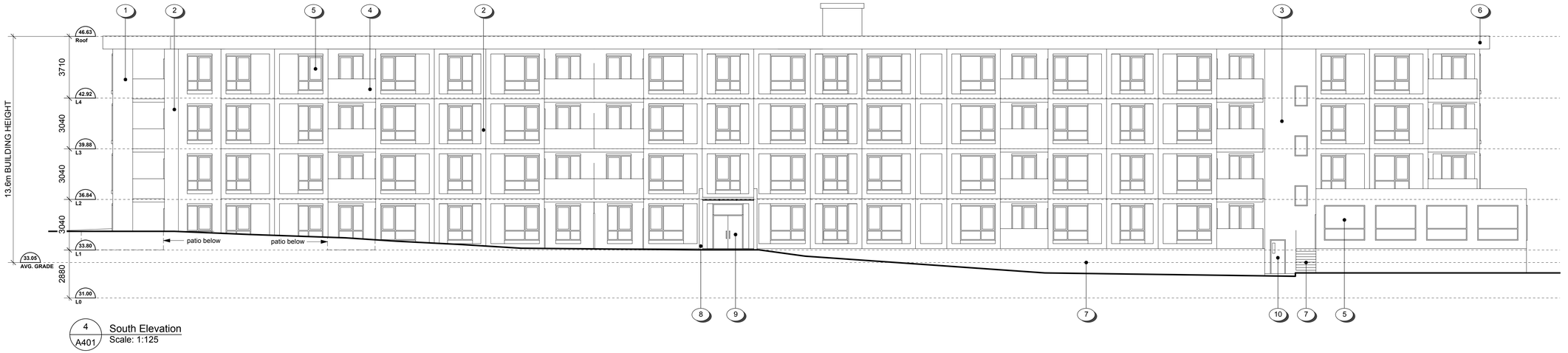
1 / A401 North Elevation
Scale: 1:125



2 / A401 East Elevation
Scale: 1:125



3 / A401 West Elevation
Scale: 1:125



4 / A401 South Elevation
Scale: 1:125

MATERIALS SCHEDULE

1. FIBRE CEMENT SIDING - Wood Tone
2. FIBRE CEMENT SIDING - White
3. FIBRE CEMENT SIDING - Grey
4. TEMPERED GLASS GUARD WITH PREFINISHED ALUMINUM FRAME - White
5. VINYL WINDOW - White
6. PREFINISHED METAL FLASHING - White
7. CONCRETE
8. HEAVY FIR TIMBERS - Natural Stain
9. TEMPERED GLASS DOOR
10. PAINTED METAL DOOR - Grey
11. VINYL DOOR - White

Rev	Date: 31 OCT 2019	Description: Issued for Development Permit
plot date	31 OCT 2019	drawing file: 1913.2 A100 Site Plan.vwx
drawn by	rlc	checked by: rgw/crk
scale	1:125	project number: 1913

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Nanaimo, BC V9T 2K6
T 1-250-585-5810

project name
Charters Road - Sooke
2170 Charters Road
Sooke, BC

drawing title
Elevations

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revision no. -

Regional Housing Trust Fund
Program Policy Guidelines

In March 2005, the Capital Regional District (CRD) launched the Regional Housing Trust Fund (RHTF) Program in response to a priority identified in the Regional Housing Affordability Strategy (RHAS). This priority identified that fundamental to the success of the RHAS was the establishment of the RHTF.

PROGRAM OVERVIEW AS IDENTIFIED IN CRD BYLAW 3266

The fund was established by the CRD for the purpose of providing capital funding:

1. To assist in the acquisition, development and retention of housing that is affordable for those households in the region with low or moderate household incomes;

2. To facilitate social and economic investment in affordable housing;

3. To assist people in core housing need, primarily those in the lowest two quintiles of regional household income as established in the most recent Canada Census; and,

4. To facilitate achieving the strategic directions outlined in the CRD's Regional Growth Strategy.

CRD PARTICIPATING AREAS

The participating areas are: Metchosin, View Royal, Victoria, Central Saanich, Saanich, North Saanich, Esquimalt, Oak Bay, Sooke, Sidney, Highlands and the Electoral Areas of Salt Spring Island and Southern Gulf Islands.

Funds raised from the participating areas shall be used to contribute to projects in the eligible participating areas that include funds from other partners, such as, contributions from senior governments and other housing stakeholders, including non-profit societies, corporations and individuals.

WHO CAN APPLY

Eligible applicants include:

- regional non-profit housing societies
- private developers, landlords and individuals

The RHTF encourages partnerships between non-profit housing societies and the private development industry, with the ownership and ongoing operations of the project by the non-profit housing society.

ELIGIBLE PROJECTS

The primary purpose of the RHTF funding is capital grant to:

- encourage the initiation of affordable rental housing development
- encourage leveraging and funding partnerships with other government funding agencies, private development industry, community agencies and individuals
- to assist in the retention of existing or construction of new affordable housing
- provide affordable rental accommodations for tenants within prescribed income targets

Tenants of the project will have rights under the *BC Residential Tenancy Act*.

The priority of RHTF funding for the period 2017-2021 is as follows:

> *That funds will be targeted to proposed affordable housing projects within approved Regional Housing First Program projects for the period 2017-2021.*

The 2019 Housing Income Limits (HILs) for Victoria as adopted by CMHC and BC Housing.

Bachelor	*= $42,500*
One Bedroom	*= $42,500*
2 Bedroom	*= $56,000*
3 Bedroom	*= $75,500*
4+ Bedroom	*= $84,500*

FUNDING ASSISTANCE

Assistance is in the form of a grant that does not have to be repaid if the recipient agrees to the terms and conditions of a 20-year funding agreement.

Applications are considered for affordable housing proposals that have a minimum of 5 to 1 leveraging of funding.

Funding requests will be considered for applications ranging in amounts from $5,000 to $15,000 per unit.

APPLICATION PROCESS AND PROCEDURE

1. The proponent submits a Letter of Intent to the RHTF Administrator.
2. The Administrator presents the Letter of Intent to the RHTF Commission, which recommends the proponent proceed with a full application, or not.
3. Proponent provides an application package to the Administrator for review and final completion.
4. The Administrator presents the application package to the RHTF Advisory Committee for evaluation and scoring. A recommendation is made to the RHTF Commission to grant funds to the proponent, request further information from the proponent or reject the application.
5. The RHTF Commission reviews the Advisory Committee's recommendation(s) and, if in agreement, makes a recommendation to the CRD Board of Directors to fund the RHTF grant.
6. The CRD Board of Directors votes on the recommendation to fund the grant.

CONTACT:

RHTF administrative services are provided by the CRD Housing Planning and Programs.

John Reilly
Manager, Housing Planning and Programs
625 Fisgard Street, Victoria, BC
Tel 250-360-3081

Jerry Michael
Administrative Coordinator, Housing Planning and Programs
625 Fisgard Street, Victoria, BC
Tel 250-360-3652

B) Capital Regional Housing Corporation staff provided an overview of the Michigan Square project and answered questions from commissioners.

CRD staff were given the opportunity to review Staff Reports relevant to each of the three proposals including examination of current financial capacity of the RHTF.

MOVED by Commissioner David Screech, **SECONDED** by Commissioner Gary Holman
That the Regional Housing Trust Fund (RHTF) Commission recommends to the Capital Regional District Board: That a grant in the amount of $765,000 to M'akola Housing Society be approved to support the development of 51 units of affordable rental housing at 2075 Drennan Street and 6418 Sooke Road, Sooke, subject to meeting the terms of the RHTF Grant Funding agreement.

CARRIED

MOVED by Commissioner David Screech, **SECONDED** by Commissioner Lynda Hundleby
That the Regional Housing Trust Fund (RHTF) Commission recommends to the Capital Regional District Board: That a grant in the amount of $330,000 to M'akola Housing Society be approved to support the development of 22 units of affordable rental housing at 2170 Charters Road, Sooke, subject to meeting the terms of the RHTF Grant Funding agreement.

CARRIED

MOVED by Commissioner David Screech, **SECONDED** by Commissioner Barbara Fallot
That the Regional Housing Trust Fund (RHTF) Commission recommends to the Capital Regional District Board: That a grant in the amount of $570,000 to the Capital Region Housing Corporation be approved to support the development of 38 units of affordable rental housing at 330 Michigan Street, Victoria, subject to meeting the terms of the RHTF Grant Funding agreement.

CARRIED

6. MOTION TO CLOSE THE MEETING in accordance with the *Community Charter*, Part 4, Division 3, Section 90(1)(e) "the acquisition, disposition or expropriation of land or improvements, if the council considers that disclosure could reasonably be expected to harm the interests of the municipality."

MOVED by Commissioner Lynda Hundleby, **SECONDED** by Commissioner Bob Thompson
That the meeting be closed.

CARRIED

The meeting was closed at 10:22am and resumed in open session at 10:24am.

7. ROUND TABLE

Commissioners held a round table to share information on housing in their respective municipalities and electoral areas.

Making a difference...together

REPORT TO REGIONAL HOUSING TRUST FUND COMMISSION
MEETING OF FRIDAY, SEPTEMBER 25, 2020

SUBJECT **2075 Drennan Street and 6418 Sooke Road**

ISSUE SUMMARY

A recommendation to the Capital Regional District (CRD) Board is needed in response to an application from M'akola Housing Society (MHS) for a $765,000 grant from the Regional Housing Trust Fund (RHTF) to support 51 units of affordable rental housing within a proposed development at 2075 Drennan Street and 6418 Sooke Road, located in the Sooke.

BACKGROUND

On February 26, 2019, the RHTF Commission approved the following resolution:

> *That the Regional Housing Trust Fund Commission suspend the receipt of Letters of Intent for non-RHFP projects until allocations for all qualified Regional Housing First Program (RHFP) projects have been approved by the Commission.*

In December 2015, the CRD approved a resolution supporting the borrowing of up to $30 million (M) to establish the Regional Housing First Program (RHFP) to meet the needs of chronically homeless individuals. The Vancouver Island Health Authority (Island Health) has agreed to provide health supports to tenants as required. In 2020, the CRD, through an Alternative Approval Process, approved an additional $10M in funding for the program.

Since that time, the CRD has partnered with BC Housing Management Commission and Canada Mortgage and Housing Corporation to obtain matching grants of $40M each to create a capital pool totaling $120M, to build 400 units of housing to be rented at the provincial income assistance shelter rate ($375/month) to address the needs of people experiencing chronic homelessness in the region. Under the mixed-market model, the combined $120M could leverage up to 2,000 units of housing, with a value of up to $600M.

Project Description

The project area consists of two legal lots at 2075 Drennan Street and 6418 Sooke Road that were formerly consolidated into a single parcel for this project. The proposal has MHS as operator. Currently MHS manages over 1,600 affordable housing units across British Columbia which target a variety of tenant groups. The development will construct 170 new affordable units in two 5-storey structures including a future road dedication along Sooke Road with construction anticipated to begin in 2021.

The 170 unit project will include 34 units at provincial income assistance rates under the RHFP. To facilitate 51 units of affordable rental units the project is requesting $765,000 through the RHTF. The breakdown of affordability levels within the building are as follows: 20% Shelter Rate, 30% Median Market and 50% Near-Market. The rents proposed for the 51 one, two and three-bedroom Median Market units align with the RHTF Guidelines and all units meet the definition of affordable under the RHFP Definitive Agreement. Table 1 provides a more detailed summary of the project unit structure.

Table 1 –Drennan and Sooke Buildings: Unit Summary

Unit Type	Number	Rental Criteria	Rent Level	Income Level
Studios	20	Shelter Rate	$375	Provincial Income Assistance Rate
One Bedroom	14	Shelter Rate	$375	Provincial Income Assistance Rate
One Bedroom	26	Median Market	$1,250	$71,810 or less
Two Bedrooms	10	Median Market	$1,580	$108,000 or less
Two Bedrooms	60	Near Market	$1,677	$108,000 or less
Three Bedrooms	15	Median Market	$1,700	$108,000 or less
Three bedrooms	25	Near Market	$1,800	$108,000 or less
TOTAL	**170**			

Evaluation Comments
The RHTF Application was reviewed by the RHTF Advisory Committee on July 15, 2020 and received a favorable score of 206 out of a possible 235. The RHTF Advisory Committee recommends that M'akola Housing Society receive a grant of $765,000 to support the Drennan and Sooke project.

ALTERNATIVES

Alternative 1
The Regional Housing Trust Fund (RHTF) Commission recommends to the Capital Regional District Board:
That a grant in the amount of $765,000 to M'akola Housing Society be approved to support the development of 51 units of affordable rental housing at 2075 Drennan Street and 6418 Sooke Road, Sooke, subject to meeting the terms of the RHTF Grant Funding agreement.

Alternative 2
That the Regional Housing Trust Fund Commission provide Capital Regional District staff with alternative direction.

IMPLICATIONS

Financial Implications
The status report of the RHTF service provided in Table 2 demonstrates that the fund has the capacity to fulfill this request. If all three of the applications presented to the Commission in 2020 are approved, the fund balance will be approximately $767,000 to support future projects.

Table 2 – RHTF Service Financial Status

Current RHTF Status	**Amount**
Current RHTF Service Surplus	$3,100,000
2020 Requisition	$1,000,000
Sub Total	$4,100,000
Committed to Other Projects	
Croftonbrook	($408,000)
Cedar Grove	($600,000)
West Park Lane	($660,000)
Sub Total	($1,668,000)
Total Available in 2020 for New Projects	$2,432,000
Projects Proposed for 2020	
Michigan	($570,000)
Charters	($330,000)
Drennan & Sooke	($765,000)
Total Remaining in RHTF	**$767,000**

Social Implications
This project will provide 34 units of independent housing to help address the needs of people experiencing chronic homelessness in the region. Providing a grant to support the development of the 51 affordable rental units will help address the needs of low and moderate income populations as defined by the RHFP Definitive Agreement, many of whom continue to experience substantial hardship within the current rental market. Despite the impact of the COVID-19 pandemic, there is evidence that the rental market continues to experience low vacancy rates, with the lowest cost rental units showing the lowest vacancy rates.

Service Delivery Implications
The use of the grant to achieve affordable housing units will be monitored through Regional Housing's annual reporting processes.

CONCLUSION

The RHTF Commission has limited Letters of Intent and applications for grants to RHFP projects. M'akola Housing Society, through the redevelopment of 2075 Drennan Street and 6418 Sooke Road, is providing an opportunity to expand the community's existing affordable housing stock and include units at provincial assistance shelter rates to address chronic homelessness. The mixed-market approach outlined in the application aligns with the RHFP model. The proponent's experience and long history in the development and operation of affordable housing makes this an appropriate project to be funded.

RECOMMENDATION

That the Regional Housing Trust Fund (RHTF) Commission recommends to the Capital Regional District Board:
That a grant in the amount of $765,000 to the M'akola Housing Society be approved to support the development of 51 units of affordable rental housing at 2075 Drennan Street and 6418 Sooke Road, Sooke, subject to meeting the terms of the RHTF Grant Funding Agreement.

Submitted by:	John Reilly, MSW, RSW, Manager Housing Planning, Policy and Programs
Concurrence:	Kevin Lorette, P. Eng., MBA, General Manager, Planning & Protective Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT(S)

Appendix A: Drennan and Sooke Application for Funding
Appendix B: Regional Housing Trust Fund Program Policy Guidelines

M'AKOLA HOUSING SOCIETY

Application for Regional Housing Trust Fund

Sooke/Drennan Project
British Columbia

June 30, 2020

June 30, 2020

John Reilly
Manager, Housing Planning and Programs
Regional Housing
Capital Regional District
625 Fisgard Street
Victoria, BC V8W 1R7

RE: Application for Regional Housing Trust Fund for the 'Sooke Drennan Project'

Dear Review Committee:

M'akola is pleased to submit this response to CRD Regional Housing Trust Fund. The Project Team has reviewed the information contained in the application form.

The attached response demonstrates the Project Team's interest, capacity, and expertise to carry out the full scope of work needed to support the development of a new non-profit housing development. This includes working with all levels of government, streamlining the development and construction process, closely monitoring progress, and ensuring the financial feasibility of the project through to building completion and operations.

Please contact Kaela Schramm, Director of Projects and Planning at M'akola Development Services (MDS), by telephone or email if you have any questions regarding this proposal.

Sincerely,



Kevin Albers, CGA, CPA, CAFM, CIHCM
Chief Executive Officer
M'akola Group of Societies

This proposal is submitted by M'akola Development Services (MDS), on behalf of M'akola Housing Society (MHS), to respond to the **Application for Regional Housing Trust Fund**.

PROPOSAL CONTACT
Kaela Schramm, MEd, MUP, AICP, RPP
Director of Projects and Planning
M'akola Development Services
107-731 Station Ave.
Victoria, BC V9B 5R5
p. 778.265.9716
e. kschramm@makoladev.com

PROPONENT CONTACT
Kevin Albers, CPA, CGA, CAFM, CIHCM
Chief Executive Officer
M'akola Housing Society
104-550 Goldstream Ave.
Victoria, BC V9B 2W7
p. 250.940.2746
e. kalbers@makola.bc.ca

Capital Regional Housing Trust Fund

For Internal Use Only

Application for Funding

File #_____

1.1 Summary Information

Sponsor

Name of Society: M'akola Housing Society

Mailing address: 104-550 Goldstream Ave., Victoria, BC, V9B 2W7

Telephone: 250-940-2746 Fax:

Date of incorporation: February 5th, 1984

Canada Revenue Agency charity number: 13063 7903 RR 001

Contact person and position: Kevin Albers, CEO Telephone: 250-940-2746

Proposal Summary

Target clientele (tenants). Please indicate the client group(s) the Society wishes to serve and the number of units proposed (for example, supportive seniors, women in transition, persons with mental illnesses homelessness). If more than one group is being targeted, indicate the approximate number of units that will dedicated to each group.

Client Group (Tenants)	Number of Units	Income Target
Deep Subsidy	34	Income Assistance (<$15,000 per year)
Affordable	136	Low to Moderate Income - Less than or equal to $71,810 (studio to 1 bedroom) to $107,000 (2 bedroom +)
Total	**170**	

Tenant Selection Process

How will tenants be selected?

Tenants for the RHFP units will be chosen from the Coordinated Access and Assessment waitlist system operated by BC Housing, Island Health and the CRD targeting individuals experiencing chronic homelessness. Through the Greater Victoria Coalition to End Homelessness Community Plan, the community has agreed to prioritize Indigenous, Youth and Women Fleeing Violence so as the housing is reflective of the populations in need.

Tenants for the remaining affordable and near-market units will be marketed through craigslist and other market-based sources. Tenants will be selected based on income testing and meeting the above mentioned income thresholds. Individuals and families of Indigenous ancestry will be prioritized per the Society's mission and mandate.

Will tenancies be in accordance with the BC Residential Tenancy Act? Yes Explain:

All tenants will have the full rights and obligations of the RTA.

Development Team

Project manager: (contact) M'akola Development Services - Kaela Schramm

Address: ____107- 731 Station Ave, Victoria BC, V9B 5R5__
Phone: _778-265-7489_____ Fax: ___N/A_____

Procurement strategy. Indicate if the Society has determined its strategy for constructing the building and assembled a development team.

■ Design-Build

Developer: (contact) Scansa Construction Ltd – Sarah Bartlett - Project Manager

Address: _2089 Millstream Rd , Victoria, BC, V9B 6H4

Telephone: 250-478-5222 Fax: ____N/A_____

Architect: (contact) Studio 531 – Jesse Garlick, Project Manager

Address: __531 Herald St, Victoria, BC, V8W 1S3

Telephone: 778-372-4827 Fax: ____N/A_____

Service Delivery Strategy

Please indicate what services the tenants will need and how the Society will provide them. For example, if meal service is intended, explain whether the Society's own staff will prepare and serve them or whether the Society will contract with another entity to provide them. If the Society will be contracting out services, please identify potential delivery partners.

Tenants will live independently and not require supports. Tenants in the social assistance units placed through the Coordinated Access System, Island Health will deliver flexible, mobile services based on the individual needs of people living in the housing units.

If the Society has engaged a consultant to help set up the delivery of support services (or specify and negotiate services with third party providers), please give the contact information below.

Service delivery consultant: (contact) N/A

Target Occupancy Date

When would your proposed Project be ready for occupancy?
Project start is targeted for December 2020, there will be staged concurrent development of both buildings with occupancy for both targeted by the end of 2022.

2.1 Letter of Committal

Reference Appendix A

3.1 Society Capacity

Sponsor Experience, Organization, and Development Team

MHS manages over 1,600 affordable housing units across British Columbia which target a variety of tenant groups including families, seniors/Elders, and singles

Number of staff: over 100 (Full Time Equivalents)

Number of directors (board members): 10

Number of members who are not also directors: 1

Does your organization have any formal relationship with other community groups, for example a provision in your by-laws requiring membership by some directors in a "parent" organization? (Describe briefly if "yes".)

N/A

Does your organization have a historical relationship with other community groups? For example, was your organization founded by a service club?

N/A

Does your organization have a fund-raising committee, branch, or a relationship with a foundation?

no

When was the last major capital project undertaken by the Society? Briefly describe its scope. Braidwood - developed a 35-unit affordable housing complex in Courtenay, BC for low-income singles and those at risk of homelessness under the BC Housing IHI program. 731 Station phase 1 is a newly opened building with 60 units in Langford developed under the BC Housing Aboriginal PIAH program, it is currently just in the tenanting process.

Please summarize the Society's organization, using the format below. Add or delete "groups" as necessary.

Board/Committee Structure	**Number of Members and Chair or Board Liaison** (when applicable)	**Role** (brief description as appropriate)
General Membership	10 Positions– Chair (President) Bruce Parisian	All Board Members are Members of the society +1 honourary Elder.
Board of Directors	10 Positions– Chair (President) Bruce Parisian	Governance Board
Executive Committee	4 Positions- Chair (President) Bruce Parisian	President – Bruce Parisian Vice-President – David Seymour Treasurer – Carl Mashon Secretary – Roger Kishi
Nominating (or Recruiting) Committee	None	
Operations (or Services) Committee	None	
Finance (or Audit) Committee	4 Positions- Chair (President) Bruce Parisian	President – Bruce Parisian Vice-President – David Seymour Treasurer – Carl Mashon Secretary – Roger Kishi
Residents' Activities (or Liaison) Committee	None	
Development (or Special Projects) Committee	None	
Fundraising (or Community Liaison) Committee	None	
Volunteer Activities Committee	None	

1. **Mandatory** Please provide a profile of your officers and directors including their roles (if they have particular responsibilities) and their relevant experience, skills and/or education.

   Reference Appendix B

2. **Mandatory** Please provide a profile of your senior staff including their roles and responsibilities and their relevant experience, skills and/or education.

   Reference Appendix B

3. **Mandatory** Please submit a copy of the Society's Certificate of Incorporation, constitution and by-laws or application for incorporation and draft constitution and by-laws.

   Reference Appendix C

4. **Mandatory** Please submit copies of the most recent auditor's letter of opinion with respect to the Society's financial statements, any recent management letters from the Society's auditor, and your financial statements for the most recent fiscal year for which they are available.

   Reference Appendix D

5. Please submit any contracts (including draft contracts), letters of agreement or other documents which establish a contractual relationship between the Society and its consultants and/or partners in the Proposal.

   Reference Appendix E - LOI with Scansa.

6. Please attach, if available, the Society's mission statement, history or any promotional material used for recruiting or fundraising.

   Reference Appendix F Society's mission statement and vision

4.1 Project Rationale: Business Case

Reference Appendix G

5.1 Housing Concept

The Development Permit Application designs and renderings are attached as Schedule C to this application. The design shows the unit layouts per floor, indoor and outdoor amenity space, and proposed landscaping.

Unit Type	Bathroom		Kitchen			
	Toilet/ Sink	3 Piece	Stove & Oven	Dishwasher	Washer Dryer	Regular Fridge
Studio		✓	✓			✓
One bedroom		✓	✓			✓
Two bedroom		✓	✓	✓	✓	✓
Three bedroom	✓	✓	✓	✓	✓	✓
Total	38	170	170	108	108 + accessible units	170

Table 1 – Drennan and Sooke: Unit Summary

Unit Type	Deep Subsidy (Chronic Homelessness)		Median Market Rent (Affordable)		Market (Moderate to High Income)		Total
Studio	$375	20 units	n/a		n/a		**20 units**
1-bedroom	$375	14 units	$1,245	21 units	n/a		**40 units**
2-bedroom	n/a		$1,580	10 units	$1,677	60 units	**72 units**
3-bedroom	n/a		$1,700	15 units	$1,800	25 units	**38 units**
Total	**34 units**		**51 units**		**85 units**		**170 units**
Percentage	**20%**		**30%**		**50%**		**100%**

6.1 Society and Community Contributions

Sponsors must have in place broad community financial support for the proposed Project. Please summarize those contributions below, identifying the source and nature of the contribution. Include both capital contributions and ongoing operational contributions.

Source	**Description** (including any conditions)	**Capital**	**Operational** (per year)
Society	Equity contribution	$1.5M	N/A
Municipal Government	To be determined	TBD	TBD
RHFP Partnership (CRD, CMHC, BC Housing)	proportion of units will remain under PRHC ownership as a condition of this equity	$10,200,000	N/A
Federal Government Agencies	Rental Construction Financing Initiative	N/A	N/A
RHTF Funding Request	$15,000 per affordable (low to moderate income) unit x 51 units	$765,000	N/A
	TOTAL	$12,465,000	N/A

PART 3

SURPLUS (DEFICIT) $ **176,247**

9.2 Operating Budget: Support Services

.

Not Applicable

10.1 Schedule

Schedule

Activity	Date of Completion	Time Required (in weeks) for Task and any Comments
1. Completion of feasibility, scope development and costing	30-Sept-20	FPA from BCH in September
2. Completion of the building conversion design drawings	N/A	
3. Municipal land use approvals	30-Sept-20	DP in September, Excavation permit in Sept, full BP issued in December
4. Completion of drawing and specifications	15-Nov-20	Scansa to fix price for FPA in September
5. Capital budget development completed	30-Sept-20	
6. Detailed support services plan completed	N/A	
7. Operating budgets (housing and services) completed	30-Sept-20	
9. Land title transfer and construction start	30-Sept-20	Title transferred after BCH FPA in September
10. Construction completion and occupancy	TBD	24 months of construction – occupancy in late 2022.

Appendix A

Letter of Committal

Date: June 23, 2020

CRD Housing Trust Fund Commission
631 Fisgard Street
Victoria BC
V8W 1R7

Attention: Chair: RHTF Commission

Re: RHTF Application,

I, Kevin Albers am the Chief Executive Officer of M'akola Housing Society, the Proponent of the attached application. By a motion approved by the Society's Board of Directors on June 3, 2020 a copy of which is attached, I have the authority to make this application and bind and make representations for the Society. Through this application, we agree to all the terms and conditions of the Regional Housing Trust Fund operating agreement and we agree to be bound by statements and representations made in this application.

We understand that our application is subject to the *Freedom of Information and Protection of Privacy Act* under which applicants can request that Regional funded bodies such as Capital Region District release information on the allocation of Regional program funds. Records can be withheld if their disclosure would be harmful to the business interests of the Regional body or the party with which it is doing business; however, in the case of a dispute, the final decision is made by the Information and Privacy Commissioner.

We certify that neither the officers nor directors have any actual or potential conflict of interest between our interests and the interests of Capital Region District under this application process. We acknowledge that if a conflict exists Capital Region may, at its discretion, withhold consideration of our application. Further, we understand that the Board, President and staff of the Society may be required to execute a statutory declaration with respect to conflict of interest.

We authorize and consent to Capital Region District receiving and exchanging with others, any references provided in the Proposal, and with other persons with whom we have had dealings. We understand that such information may be a factor in the decision of Capital Region to enter into agreements for this application.

Society's legal name: M'akola Housing Society

Authorized Officer:  Date: June 23, 2020

Appendix B

M'AKOLA HOUSING SERVICES, SENIOR STAFF

MHS is governed by an all-Indigenous Board of Directors with significant related experience, skills, passion, and understanding of the needs of both on and off-reserve Indigenous families and households in need of affordable housing. The Board provides accountability and transparency as an oversight body for the Society and is responsible for developing and approving a strategic plan. Members of the Board establish organizational policy, authorize programs, and act as the trustees of the Society on behalf of the membership. The Board has developed the vision for the organization and is working directly with MDS to drive the development of new units.

Table 7: MHS Senior Staff (Assigned to the Project)

Title	Staff	Role/Responsibility
Chief Executive Officer	Kevin Albers	Responsible for creating, planning, implementing, and integrating the strategic direction of the organization.
Chief Financial Officer	Scott Peterson	Optimize the financial performance of the company, including its reporting, liquidity, and return on investment.
Director of Asset Management	Draven Darkke	Provides overall directions, management and leadership in the areas of housing operations, new housing project development, lease management and asset management.
Director of Housing Operations	Alita Tocher	Responsible for overseeing and coordinating key housing services provided by MHS. This includes overseeing tenant selection, tenancy agreement administration and tenant relations for the entire MHS housing portfolio while maintaining compliance with all applicable laws and regulations.
Board of Directors	Bruce Parisian, David Seymour, Roger Kishi, Kolette Cristante, Nella Nelson, Bruce Underwood, Cyndi Stevens, Carl Mashon, Grace Elliot-Nielson, Debbie Williams, George Cook	Consists of Indigenous representatives who hold the holistic vision for the organization, including the improvement of living conditions for Indigenous people, as well as encouraging and reinforcing traditional practices and cultural beliefs.

Appendix C DUPLICATE

CANADA
PROVINCE OF BRITISH COLUMBIA

NUMBER

S-28370

Province of British Columbia
Ministry of Consumer and Corporate Affairs
REGISTRAR OF COMPANIES

SOCIETY ACT

Certificate of Incorporation

I HEREBY CERTIFY THAT

VICTORIA NATIVE INDIAN HOUSING SOCIETY

HAS THIS DAY BEEN INCORPORATED UNDER THE SOCIETY ACT

GIVEN UNDER MY HAND AND SEAL OF OFFICE

AT VICTORIA, BRITISH COLUMBIA,

THIS 6TH DAY OF FEBRUARY, 1984

L. G. HUCK
DEPUTY REGISTRAR OF COMPANIES

DUPLICATE

CANADA
'NCE OF BRITISH COLUMBIA

NUMBER

S-18870

Province of British Columbia
Ministry of Finance and Corporate Relations
REGISTRAR OF COMPANIES

SOCIETY ACT

Certificate

I HEREBY CERTIFY THAT

VICTORIA NATIVE INDIAN HOUSING SOCIETY

HAS THIS DAY CHANGED ITS NAME TO THE NAME

M'AKOLA HOUSING SOCIETY

GIVEN UNDER MY HAND AND SEAL OF OFFICE

AT VICTORIA, BRITISH COLUMBIA,

THIS 5TH DAY OF APRIL, 1988

B. BECKWITH
ASST. DEPUTY REGISTRAR OF COMPANIES

BRITISH COLUMBIA

CERTIFIED COPY
Of a document filed with the Province of British Columbia Registrar of Companies

CAROL PREST

CONSTITUTION

BC Society • Societies Act

NAME OF SOCIETY: **M'AKOLA HOUSING SOCIETY**

Incorporation Number:	S0018870
Business Number:	13063 7903 BC0001
Filed Date and Time:	March 7, 2018 12:13 PM Pacific Time

The name of the Society is M'AKOLA HOUSING SOCIETY

The purposes of the Society are:

The purpose of the Society is to provide appropriate and consistently affordable housing for Indigenous individuals and families of low and moderate income as defined by the National Housing Act.

Appendix E

M'AKOLA DEVELOPMENT SERVICES

May 3, 2020

Scansa Construction Ltd.
c/o Sarah Bartlett, Project Manager
203-2089 Millstream Road
Victoria, BC V9B 6H4

VIA ELECTRONIC DELIVERY

Re: Construction Management Services for 6418 Sooke Rd., Sooke, BC

Dear Ms. Bartlett,

M'akola Development Services, on behalf of M'akola Housing Society, is pleased to provide this letter of intent to award construction management services for the 6418 Sooke Rd. Project to Scansa Construction Ltd.

M'akola would like to engage your team and services for the construction term of this project. This letter confirms M'akola's intent to enter into a CCDC 14 Design-Build Stipulated Price Contract with the associated BC Housing Supplementary General Conditions (SGCs).

These items must be completed prior to the execution of a CCDC14 contract:

* Satisfactory pricing;
* Final construction and take-out financing commitment from BC Housing;
* Confirmation that all requirements of the contract are met, including proper WorkSafeBC and insurance documentation.

We look forward to working with you on this project. Please contact Kaela Schramm should you have any questions in the interim.

Sincerely,

Kaela Schramm, Director of Projects and Planning
M'akola Development Services
102-550 Goldstream Ave., Victoria, BC V9B 2W7
p. 778.265.7489 I e. kschramm@makoladev.com



DRAWING LIST

ARCHITECTURAL

DP-000	COVER SHEET
DP-001	SURVEY
DP-100	LOCATION & CODE SUMMARY
DP-101	SITE PLAN
DP-201	SOUTH BUILDING FLOOR PLANS
DP-202	NORTH BUILDING FLOOR PLANS
DP-203	SOUTH BUILDING ROOF PLAN
DP-204	NORTH BUILDING ROOF PLAN
DP-205	AMENITY BLDG PLAN, ELEV., SECTIONS
DP-301	SOUTH BUILDING ELEVATIONS
DP-302	SOUTH BUILDING ELEVATIONS
DP-303	NORTH BUILDING ELEVATIONS
DP-304	NORTH BUILDING ELEVATIONS
DP-401	SOUTH BUILDING SECTIONS
DP-402	NORTH BUILDING SECTIONS
DP-501	MATERIALS & FINISHES
DP-502	3D VIEWS
DP-503	3D VIEWS
DP-504	3D VIEWS

LANDSCAPE DRAWINGS

L1.01	LANDSCAPE MATERIALS
L2.02	LANDSCAPE GRADING & SECTIONS
L3.01	PLANTING PLAN

CIVIL DRAWINGS

C-01	SITE PLAN AND STORM WATER MANAGEMENT

REGISTERED ARCHITECT
JESSE GARLICK
2020-07-07
BRITISH COLUMBIA

This document has been digitally certified with digital certificate and encryption technology authorized by the Architectural Institute of BC and the Association of Architectural Technologists. The seal and authorization below has been transmitted to you in digital form. Any printed version can be relied upon as a true copy of the original when supplied by the architect, bearing images of the professional seal and digital certificate, or when printed from the digitally-certified electronic file provided by the architect.

19-254 SOOKE DRENNAN HOUSING
ISSUED FOR DP, 2020-07-06

OWNER
M'akola Housing Society
102 - 550 Goldstream Avenue
Victoria, BC V9B 2W7
t. 778 | 265.7489
contact: Kaela Schramm
e: kschramm@makoladev.com

ARCHITECT
Studio 531 architects Inc.
531 Herald Street
Victoria, BC V8W 1S5
t. 250 | 384.2131
contact: Jesse Garlick
e: jgarlick@studio531.ca

STRUCTURAL ENGINEER
Skyline Engineering
380 - 4243 Glanford Avenue
Victoria, BC V8Z 4B9
t. 250 | 590.4133 ext.103
contact: Wade Griffin
e: wgriffin@seng.ca

MECHANICAL ENGINEER
Integral Group
101 - 1016 Wharf Street
Victoria, BC V8W 2Y9
t. 250 | 418.1288 ext. 5001
contact: Andy Chong
e: achong@integralgroup.com

ELECTRICAL ENGINEER
AES Engineering
500 - 3795 Carey Road
Victoria, BC V8Z 6T8
t. 604 | 695.2701
contact: Roger Dupuis
e: roger.dupuis@aesengr.com

CIVIL ENGINEER
McElhanney Consulting Services Ltd.
500 - 3960 Quadra St
Victoria, BC V8X 4A3
t. 778 | 2746.7430
contact: Ian Sander
e: isander@mcelhanney.com

LANDSCAPE ARCHITECT
Murdoch de Greeff Inc.
200 - 524 Culduthel Road
Victoria, BC V8Z 1G1
t. 250 | 412.2891
contact: Scott Murdoch
e: scott@mdidesign.ca

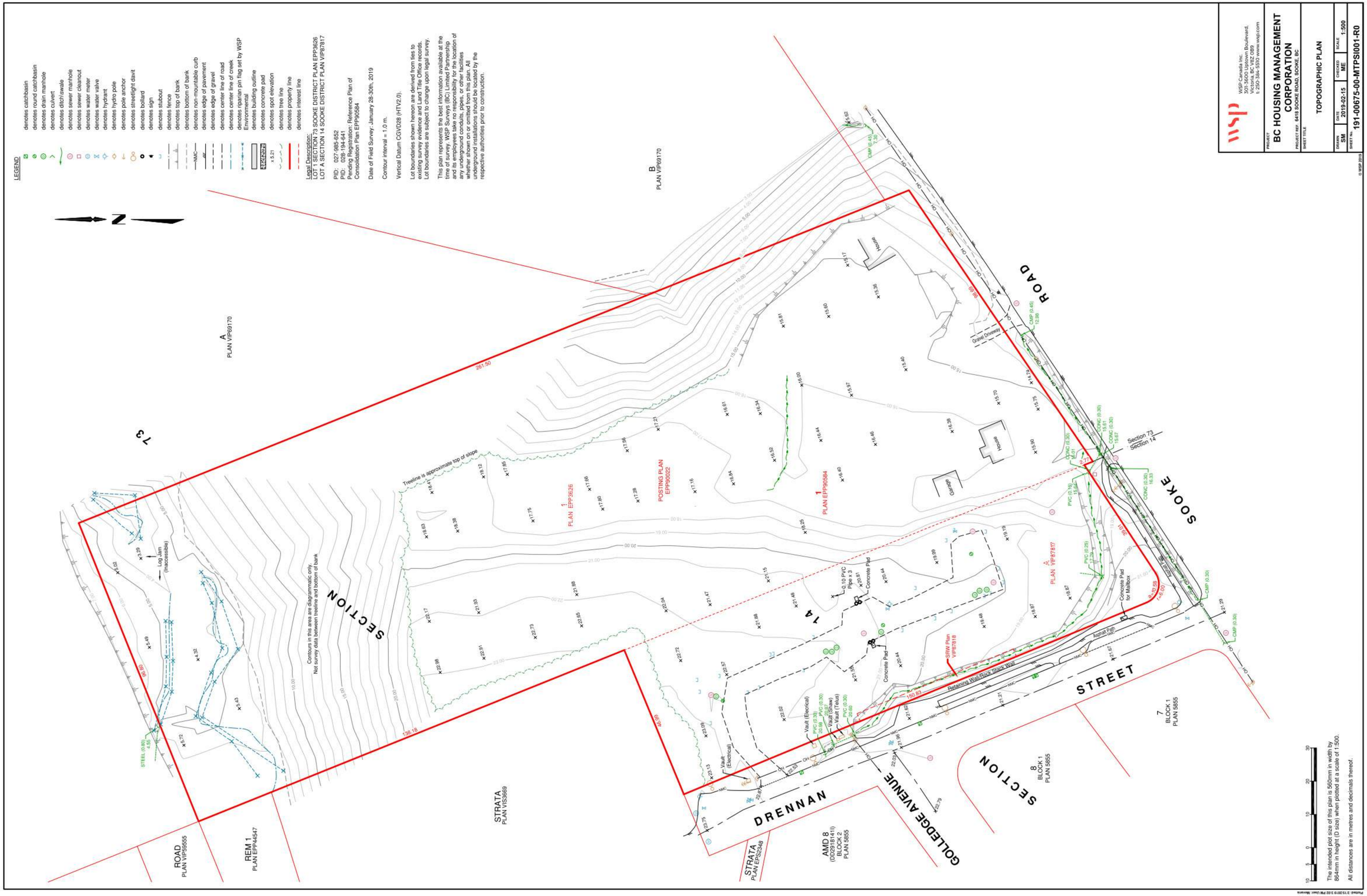
ENERGY CONSULTANT
Morrison Hershfield Ltd.
536 Broughton Street
Victoria, BC V8W 1C6
t. 250 | 361.1215
contact: Voytek Gretka
e: vgretka@morrisonhershfield.com

GEOTECHNICAL CONSULTANT
Ryzuk Geotechnical
28 Crease Avenue
Victoria, BC V8Z 1S3
t. 250 | 475.3131
contact: Shane Moore
e: shane@ryzuk.com

GENERAL CONTRACTOR
Scansa Construction Ltd.
203 - 2089 Milstream Road
Victoria, BC V9B 6H4
t. 250 | 478.5222
contact: Sarah Bartlett
e: sbartlett@scansa.ca

STUDIO531
architects inc

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Print Date: 2020-07-06 4:05:33 PM



STUDIO531 architects inc

19-254 SOOKE DRENNAN HOUSING

SURVEY

Scale: Date: JULY 6, 2020

N

DP-001

PROJECT INFORMATION

PROJECT DESCRIPTION

The project scope is to redevelop the property at the intersection of Sooke Road and Drennan Street, to provide 170 units of affordable housing to the Sooke region. The proposed development is 5 stories in height.

The project area consists of 2 legal lots that were formerly consolidated into a single parcel for this project. The proposal includes a future road dedication along Sooke Road, and a Statutory Right-of Way for a public trail.

Relationship to Context:
The site is centrally located within the District of Sooke, with schools, services, parks and the waterfront all nearby. The site's position along Sooke road provides convenient access to regional transportation connections by car, transit and bike. Primary vehicle and pedestrian access to the development will be from Drennan road, near the intersection with Golledge Ave that provides a walking/bike connection to downtown Sooke.

The North and Eastern portions of the site are bordered by Throup Stream, with riparian setbacks that limit the developable area. Refer to the Riparian Assessment report by Swell.

The North portion of the site also borders the SEPARC Leisure Complex - a public facility that includes pool, arena, fitness programs, baseball fields and other recreational amenities. This proposal includes a SRW trail between Drennan St and SEPARC - a connection that provides a useful, family-friendly pedestrian link between SEPARC and the surrounding residential areas.

The site topography and natural features have several key features that influence the form and character of the development:
- Significant grade change – 6m vertical grade change across the site.
- Riparian setbacks from Throup Stream provide significant setbacks on the north and east boundary lines.
- Archaeological setbacks on the eastern portion of the site limit the development in this area.

The buildings are located on the "upper bench" of the site - a relatively flat area along Drennan Road that provides level pedestrian and vehicular access to the buildings. The "lower bench" on the site is designated for the outdoor amenity areas that includes a natural play area, garden beds and stormwater retention pond. Geotechnical considerations also influenced the placement of the buildings – placing the buildings on the flat portion of the site proved the most cost effective, and a balanced cut-fill configuration to the earthworks.

Building Massing:
The surrounding architecture is primarily multi-family, and duplex residential buildings 2-3 storeys in height. The project is designed to integrate with this context.

The project massing consists of 3 separate buildings: 2 five-storey residential buildings, and a single-storey amenity building.
The residential buildings are staggered and articulated to reduce the visual length of each building. The roofs are gable shaped to visually integrate with the residential single and multi-family context. The lower floor of each residential building is recessed 500mm to suggest a 4 storey building sitting atop a single-storey base.
The single-storey amenity building is designed at the scale of a small home. The building is centrally located adjacent to the amenity gardens and provides a multi-purpose space to be used by the residents, as well as offices for management.

Parking is located between the buildings and amenity gardens. This configuration screens the parking from the public realm and contributes to the residential character along Drennan Road.

The primary and secondary entries to the residential buildings are located on the east side of the building, adjacent to the parking areas. A covered bike structure creates a point of interest at the middle of the site, and a place for visitors to park their bikes.

Each residential building includes an indoor bike room adjacent to the main building lobby, with a separate exterior door for convenient access. Garbage/recycling rooms are also located within the building, providing a secure, handy, bear-proof solution to garbage and recycling.

PROJECT INFORMATION CONTINUED

PROJECT DESCRIPTION
CONTINUED

Architectural Features and Materials:

The architectural character of the development includes a blend of contemporary and traditional elements. The intent is a form and character that is familiar and inviting while incorporating elements that maintain a clean, crisp appearance to the buildings. Materials selected are durable, long-lasting, warm, and inviting. Traditional horizontal siding is combined with wood soffits, warm colored accents, and a brick base.

Traditional elements include:
- Gable roof shape
- Horizontal lap siding
- Single storey amenity building is the size and scale of a nearby home
- "Punched" windows
- Brick base
- Wood privacy screens

Contemporary elements include:
- Aluminum trim details around windows and cladding
- Floating wood canopies at the entries are warm and inviting
- Balcony detailing consist of 2 types of metal panels to create diversity in the façade
- Accent metal panels at the gable ends
- Curtainwall glazing of the common stairs encourage stair use and create natural breaks in the façade.
- Random width vertical joints in metal and wood panels

Sustainability:

The project will be constructed to exceed code minimums for energy performance. This includes the following targets:

- Step Code Level 3
- Energy use and Greenhouse Gas Emissions 15% below the 2015 NECB

Sustainable strategies include:

- Airtight and vapour permeable wall construction combined with Heat Recovery Ventilators to ensure high interior air quality.
- High performance window assemblies. min U=1.4
- Bike parking infrastructure including secure, visitor and covered areas
- Natural amenity area that includes garden plots, natural play area and rain garden.
- Wood construction that captures embodied carbon.
- Site design that focuses on native, drought resistant plantings
- Individual electricity metering to encourage conservation
- Low flow plumbing fixtures
- Increased density in this location, with nearby transit, will reduce personal automobile use and Co2 emissions.

Affordability:
The proposed application will provide a much needed, family friendly mix of affordable, rental housing for Sooke. The application aligns directly with both section 4.7 District of Sooke's Official and the Capitol Regional Districts 2018 Regional Growth Strategy (RGS). Both documents recommend expanding the range of affordable housing in the area.

In order to achieve the affordability criteria mandated by the BC housing funding model, the project design must be cost effective and efficient. Affordability influences all aspects of the project design, from building siting and massing to floor plans, landscape, exterior treatments and balconies.

PROJECT INFORMATION CONTINUED

BUILDING CODE 2018 EDITION OF THE BCBC INCLUDING ALL ADDENDA

Owner	M'AKOLA DEVELOPMENT SERVICES					
Municipal Address	2075 DRENNAN ST. SOOKE, BC					
Legal Description	LOT 1 SECTIONS 14 AND 73 SOOKE DISTRICT PLAN EPP90584					
Zoning	**Current** RM2			**Proposed** RM2		
Lot Area	**Current** 34,120 m2 (3.41 ha)			**Proposed** 34,120 m2 (3.41 ha)		
Lot Coverage	**Permitted** 45% - 15,354 m2			**Proposed** 3,359 / 34,120 = 9.85%		
Building Setbacks		**Front (W)**	**Rear (E)**	**Interior Side (N)**	**Exterior Side (S)**	
	Required	3.0 m	4.5 m	3.0 m	3.0m	
	Provided	6.9 m (min)	54.9 m (min)	44.3 m (min)	23.1 m (min)	
Building Height	**Permitted** 20.0 m			**Proposed** 17.82 m		
Gross Floor Area	Building N and S 6726.21m2 each Amenity 148.5 m2 Total 13,600.91m²					
Site Amenity	**Required** 8% = 2,730 m²			**Proposed** >2,730m²		
Density and dwelling units	**Permitted** 50 dwelling units/ha= 170			**Proposed** 170 units		

	North	South	**Total**
Studios	9	9	**18**
1Bedroom	14	14	**28**
1Bedroom- Accessible	8	8	**16**
2Bedroom	35	35	**70**
2Bedroom-Accessible	1	1	**2**
3Bedroom	18	18	**36**
Total	85	85	**170**

Vehicle Parking	**Type**	**Required/Permitted**	**Proposed**
	Total Spaces:	**1.5/unit x 170 units =255**	**TOTAL PROVIDED 179**
	SMALL CAR (SC)	40% SMALL CAR	SC (MAX 40% = 71) 61
	ACCESSIBLE (HC)	7 ACCESSIBLE STALLS	ACCESSIBLE STALLS 8
	STANDARD		STANDARD: 108
	LOADING	0 LOADING STALLS	LOADING: 2

Bicycle Parking	**Type**	**Required**	**Proposed**
	Total Spaces	**1 PER RESID. UNIT = 170**	**174**
	Class I (Enclosed Dry)	0.80 X 170 = 136	136 (68/BLDG)
	Class II	0.20 x 170 = 34	38



LOCATION MAP

N.T.S. N

ITEM	2018 BRITISH COLUMBIA BUILDING CODE SUMMARY		BCBC REFERENCE
1	Type of Project	■ New □ Addition □ Alteration □ Tenant Improvement	
2	Basis of Code Analysis	■ Prescriptive Requirements □ Alternative Solutions	■ Part 3 □ Part 9
3	Building Area (m²)	1414 m² (each building, BLDG N&S), 161 m² (Amenity)	1.4.1.2. Defined Terms
4	Major Occupancy(s)	Group 'C' - Residential (up to 6 Storeys, Sprinklered) Group 'A2' - Assembly (1 Storey)	Table 3.1.2.1 and 3.2.2.50 and 3.2.2.28
5	Number of Storeys	Above grade: 5 Below grade: 0	3.2.1.1.
6	Number of Streets/Fire Fighter Routes	1 street and/or 2 access routes	3.2.2.10. & 3.2.5.
7	Building Classification	Group 'C' up to 6 Storeys, Sprinklered and Group 'A2' One Storey	3.2.2.50 & 3.2.2.28
8	Permitted Construction	□ Combustible □ Non-Combustible ■ Both	3.2.2.50(2) 3.2.2.28(1)
9	Floor & Structure Fire Resistance Ratings (FRR)	Floors: FRR 1hr, Fire separations Mezzanines: FRR 1hr, Fire separations Roofs: FRR 1hr Walls & Columns supporting an assembly required to have a fire resistance rating: FRR not less than supported assembly	
		Heavy Timber Roof/Supporting Struct: □ yes ■ no	3.2.2.16
		Combustible Construction Assemblies: Yes	.
10	Multiple Occupancy Fire Separations	□ yes ■ no	Table 3.1.3.1. and 3.3.5.6
11	Foamed Plastics Protection	□ yes ■ no	3.1.4.2.(1)
12	Fire-Protection Rating of Closures	■ yes □ no	Table 3.1.8.4. & 3.1.8.12
13	Fire-Dampers	■ yes □ no	Table 3.1.8.7. & 3.1.8.10
14	Self-Closing Devices	■ yes □ no	Table 3.1.8.13
15	Firewall(s)	□ yes ■ no	3.1.10
16	Spatial Separation and Exposure protection		3.2.3.1.(1) thru (7)

	Facade	Limiting Distance	Exposing Face/Comp	Permitted Openings	Proposed Openings	
Group C - Building A	North	>10m	40 m²	100%	<30%	3.2.3.1. Table D
	East	>10m	>150 m²	100%	<30%	
	South - (Sooke Rd)	>10m	40 m²	100%	<30%	
	West - (Drennan Rd)	>10m	>150 m²	100%	<30%	
Group C - Building B	North	>10m	40 m²	100%	<30%	
	East	>10m	>150 m²	100%	<30%	
	South - (Sooke Rd)	>10m	40 m²	100%	<30%	
	West - (Drennan Rd)	7m	>150 m²	66%	<30%	
	* Buildings considered as fire compartments at each story					

17	Construction of Exposing Building Walls					3.2.3.7.(3)
	Facade	Wall Construction Permitted		Cladding Construction Permitted		FRR (Min)
	North	■ Combustible	■ Noncombustible	■ Combustible	■ Noncombustible	3/4 Hour FRR
	East	■ Combustible	■ Noncombustible	■ Combustible	■ Noncombustible	3/4 Hour FRR
	South	■ Combustible	■ Noncombustible	■ Combustible	■ Noncombustible	3/4 Hour FRR
	West	■ Combustible	■ Noncombustible	■ Combustible	■ Noncombustible	3/4 Hour FRR

18	Fire Alarm required (Refer to Electrical)	■ yes □ no	3.2.4
19	Access Route Design	■ yes □ no	3.2.5.6.(1)
20	Standpipe Required	■ yes □ no	3.2.5.8.(1)
21	Automatic Sprinkler System Required	■ yes □ no	3.2.5.12.
22	Additional Requirem'ts for High Buildings	□ yes ■ no	3.2.6.
23	Lighting & Emergency Power Systems	■ yes □ no	3.2.7.
24	Mezzanines & Openings at Floor assemblies	□ yes ■ no	3.2.8.
25	Separation of Suites / Fire Compartments	■ yes □ no	3.3.1.1. & 3.3.4.2.
26	Hazardous Substances	□ yes ■ no	3.3.1.2.(1)
27	Means of Egress from Contained Open Spaces, Roofs and Service Rms.	□ yes ■ no	3.3.1.3.
28	Public Corridor Separations	■ yes □ no	3.3.1.4
29	Two Egress Doorways Provided	■ yes □ no	3.3.1.5.
30	Travel Distance	Travel Distance Within a Room or Suite 30m Travel Distance Within a Floor Area 30m	3.3.1.6. 3.4.2.5.
31	Public Corridors	■ yes □ no	3.3.1.4
32	Janitor's Room Fire Separations	□ yes ■ no	3.3.1.21 (3)
33	Residential Occupancy	■ yes □ no	3.3.4.2.
34	Sound Transmission	■ yes □ no	5.9.1.
35	Fall Protection of Openable Windows	■ yes □ no *Not Required is sill is 1070mm above floor	3.3.4.8.
36	Storage Garage Separation	□ yes ■ no	3.3.5.6.
37	Vestibules	□ yes ■ no	3.3.5.7.
38	Minimum Number of Exits from Floor Area	2 Exits Required	3.4.2.1.
39	Occupant Load Calculations:	Buildings A and B: 2 people per sleeping room = 314 persons/building Amenity Building: 103.03 x 0.95m2 = 98 persons Posted to MAX. 50 Persons	Table 3.1.17.1. 3.1.17.1.(2)
40	Exit Width Calculation:	■ yes □ no	3.4.3.2.(1)(a) & Table 3.4.3.2.(A)
41	Fire Resistance Rating of Exit Separations	■ yes □ no 1 HR	3.4.4.1.(1).
42	Exits Through Lobbies	□ yes ■ no	3.4.4.2.
43	Elev Shaft/Machine Room Fire Separation	■ yes □ no 1 HR	3.5.3.1 & 3.5.3.3.
44	Dumbwaiter Fire Separation	□ yes ■ no N/A	3.5.3.2.
45	Service Room Fire Separations	Rooms w/ Fuel-Fired Appliances N/A Electrical Rooms 1 HR	3.6.2.1.(1) or 3.6.2.1.(8) 3.6.2.1.(5) & (6)
46	Plumbing Facilities - Water Closets	Per Table 3.7.2.2.A - Based on the 3.7.2.2 assumption of equal division between male and female occupants, the proposed water closet provisions that can serve an occupant load of **50 people maximum is:** Female Provisions, 1 water closets are permitted to serve up to 25 females. Male Provisions, 1 water closets are permitted to serve up to 25 males.	Table 3.7.2.2.A
47	Accessibility:		3.8.2
	Access to all Storeys Required	■ yes □ no	3.8.2.1.(1)
	Universal Washroom Required	■ yes □ no	3.8.2.8.(3).(a)
	Accessible Public Washrooms Required	■ yes □ no	3.8.2.8.
	Accessible Sleeping Units Required	□ yes ■ no	3.8.2.12
	Path of Travel	■ yes □ no	3.8.3.2.
	Accessible Entrance	■ yes □ no	3.8.2.2.
	Power Door Operator	□ yes ■ no	3.8.2.7
	Tactile Warning Systems	■ yes □ no	3.8.2.10.(3) + 3.8.3.9.(3)
	Directional Signs	■ yes □ no	3.8.2.10 + 3.8.3.9
48	Energy Efficiency	■ Model □ Prescriptive □ NECB □ ASHRAE 90.1-2010	Part 10

STUDIO531 architects inc

19-254 SOOKE DRENNAN HOUSING

LOCATION & CODE SUMMARY

Scale: 1 : 1 **Date:** JULY 6, 2020

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DP-100

TO SEAPARC

APPROXIMATE CONFIGURATION OF PUBLIC WALKING TRAIL SRW

2.0m PUBLIC TRAIL SRW

BOLLARD TYPE LIGHTING, TYP. AT WALKING TRAIL

3000 SETBACK

RETAINING WALL AS REQ. <1.5M TALL

Treeline is approximate top of slope

APPROX. LINE OF TREES

RETAINING WALL WITH RAILING UP TO ~2.5M AS REQUIRED

APPROX OUTLINE OF ARCHAEOLOGICAL SITE

APPROXIMATE LINE OF 15m ROADWAY DEDICATION

POSSIBLE GREEN SPACE COLLABORATION WITH SOOKE FIRST NATION

NEW SIDEWALK TO DISTRICT OF SOOKE REQUIREMENTS - SEE ALSO CIVIL

RAA SETBACK

3000 REQ. SETBACK

63896 PROVIDED SETBACK

115278 PROVIDED SETBACK

79042 PROVIDED SETBACK

71619 PROVIDED SETBACK

118745 PROVIDED SETBACK

44333 PROVIDED SETBACK

23147 PROVIDED SETBACK

BOTTOM OF BANKS

SPEA

RAA

SECTION 73

Contours in this area are diagrammatic only. Not survey data between treeline and bottom of bank

NORTH BUILDING DATUM 100.00 = GEODETIC 21.50m

SOUTH BUILDING DATUM 100.00 = GEODETIC 21.00m

AMENITY BUILDING DATUM 100.00 = GEODETIC 20.00m

Garden Shed

AMENITY GARDENS

RAIN GARDEN

nature play

lawn/play

3.0m PUBLIC TRAIL SRW

4500 REQ. SETBACK

4500 REQ. SETBACK

3.0m PUBLIC TRAIL SRW

9000 LOADING

RECY./ GARB.

FDC

FH

PMT

BIKE RACK (10)

COLORED BIKE PARKING (6)

8.0m WIDE FIRE LANE

3000 PARKING SETBACK

MAIN ENTRANCE

NEW DRIVE APRON TO DISTRICT OF SOOKE REQUIREMENTS

NEW SIDEWALK TO DISTRICT OF SOOKE REQUIREMENTS - SEE ALSO CIVIL

CURB

EXISTING ROCK RETAINING WALL

EXISTING SRW

Retaining Wall/Rock Stack Wall

EXISTING ROCK RETAINING WALL

TO DOWNTOWN

DRENNAN ST.

SOOKE RD

Gravel Driveway

House

Garage

SITE LEGEND

HATCHES

- Soft Landscape Surface Refer to Landscape Documents
- Hardscape - Surface Refer to Landscape Documents
- Hardscape - Asphalt, Refer to Landscape/Civil Documents
- Main Entry & Fire Department Access
- Secondary Entry

LINES

- Property Line
- Property Setback
- RAA Setback
- SPEA Setback / SRW
- Approximate Archaeological Line

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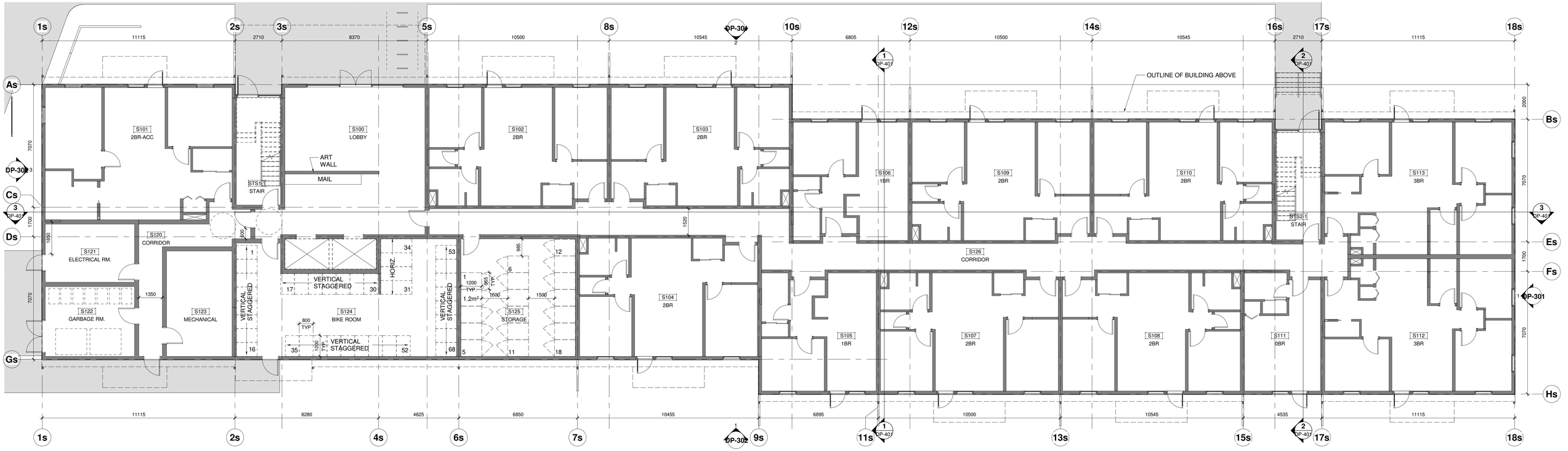
19-254 SOOKE DRENNAN HOUSING

SITE PLAN

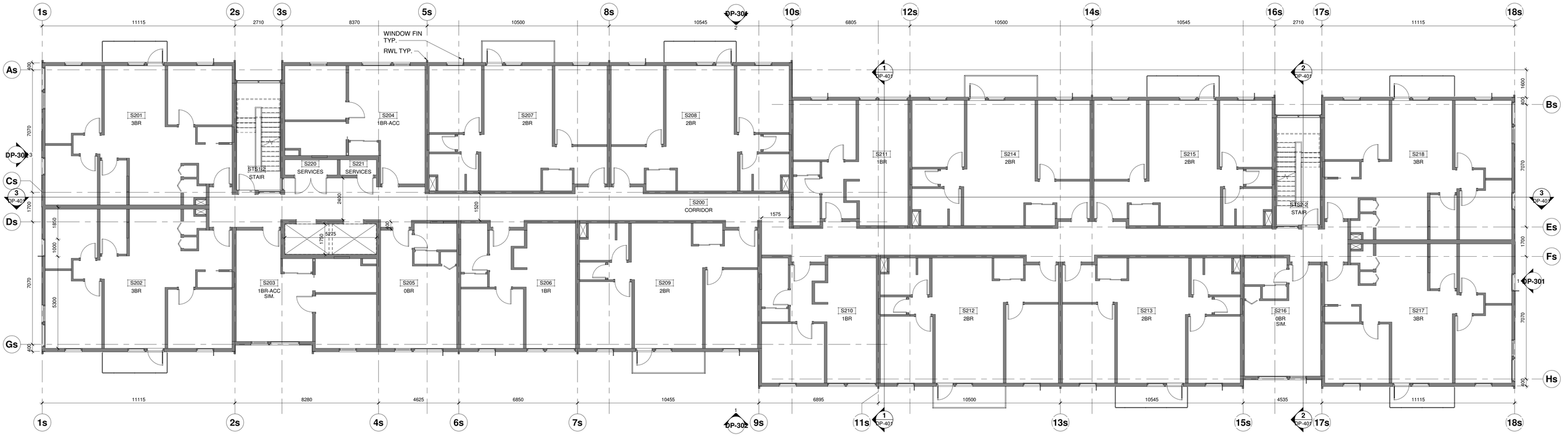
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DP-101



1 DP-301 DP-201 S-LEVEL 1
1 : 100



2 DP-301 DP-201 S-LEVEL 2-5
1 : 100

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19-254 SOOKE DRENNAN HOUSING

SOUTH BUILDING FLOOR PLANS

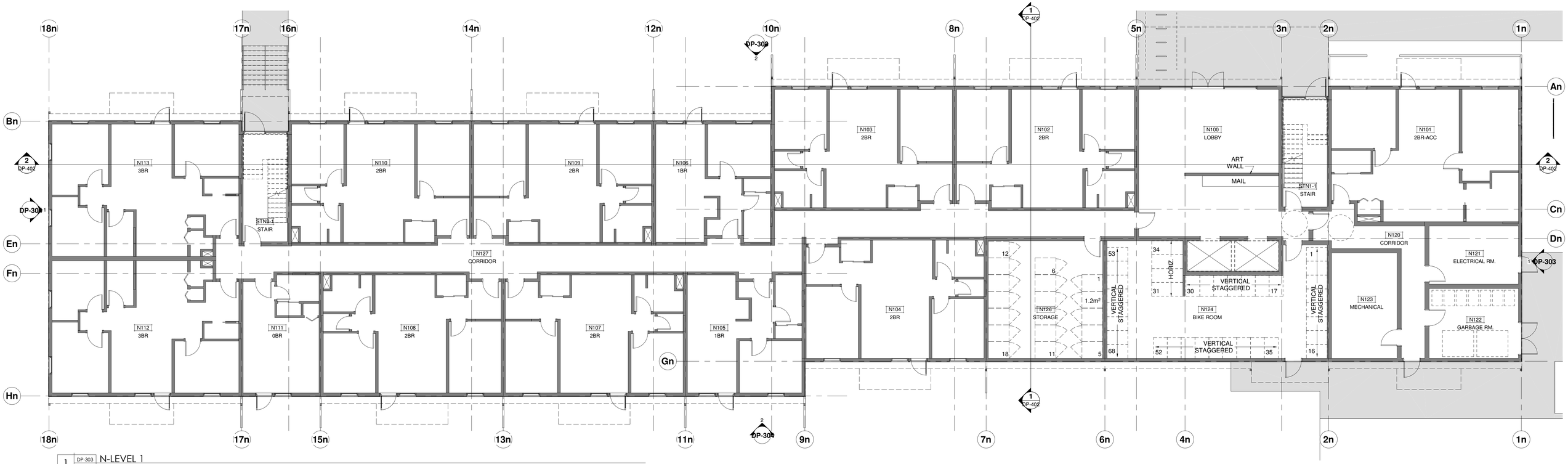
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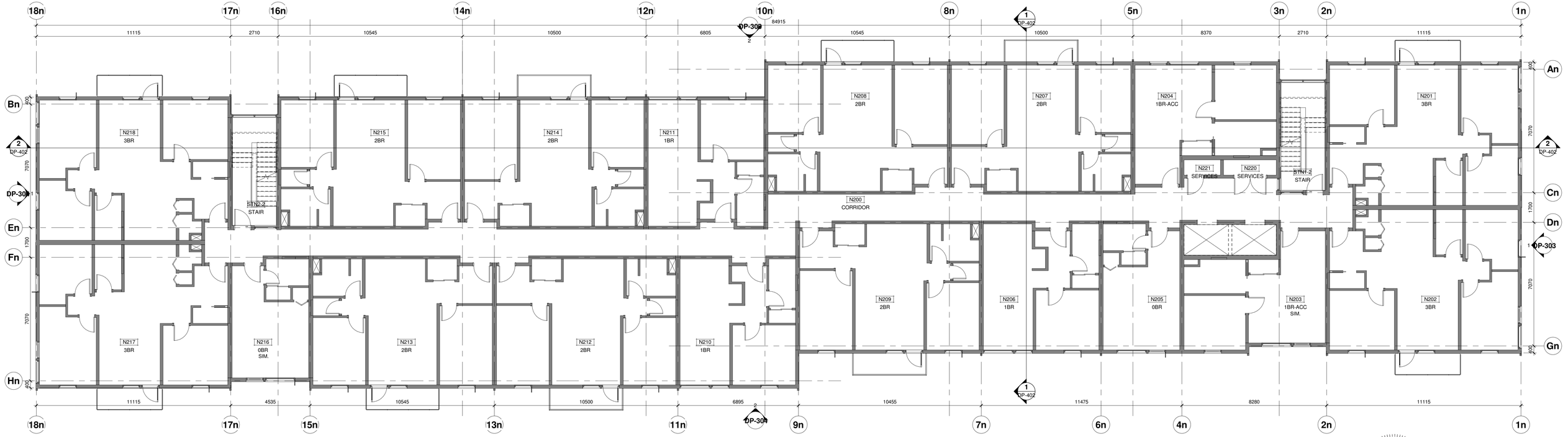
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1 DP-303 DP-202 N-LEVEL 1
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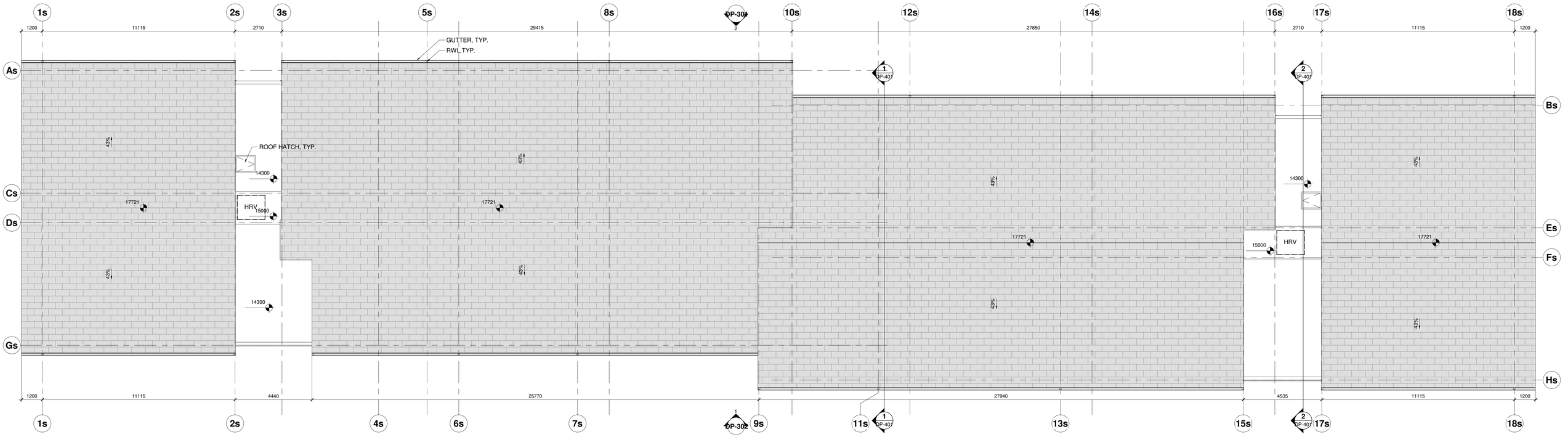
19-254 SOOKE DRENNAN HOUSING

NORTH BUILDING FLOOR PLANS

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DP-202



1 DP-301 DP-203 S-ROOF
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SOUTH BUILDING ROOF PLAN

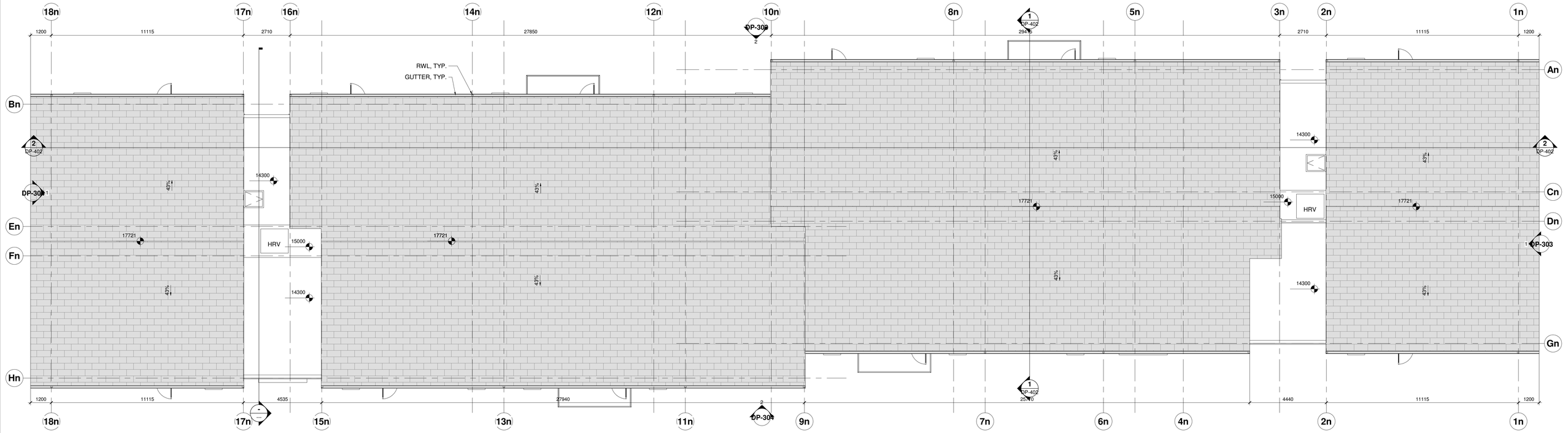
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1 | DP-303, DP-204 | N-ROOF | 1 : 100

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NORTH BUILDING ROOF PLAN

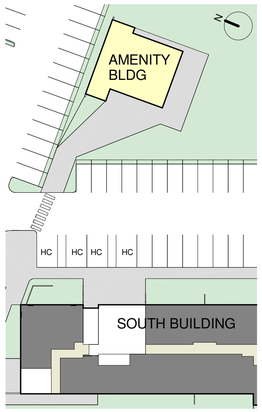
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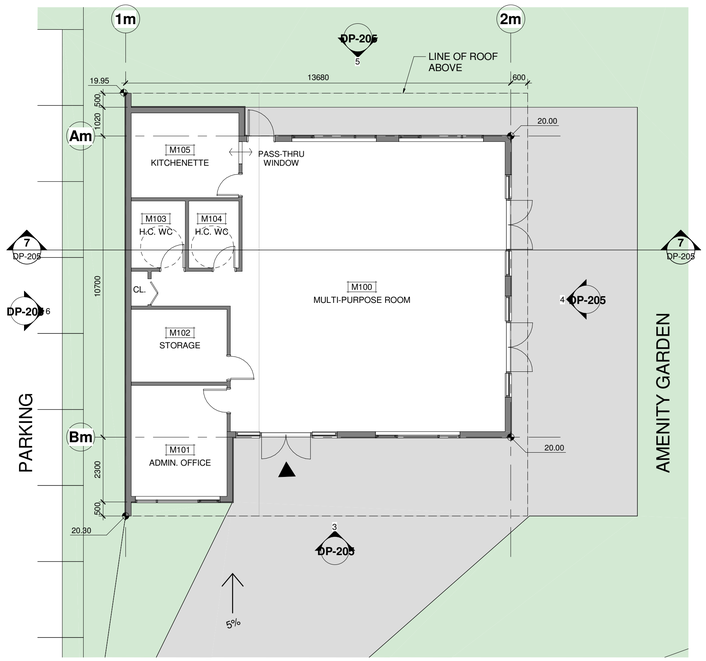
DP-204

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BRITISH COLUMBIA

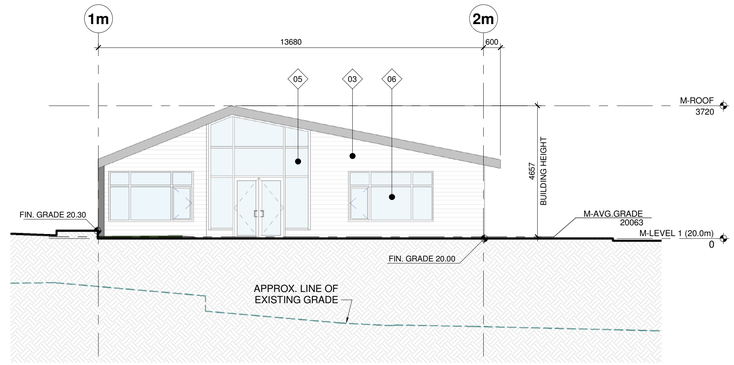
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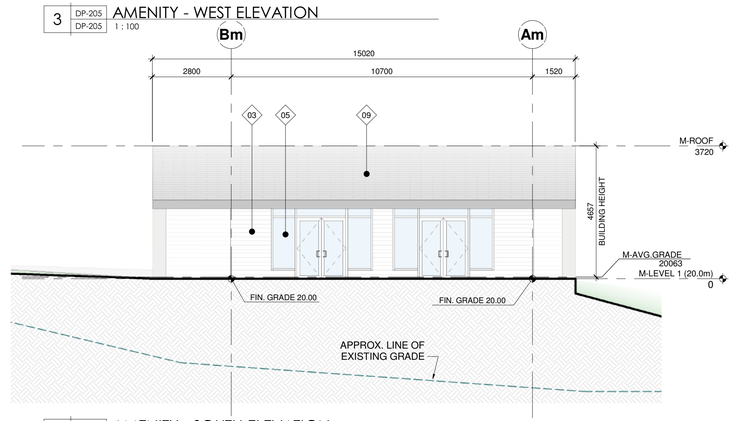
AMENITY BLDG - KEY PLAN



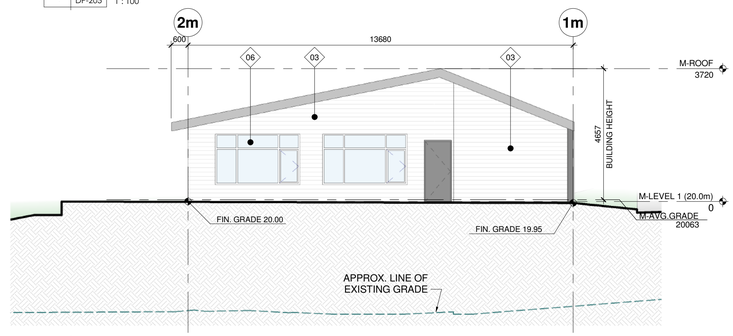
1 DP-205 DP-205 AMENITY BLDG FLOOR PLAN 1 : 100



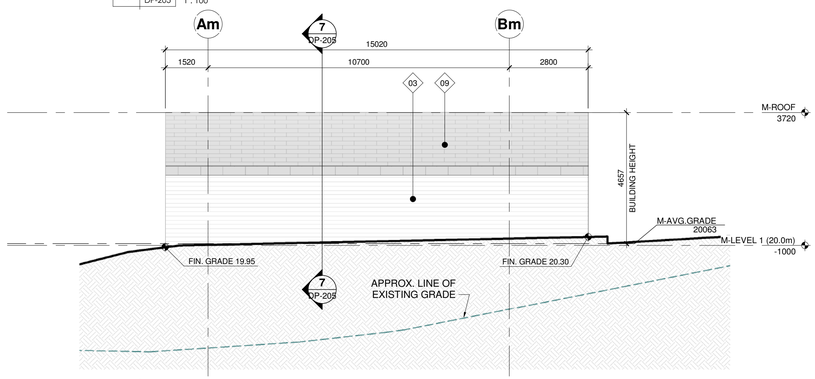
3 DP-205 DP-205 AMENITY - WEST ELEVATION 1 : 100



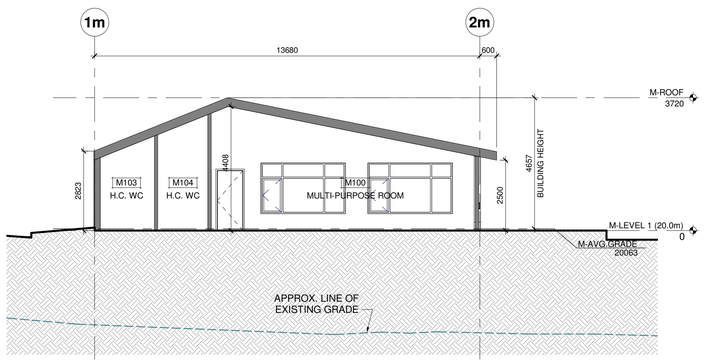
4 DP-205 DP-205 AMENITY - SOUTH ELEVATION 1 : 100



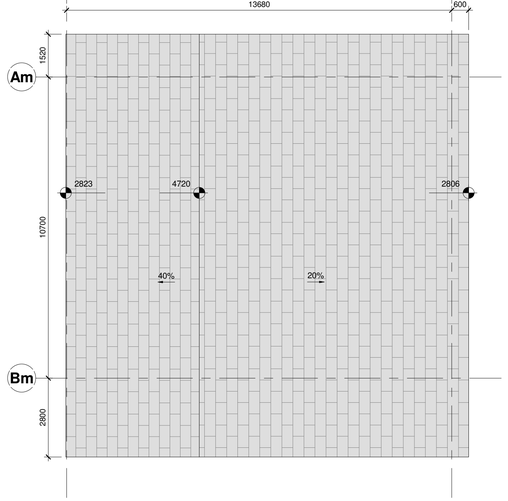
5 DP-205 DP-205 AMENITY - EAST ELEVATION 1 : 100



6 DP-205 DP-205 AMENITY - NORTH ELEVATION 1 : 100



7 DP-205 DP-205 AMENITY BLDG - SECTION 1 1 : 100



2 DP-205 DP-205 AMENITY BLDG ROOF 1 : 100

ELEVATION LEGEND

01	CLADDING TYPE 01, BRICK, NORMAN SIZE, DARK GREY, RUNNING BOND
02	CLADDING TYPE 02, VERTICAL SIDING, DARK GREY
03	CLADDING TYPE 03, HORIZONTAL SIDING, WHITE
04	CLADDING TYPE 04, METAL PANEL, CUSTOM COLOR (GREY)
05	ALUMINUM CURTAIN WALL SYSTEM
06	VINYL WINDOW, FRAME COLOR WHITE
07	GUARD 01, METAL GUARD WITH 1"X1" SQUARE, PICKETS @ 3"O.C., CHARCOAL GREY
08	GUARD 02, METAL GUARD WITH PERFORATED METAL SHEET, PAINTED FINISH a. SOFT ORANGE b. SOFT BROWN
09	ROOF, ASPHALT SHINGLE, GREY
10	PREFINISHED SOFFIT, SIMULATED WOOD FINISH
11	ENTRY CANOPIES, SIMULATED WOOD FINISH
12	PREFINISHED METAL FLASHING, GALVALUME FINISH
13	WOOD FENCE, PRIVACY SCREEN
14	ALUMINUM TRIM 1 - FOR VERTICAL JOINTS - MATCH CLADDING FINISH
15	PREFINISHED METAL FINS/FLASHING, CUSTOM POWDER COATED FINISH a. SOFT ORANGE b. SOFT BROWN

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19-254 SOOKE DRENNAN HOUSING

AMENITY BLDG PLAN, ELEV., SECTIONS

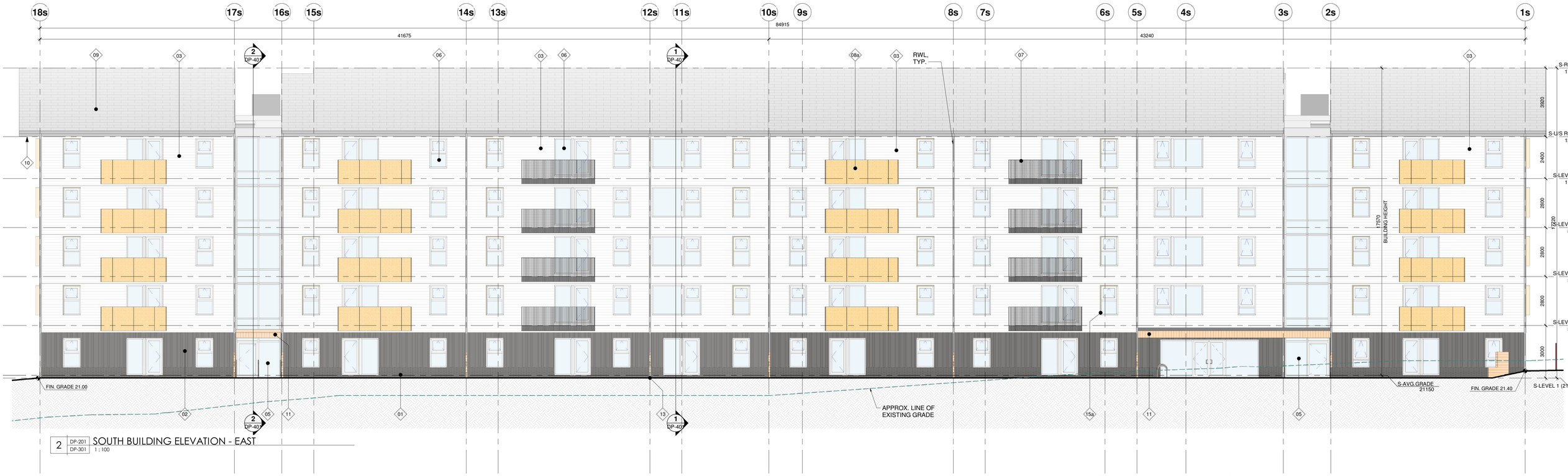
Scale: As indicated **Date:** JULY 6, 2020

SCALE 1: 100 (1 0 1 2 3 4 5 m)

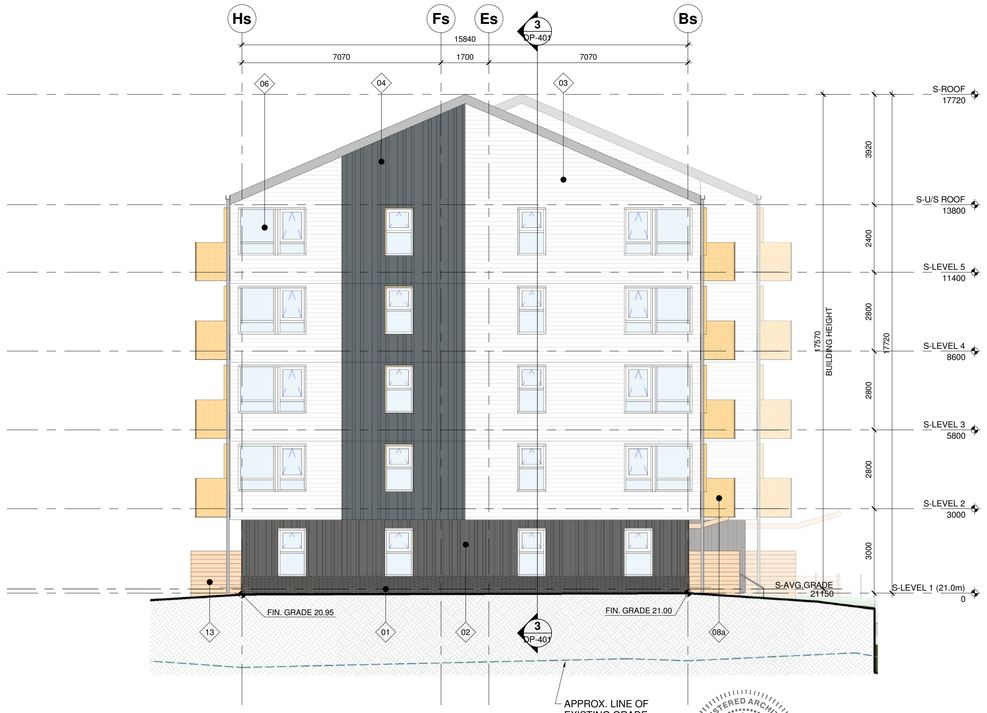
DP-205

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2 DP-201 DP-301 SOUTH BUILDING ELEVATION - EAST
1 : 100



1 DP-201 DP-301 SOUTH BUILDING ELEVATION - SOUTH
1 : 100

ELEVATION LEGEND

- 01 CLADDING TYPE 01, BRICK, NORMAN SIZE, DARK GREY, RUNNING BOND
- 02 CLADDING TYPE 02, VERTICAL SIDING, DARK GREY
- 03 CLADDING TYPE 03, HORIZONTAL SIDING, WHITE
- 04 CLADDING TYPE 04, METAL PANEL, CUSTOM COLOR (GREY)
- 05 ALUMINUM CURTAIN WALL SYSTEM
- 06 VINYL WINDOW, FRAME COLOR WHITE
- 07 GUARD 01, METAL GUARD WITH 1"X1" SQUARE, PICKETS @ 3"O.C., CHARCOAL GREY
- 08 GUARD 02, METAL GUARD WITH PERFORATED METAL SHEET, PAINTED FINISH
  - a. SOFT ORANGE
  - b. SOFT BROWN
- 09 ROOF, ASPHALT SHINGLE, GREY
- 10 PREFINISHED SOFFIT, SIMULATED WOOD FINISH
- 11 ENTRY CANOPIES, SIMULATED WOOD FINISH
- 12 PREFINISHED METAL FLASHING, GALVALUME FINISH
- 13 WOOD FENCE, PRIVACY SCREEN
- 14 ALUMINUM TRIM 1 - FOR VERTICAL JOINTS - MATCH CLADDING FINISH
- 15 PREFINISHED METAL FINS/FLASHING, CUSTOM POWDER COATED FINISH
  - a. SOFT ORANGE
  - b. SOFT BROWN

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19-254 SOOKE DRENNAN HOUSING

SOUTH BUILDING ELEVATIONS

Scale: As indicated **Date:** JULY 6, 2020

1 0 1 2 3 4 5
SCALE 1: 100 m

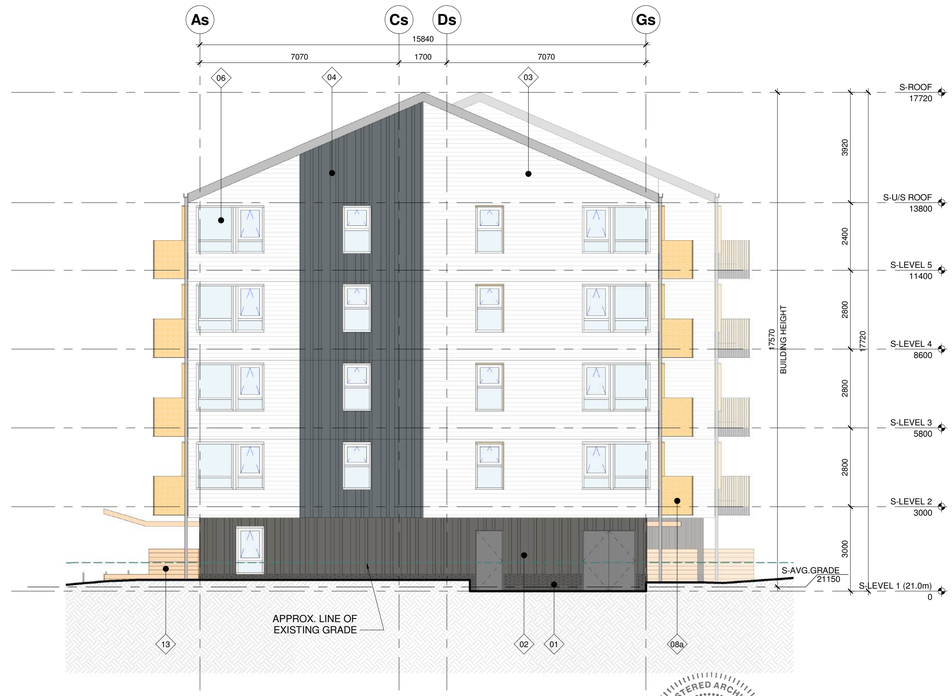
DP-301



2 DP-201 DP-302 SOUTH BUILDING ELEVATION - WEST
1 : 100

ELEVATION LEGEND

- 01 CLADDING TYPE 01, BRICK, NORMAN SIZE, DARK GREY, RUNNING BOND
- 02 CLADDING TYPE 02, VERTICAL SIDING, DARK GREY
- 03 CLADDING TYPE 03, HORIZONTAL SIDING, WHITE
- 04 CLADDING TYPE 04, METAL PANEL, CUSTOM COLOR (GREY)
- 05 ALUMINUM CURTAIN WALL SYSTEM
- 06 VINYL WINDOW, FRAME COLOR WHITE
- 07 GUARD 01, METAL GUARD WITH 1"X1" SQUARE, PICKETS @ 3"O.C., CHARCOAL GREY
- 08 GUARD 02, METAL GUARD WITH PERFORATED METAL SHEET, PAINTED FINISH
  - a. SOFT ORANGE
  - b. SOFT BROWN
- 09 ROOF, ASPHALT SHINGLE, GREY
- 10 PREFINISHED SOFFIT, SIMULATED WOOD FINISH
- 11 ENTRY CANOPIES, SIMULATED WOOD FINISH
- 12 PREFINISHED METAL FLASHING, GALVALUME FINISH
- 13 WOOD FENCE, PRIVACY SCREEN
- 14 ALUMINUM TRIM 1 - FOR VERTICAL JOINTS - MATCH CLADDING FINISH
- 15 PREFINISHED METAL FINS/FLASHING, CUSTOM POWDER COATED FINISH
  - a. SOFT ORANGE
  - b. SOFT BROWN



1 DP-201 DP-302 SOUTH BUILDING ELEVATION - NORTH
1 : 100

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19-254 SOOKE DRENNAN HOUSING

SOUTH BUILDING ELEVATIONS

Scale: As indicated **Date:** JULY 6, 2020

SCALE 1: 100 (1 0 1 2 3 4 5 m)

DP-302



2 | DP-202, DP-303 NORTH BUILDING ELEVATION - EAST
1 : 100

ELEVATION LEGEND

- 01 CLADDING TYPE 01, BRICK, NORMAN SIZE, DARK GREY, RUNNING BOND
- 02 CLADDING TYPE 02, VERTICAL SIDING, DARK GREY
- 03 CLADDING TYPE 03, HORIZONTAL SIDING, WHITE
- 04 CLADDING TYPE 04, METAL PANEL, CUSTOM COLOR (GREY)
- 05 ALUMINUM CURTAIN WALL SYSTEM
- 06 VINYL WINDOW, FRAME COLOR WHITE
- 07 GUARD 01, METAL GUARD WITH 1"X1" SQUARE, PICKETS @ 3"O.C., CHARCOAL GREY
- 08 GUARD 02, METAL GUARD WITH PERFORATED METAL SHEET, PAINTED FINISH
  - a. SOFT ORANGE
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- 10 PREFINISHED SOFFIT, SIMULATED WOOD FINISH
- 11 ENTRY CANOPIES, SIMULATED WOOD FINISH
- 12 PREFINISHED METAL FLASHING, GALVALUME FINISH
- 13 WOOD FENCE, PRIVACY SCREEN
- 14 ALUMINUM TRIM 1 - FOR VERTICAL JOINTS - MATCH CLADDING FINISH
- 15 PREFINISHED METAL FINS/FLASHING, CUSTOM POWDER COATED FINISH
  - a. SOFT ORANGE
  - b. SOFT BROWN



1 | DP-202, DP-303 NORTH BUILDING ELEVATION - SOUTH
1 : 100

REGISTERED ARCHITECT
JESSE GARLICK
2020-07-07
BRITISH COLUMBIA

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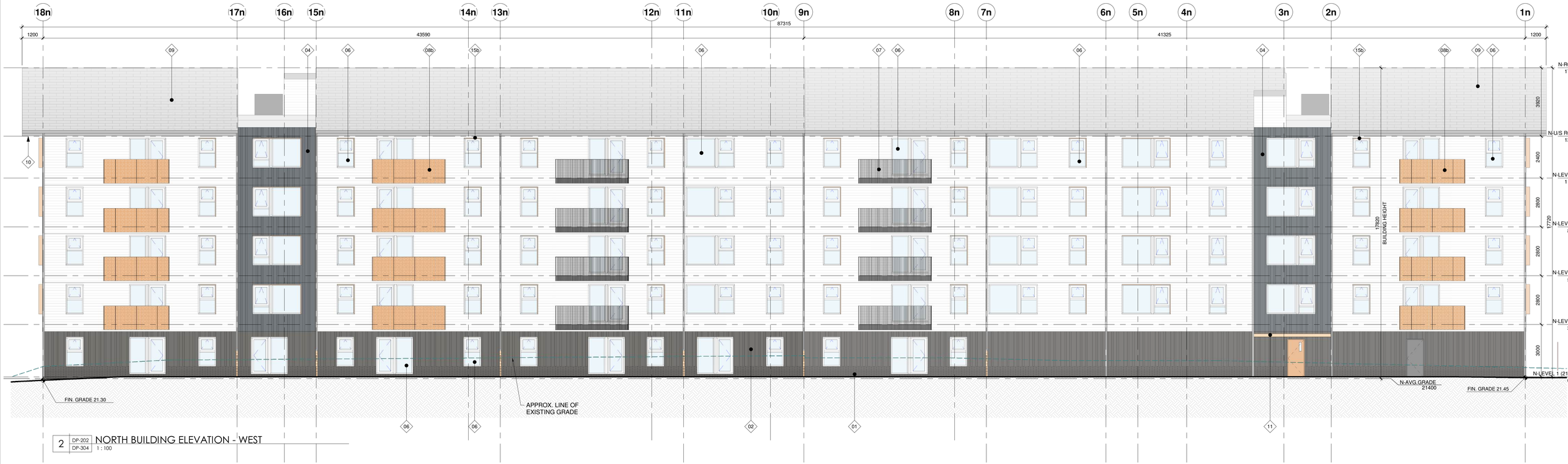
19-254 SOOKE DRENNAN HOUSING

NORTH BUILDING ELEVATIONS

Scale: As indicated **Date:** JULY 6, 2020

SCALE 1: 100 (1 0 1 2 3 4 5 m)

DP-303



2 DP-202 DP-304 NORTH BUILDING ELEVATION - WEST
1 : 100

ELEVATION LEGEND

- 01 CLADDING TYPE 01, BRICK, NORMAN SIZE, DARK GREY, RUNNING BOND
- 02 CLADDING TYPE 02, VERTICAL SIDING, DARK GREY
- 03 CLADDING TYPE 03, HORIZONTAL SIDING, WHITE
- 04 CLADDING TYPE 04, METAL PANEL, CUSTOM COLOR (GREY)
- 05 ALUMINUM CURTAIN WALL SYSTEM
- 06 VINYL WINDOW, FRAME COLOR WHITE
- 07 GUARD 01, METAL GUARD WITH 1"X1" SQUARE, PICKETS @ 3"O.C., CHARCOAL GREY
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- 12 PREFINISHED METAL FLASHING, GALVALUME FINISH
- 13 WOOD FENCE, PRIVACY SCREEN
- 14 ALUMINUM TRIM 1 - FOR VERTICAL JOINTS - MATCH CLADDING FINISH
- 15 PREFINISHED METAL FINS/FLASHING, CUSTOM POWDER COATED FINISH
  - a. SOFT ORANGE
  - b. SOFT BROWN



1 DP-202 DP-304 NORTH BUILDING ELEVATION - NORTH
1 : 100

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2020-07-07
BRITISH COLUMBIA

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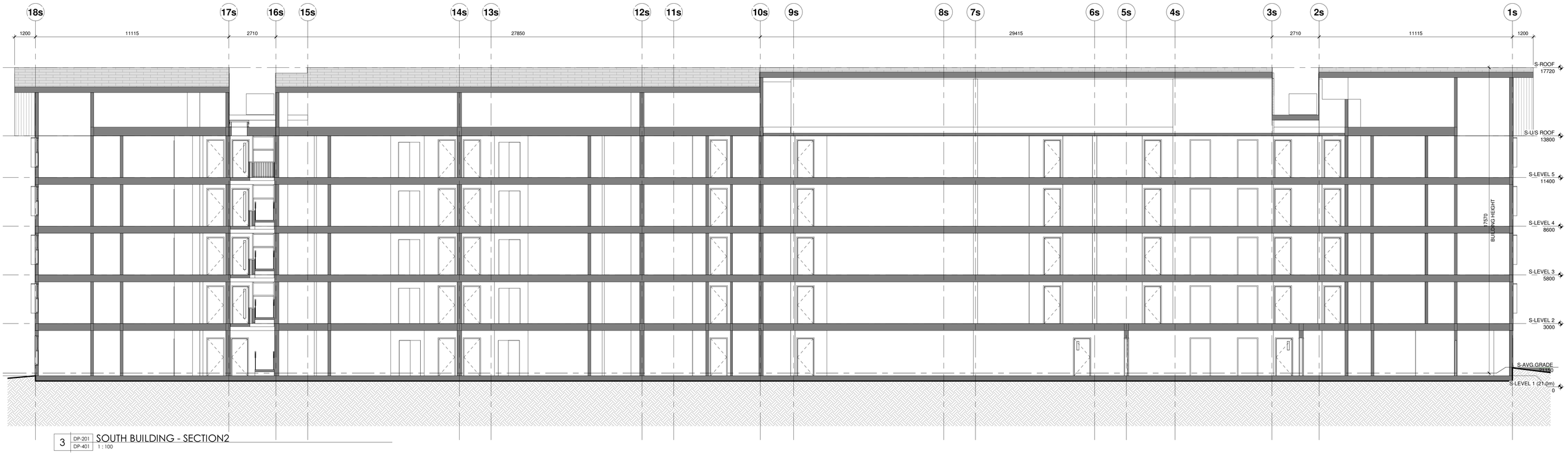
19-254 SOOKE DRENNAN HOUSING

NORTH BUILDING ELEVATIONS

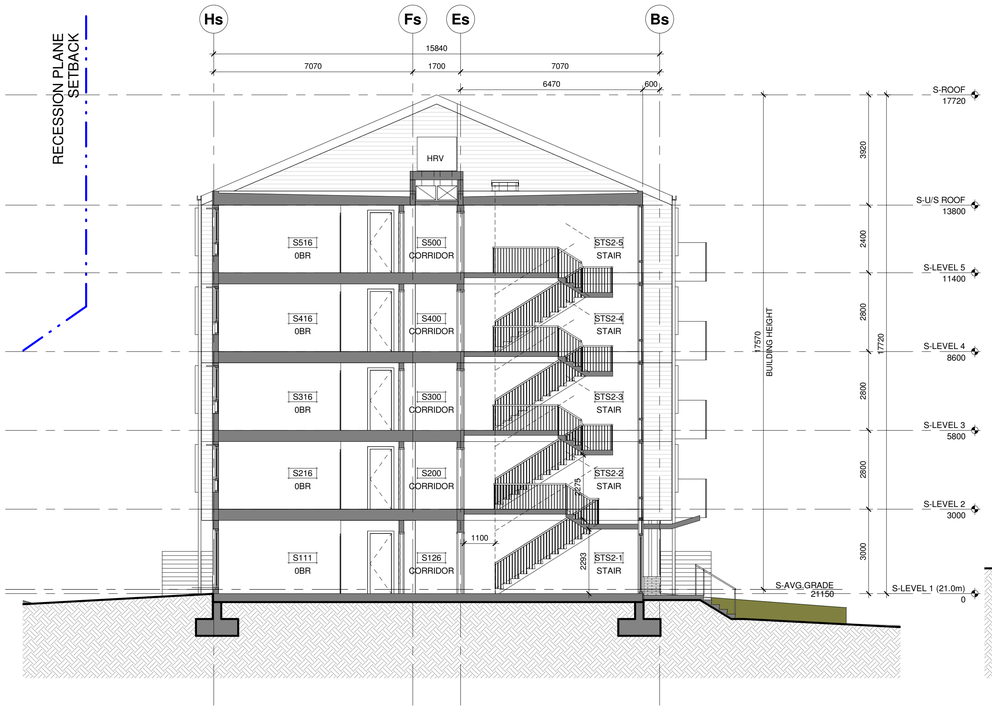
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SCALE 1: 100 m

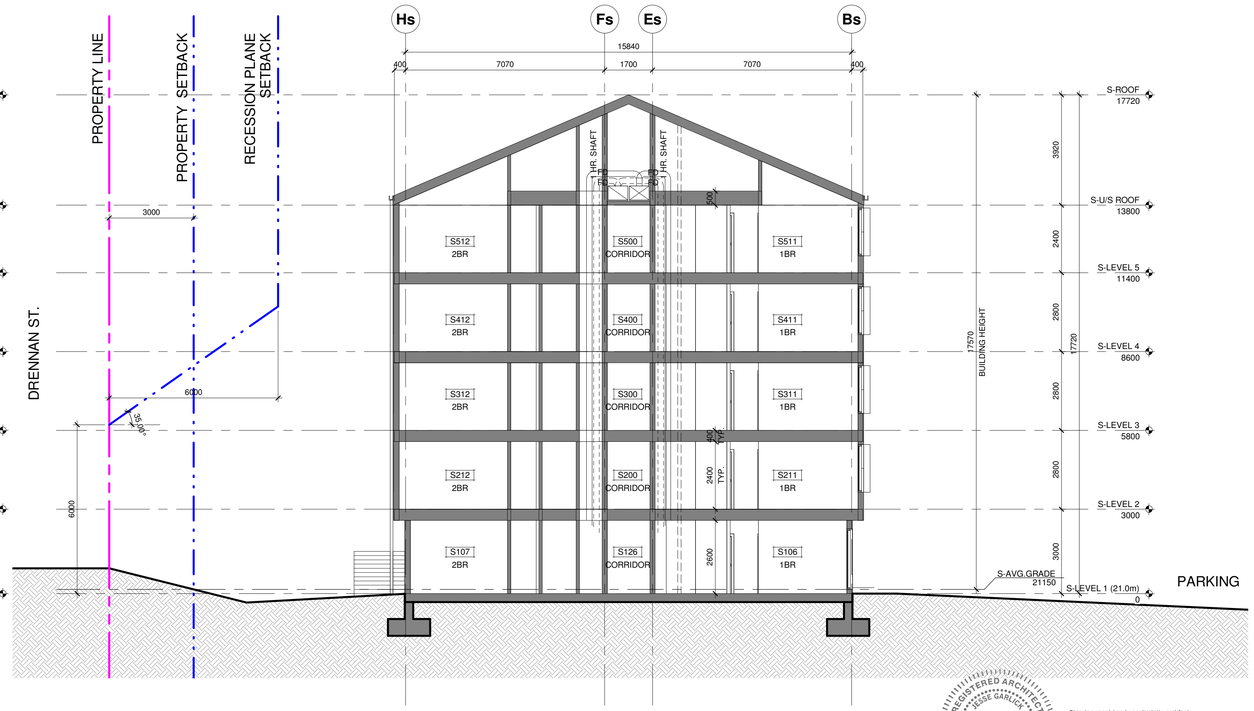
DP-304



3 DP-201 DP-401 SOUTH BUILDING - SECTION2
1 : 100



2 DP-201 DP-401 SECTION @ STAIR
1 : 100



1 DP-201 DP-401 SOUTH BUILDING - SECTION
1 : 100

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JESSE GARTKA
2020-07-07
BRITISH COLUMBIA

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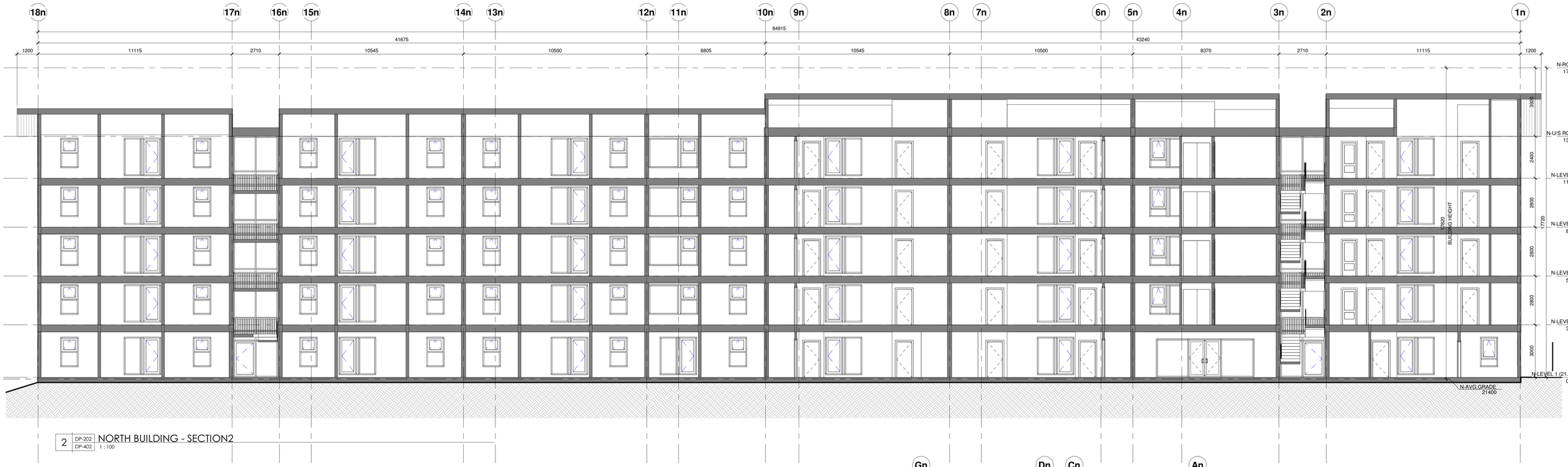
19-254 SOOKE DRENNAN HOUSING

SOUTH BUILDING SECTIONS

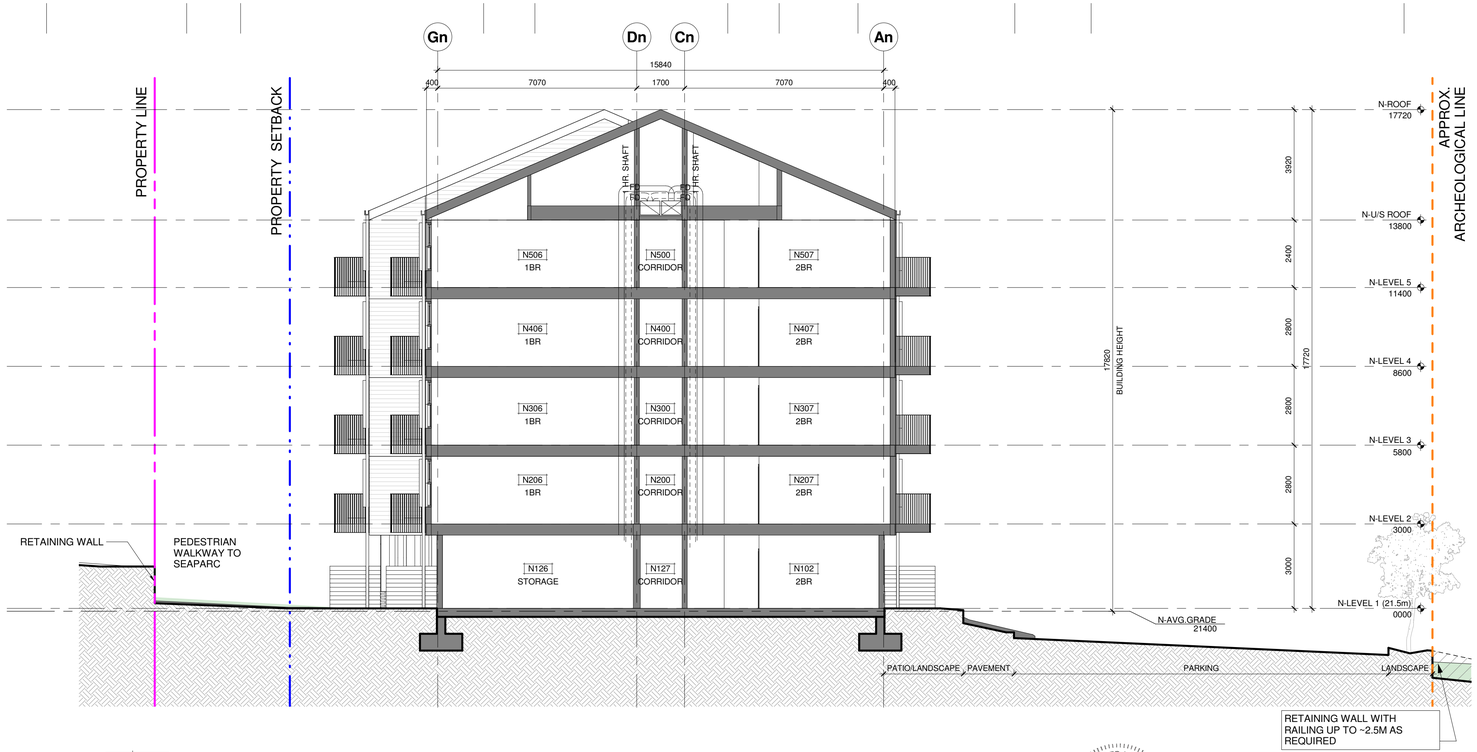
Scale: 1 : 100 **Date:** JULY 6, 2020

1 0 1 2 3 4 5
SCALE 1: 100 m

DP-401



2 | DP-202 DP-402 | NORTH BUILDING - SECTION2
1 : 100



1 | DP-202 DP-402 | NORTH BUILDING - SECTION
1 : 100

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CHAD GARDNER
2020-07-07
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19-254 SOOKE DRENNAN HOUSING

NORTH BUILDING SECTIONS

Scale: 1 : 100 **Date:** JULY 6, 2020

SCALE 1: 100 (1 0 1 2 3 4 5 m)

DP-402







07a/14a

07b/14b

<09> ROOF, ASPHALT SHINGLE, GREY

<15> PREFINISHED METAL FINS/FLASHING, CUSTOM POWDER COATED FINISH
a. SOFT ORANGE
b. SOFT BROWN

<03> CLADDING TYPE 03, HORIZONTAL SIDING, WHITE

<08> GUARD 02, METAL GUARD WITH PERFORATED METAL SHEET, PAINTED FINISH
a. SOFT ORANGE
b. SOFT BROWN



<10> PREFINISHED SOFFIT, SIMULATED WOOD FINISH

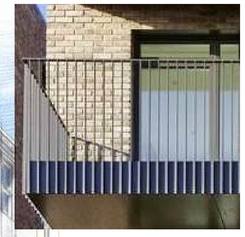
<11> ENTRY CANOPIES, SIMULATED WOOD FINISH



<06> VINYL WINDOW, FRAME COLOR WHITE



<07> GUARD 01, METAL GUARD WITH 1"X1" SQUARE, PICKETS @ 3"O.C., CHARCOAL GREY



<04> CLADDING TYPE 04, METAL PANEL, CUSTOM COLOR (GREY)



<05> ALUMINUM CURTAIN WALL SYSTEM



<13> FENCE



<02> CLADDING TYPE 02, VERTICAL SIDING, DARK GREY

<01> CLADDING TYPE 01, BRICK, NORMAN SIZE, DARK GREY, RUNNING BOND





ELEVATION LEGEND

01 CLADDING TYPE 01, BRICK, NORMAN SIZE, DARK GREY, RUNNING BOND

02 CLADDING TYPE 02, VERTICAL SIDING, DARK GREY

03 CLADDING TYPE 03, HORIZONTAL SIDING, WHITE

04 CLADDING TYPE 04, METAL PANEL, CUSTOM COLOR (GREY)

05 ALUMINUM CURTAIN WALL SYSTEM

06 VINYL WINDOW, FRAME COLOR WHITE

07 GUARD 01, METAL GUARD WITH 1"X1" SQUARE, PICKETS @ 3"O.C., CHARCOAL GREY

08 GUARD 02, METAL GUARD WITH PERFORATED METAL SHEET, PAINTED FINISH
a. SOFT ORANGE
b. SOFT BROWN

09 ROOF, ASPHALT SHINGLE, GREY

10 PREFINISHED SOFFIT, SIMULATED WOOD FINISH

11 ENTRY CANOPIES, SIMULATED WOOD FINISH

12 PREFINISHED METAL FLASHING, GALVALUME FINISH

13 WOOD FENCE, PRIVACY SCREEN

14 ALUMINUM TRIM 1 - FOR VERTICAL JOINTS - MATCH CLADDING FINISH

15 PREFINISHED METAL FINS/FLASHING, CUSTOM POWDER COATED FINISH
a. SOFT ORANGE
b. SOFT BROWN

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JESSE GARLICK
2020-07-07
BRITISH COLUMBIA

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19-254 SOOKE DRENNAN HOUSING

MATERIALS & FINISHES

Scale: 1 : 1 Date: JULY 6, 2020

DP-501

VIEW FROM SOOKE RD/ RAIN GARDEN





STAIR ENTRY



LOBBY ENTRY

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19-254 SOOKE DRENNAN HOUSING

3D VIEWS

Scale:

Date: JULY 6, 2020

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DP-502

COVERED BIKE PARKING





VIEW FROM MAIN ENTRANCE
(PEDESTRIAN)



VIEW FROM SOOKE RD & DRENNAN ST

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19-254 SOOKE DRENNAN HOUSING

3D VIEWS

Scale: **Date:** JULY 6, 2020

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JESSE GARLICK
2020-07-07
PROVINCE OF BRITISH COLUMBIA

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DP-503



SOUTH BUILDING



AMENITY BUILDING



NORTH BUILDING

STUDIO531 architects inc

19-254 SOOKE DRENNAN HOUSING

3D VIEWS

Scale:

Date: JULY 6, 2020

REGISTERED ARCHITECT
PROVINCE OF BRITISH COLUMBIA
2020-07-07
BRITISH COLUMBIA

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DP-504

Regional Housing Trust Fund
Program Policy Guidelines

In March 2005, the Capital Regional District (CRD) launched the Regional Housing Trust Fund (RHTF) Program in response to a priority identified in the Regional Housing Affordability Strategy (RHAS). This priority identified that fundamental to the success of the RHAS was the establishment of the RHTF.

PROGRAM OVERVIEW AS IDENTIFIED IN CRD BYLAW 3266

The fund was established by the CRD for the purpose of providing capital funding:

1. To assist in the acquisition, development and retention of housing that is affordable for those households in the region with low or moderate household incomes;

2. To facilitate social and economic investment in affordable housing;

3. To assist people in core housing need, primarily those in the lowest two quintiles of regional household income as established in the most recent Canada Census; and,

4. To facilitate achieving the strategic directions outlined in the CRD's Regional Growth Strategy.

CRD PARTICIPATING AREAS

The participating areas are: Metchosin, View Royal, Victoria, Central Saanich, Saanich, North Saanich, Esquimalt, Oak Bay, Sooke, Sidney, Highlands and the Electoral Areas of Salt Spring Island and Southern Gulf Islands.

Funds raised from the participating areas shall be used to contribute to projects in the eligible participating areas that include funds from other partners, such as, contributions from senior governments and other housing stakeholders, including non-profit societies, corporations and individuals.

WHO CAN APPLY

Eligible applicants include:

- regional non-profit housing societies
- private developers, landlords and individuals

The RHTF encourages partnerships between non-profit housing societies and the private development industry, with the ownership and ongoing operations of the project by the non-profit housing society.

ELIGIBLE PROJECTS

The primary purpose of the RHTF funding is capital grant to:

- encourage the initiation of affordable rental housing development
- encourage leveraging and funding partnerships with other government funding agencies, private development industry, community agencies and individuals
- to assist in the retention of existing or construction of new affordable housing
- provide affordable rental accommodations for tenants within prescribed income targets

Tenants of the project will have rights under the *BC Residential Tenancy Act*.

The priority of RHTF funding for the period 2017-2021 is as follows:

> *That funds will be targeted to proposed affordable housing projects within approved Regional Housing First Program projects for the period 2017-2021.*

The 2019 Housing Income Limits (HILs) for Victoria as adopted by CMHC and BC Housing.

Bachelor	*= $42,500*
One Bedroom	*= $42,500*
2 Bedroom	*= $56,000*
3 Bedroom	*= $75,500*
4+ Bedroom	*= $84,500*

FUNDING ASSISTANCE

Assistance is in the form of a grant that does not have to be repaid if the recipient agrees to the terms and conditions of a 20-year funding agreement.

Applications are considered for affordable housing proposals that have a minimum of 5 to 1 leveraging of funding.

Funding requests will be considered for applications ranging in amounts from $5,000 to $15,000 per unit.

APPLICATION PROCESS AND PROCEDURE

1. The proponent submits a Letter of Intent to the RHTF Administrator.
2. The Administrator presents the Letter of Intent to the RHTF Commission, which recommends the proponent proceed with a full application, or not.
3. Proponent provides an application package to the Administrator for review and final completion.
4. The Administrator presents the application package to the RHTF Advisory Committee for evaluation and scoring. A recommendation is made to the RHTF Commission to grant funds to the proponent, request further information from the proponent or reject the application.
5. The RHTF Commission reviews the Advisory Committee's recommendation(s) and, if in agreement, makes a recommendation to the CRD Board of Directors to fund the RHTF grant.
6. The CRD Board of Directors votes on the recommendation to fund the grant.

CONTACT:

RHTF administrative services are provided by the CRD Housing Planning and Programs.

John Reilly
Manager, Housing Planning and Programs
625 Fisgard Street, Victoria, BC
Tel 250-360-3081

Jerry Michael
Administrative Coordinator, Housing Planning and Programs
625 Fisgard Street, Victoria, BC
Tel 250-360-3652

B) Capital Regional Housing Corporation staff provided an overview of the Michigan Square project and answered questions from commissioners.

CRD staff were given the opportunity to review Staff Reports relevant to each of the three proposals including examination of current financial capacity of the RHTF.

MOVED by Commissioner David Screech, **SECONDED** by Commissioner Gary Holman
That the Regional Housing Trust Fund (RHTF) Commission recommends to the Capital Regional District Board: That a grant in the amount of $765,000 to M'akola Housing Society be approved to support the development of 51 units of affordable rental housing at 2075 Drennan Street and 6418 Sooke Road, Sooke, subject to meeting the terms of the RHTF Grant Funding agreement.

CARRIED

MOVED by Commissioner David Screech, **SECONDED** by Commissioner Lynda Hundleby
That the Regional Housing Trust Fund (RHTF) Commission recommends to the Capital Regional District Board: That a grant in the amount of $330,000 to M'akola Housing Society be approved to support the development of 22 units of affordable rental housing at 2170 Charters Road, Sooke, subject to meeting the terms of the RHTF Grant Funding agreement.

CARRIED

MOVED by Commissioner David Screech, **SECONDED** by Commissioner Barbara Fallot
That the Regional Housing Trust Fund (RHTF) Commission recommends to the Capital Regional District Board: That a grant in the amount of $570,000 to the Capital Region Housing Corporation be approved to support the development of 38 units of affordable rental housing at 330 Michigan Street, Victoria, subject to meeting the terms of the RHTF Grant Funding agreement.

CARRIED

6. MOTION TO CLOSE THE MEETING in accordance with the *Community Charter*, Part 4, Division 3, Section 90(1)(e) "the acquisition, disposition or expropriation of land or improvements, if the council considers that disclosure could reasonably be expected to harm the interests of the municipality."

MOVED by Commissioner Lynda Hundleby, **SECONDED** by Commissioner Bob Thompson
That the meeting be closed.

CARRIED

The meeting was closed at 10:22am and resumed in open session at 10:24am.

7. ROUND TABLE

Commissioners held a round table to share information on housing in their respective municipalities and electoral areas.

Making a difference...together

REPORT TO REGIONAL PARKS COMMITTEE
MEETING OF WEDNESDAY, SEPTEMBER 30, 2020

SUBJECT **Elk/Beaver Lake Remediation Project**

ISSUE SUMMARY

The Elk/Beaver Lake Watershed Management Plan (Plan) is ready for approval and a progress update is provided for in-lake remediation work.

BACKGROUND

Since the 1980s, Elk/Beaver Lake has experienced significant eutrophication (elevated nutrient levels) due to external (~30%) and internal (~70%) nutrient loading, with water quality deterioration, blue-green algae blooms, growth of invasive aquatic plants and severe oxygen depletion in the deeper parts of the lake. These conditions have negatively influenced the environmental, social and economic values of the area.

The lake system is complex and spans multiple jurisdictions and, from 2016-2019, the Capital Regional District (CRD) led a water quality monitoring program, conducted research and studies, and facilitated an inter-governmental working group to develop a long-term approach and plan for lake remediation to improve water quality.

External nutrients enter the lake by natural ecological processes but are elevated by various human uses within the watershed (urban, rural and agricultural). To address the ongoing external nutrient load from the land surrounding the lake, staff initiated the development of a Watershed Management Plan in 2019. A public information session, three public workshops, and direct consultation with First Nations, interest groups, field experts and government agencies were conducted. The public was invited to comment on the draft Plan in February 2020, as well through an online survey to support the finalization of the Plan. Public suggestions were reviewed for consideration and the final Plan (Appendix A) was drafted by staff. The Plan facilitates and supports partnership, collaboration and leveraging of resources with government agencies, stewardship groups and landowners to ensure the long-term sustainability of the lake's ecosystem and its many environmental, social, recreational, cultural and economic values and outlines an action plan, implementation plan and long-term monitoring program.

The report only addresses control of the external loadings and the development of best practices to reduce ongoing loadings to the lake. The internal loadings are being addressed through grant requests for an engineered in-lake solution. The CRD received a third-party technical review of in-lake remediation options to address internal nutrient loading (nutrient release from bottom sediments), conducted in 2019. Hypolimnetic oxygenation systems were recommended for both lake basins. On September 11, 2019, the CRD Board directed staff to pursue external funding opportunities and partnerships to offset at least 50% of the costs associated with acquiring and installing the remediation systems in Elk and Beaver lakes, and that staff incorporate capital and operating expenditures into the Regional Parks five-year financial plan.

Staff are currently pursuing funding and partnership opportunities to offset costs associated with the design, installation and long-term operation of the hypolimnetic oxygenation systems. Provided sufficient funds have been secured, a detailed design of the oxygenation systems will be completed in 2021 and installation of the systems are planned for 2022. Staff are currently coordinating two studies that will inform the design (sizing and siting) of the proposed oxygenation systems.

ALTERNATIVES

Alternative 1

The Regional Parks Committee recommends to the Capital Regional District Board:

1. That this report be received for information; and
2. That staff be directed to implement actions within the Elk/Beaver Lake Watershed Management Plan, as opportunities allow.

Alternative 2

That this report be referred back to staff for additional information.

IMPLICATIONS

Environmental & Climate Implications

The lake and surrounding watershed play an important role in water filtration and storage, carbon sequestration and climate mitigation. The lake system is the headwaters of the Colquitz River and suffers from deteriorating water quality, leading to more frequent and extended blue-green algal blooms. Other issues, such as invasive species (notably Eurasian milfoil, American bullfrogs and many species of introduced fish species) and reduced oxygen levels also reflect deteriorating water quality and are putting more stresses on the ecosystem. Further deterioration of water quality in Elk and Beaver lakes would result in significant decline in biodiversity, habitat, and environmental values, both within the regional park and downstream in the Colquitz Watershed.

The Plan would address ongoing external nutrient sources; promote better land management practices within the watershed; improve watershed structure and function; and improve lake health and function, thereby reducing total phosphorus entering the lake. Furthermore, the anticipated outcomes of implementing the Plan include restored habitat for native aquatic species, reduced growth of Eurasian milfoil, reduced frequency of blue-green algae blooms and improved community awareness and understanding of watershed stewardship.

Intergovernmental Implications

The implementation of the Plan requires collaboration and coordination among many levels of government and community partners. In particular, agencies that have jurisdiction for land use within the Elk/Beaver Lake watershed have direct responsibility for coordinating, facilitating and/or implementing the recommended actions, including District of Saanich, Central Saanich and CRD Regional Parks. The Plan identifies remediation actions and responsibilities. Outreach and education will be key to engage the public, landowners and local governments on collective

responsibilities and actions and can be facilitated by existing resources. Actions within the regional park will be led by CRD Regional Parks staff, with support from community stewardship groups and volunteers.

Social Implications

Access and enjoyment of public park spaces is an important component of a healthy community. The lake and surrounding regional park functions as an important recreational hub in the capital regional district by providing various opportunities in and around the lake. Activities include swimming, fishing, rowing, hiking, dog-walking, equestrian use, nature watching and many special events. The Elk/Beaver Lake Regional Park has the greatest visitation of any regional park in the CRD with over 1.5 million visits annually and an estimated 15,000 angler days each year, making it the most fished lake on Vancouver Island. In a typical year, the park hosts many community events, day camps and nature programs that educate and benefit citizens year-round.

Financial Implications

Elk/Beaver Lake provides significant economic value to the region and its residents. The business case for an in-lake remediation solution for Elk/Beaver Lake provided in September 2019 approximated the sum of annual assets that would be lost if the lake continued to degrade without intervention. The total potential economic value (i.e., not including the monetary value of the environmental, cultural and social values) associated with the recreational use of the park was conservatively estimated at over $10 million per year.

The internal nutrient load that has accumulated in the lake is a direct function of the amount of nutrients entering the lake from external sources. While addressing the 70% internal nutrient load is essential to lake-remediation, actions to reduce the ongoing external nutrient load is critical to supporting long-term remediation efforts. Efforts to reduce and mitigate the ongoing external nutrient load will reduce nutrient load accumulation on the lake and relieve the long-term operational costs associated with an in-lake oxygenation system.

Funding to support actions within the Plan is limited and will require innovative cost-sharing approaches, creative partnerships and successful grant applications to solicit necessary funds to support implementation.

CONCLUSION

The Elk/Beaver Lake system is a significant natural asset providing environmental, social and economic benefits for the CRD, but water quality continues to decline, increasing the frequency and duration of blue-green algae blooms, risk to human health, and compromising the many values of the lake and surrounding watershed. A Watershed Management Plan has been developed which outlines a series of actions and long-term monitoring efforts to address external nutrient sources, and an in-lake remediation plan is underway to procure and cost-share a hypolimnetic oxygenation system for each lake to help address internal nutrient loading. These initiatives are to be undertaken in collaboration with other agencies, landowners and organizations to ensure the long-term viability of the two lakes as the foundation for the regional park and the many benefits it provides.

RECOMMENDATION

The Regional Parks Committee recommends to the Capital Regional District Board:

1. That this report be received for information; and
2. That staff be directed to implement actions within the Elk/Beaver Lake Watershed Management Plan, as opportunities allow.

Submitted by:	Jeff Leahy, RPF, Senior Manager, Regional Parks
Concurrence:	Larisa Hutcheson, P. Eng., General Manager, Parks & Environmental Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT

Appendix A: Elk/Beaver Lake Watershed Management Plan

Elk/Beaver Lake Watershed Management Plan

September 2020

Capital Regional District | Parks & Environmental Services, Regional Parks



Prepared by
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EXECUTIVE SUMMARY

A healthy and vibrant community depends on healthy ecosystems. In an effort to improve water quality and support recreational, cultural, social and environmental values across the region, the Capital Regional District (CRD) has led the development of a watershed management plan for the Elk/Beaver Lake watershed.

Water quality degradation has been reported in Elk/Beaver Lake for decades. Intensive research, data collection and analysis has improved our understanding of lake issues and supports ongoing decision making to improve water quality at the lake. In 2013, an intergovernmental group was formed by the Province to address the lake issues, and at the direction of the CRD Board in 2016, staff formed the Elk/Beaver Lake Initiative to chair and coordinate actions with local government and interest groups. The priorities of the Elk/Beaver Lake Initiative are to:

- reduce the frequency and toxicity of blue-green algae
- improve fish habitat
- manage invasive weed growth.

With the overall goal of improving water quality in Elk/Beaver Lake, this watershed management plan addresses these priorities by tackling the elevated nutrient levels in the lake that contribute to these issues. Recommendations are outlined to reduce total phosphorus entering the lake by improving land management practices within the watershed, improving watershed structure and function, and improving lake health and function.

In addition, the watershed management plan outlines various actions to reduce nutrient inputs into the lake from the surrounding watershed, with the highest priority actions being to:

- improve rural/urban land management practices to reduce and manage the source of phosphorus inputs into the watershed
- improve agricultural land use practices to reduce and manage nutrient use
- restore and enhance stream and watershed function in Haliburton Brook and O'Donnell Creek
- manage and reduce growth of invasive Eurasian milfoil.

An implementation plan, performance metrics and long-term monitoring recommendations are also presented. Partnership and collaboration with government agencies is also important to ensure the long-term sustainability of the plan and guide future improvement of water quality in the lake and its many environmental, social, recreational, cultural and economic values.

ACKNOWLEDGEMENTS

Many individuals, landowners, interest groups, experts, and government agencies have put countless hours into better understanding, assessing and restoring water quality at Elk/Beaver Lake. These contributions of time, energy, and resources have been fundamental in understanding the lake issues, increasing public awareness and supporting informed decision making to improve water quality in the lake. Through collaboration, passion, vision and determination, this watershed management plan has been developed in partnership with many individuals, agencies and groups to support, protect and restore the many values of the lake and surrounding watershed.

The CRD acknowledges that Elk/Beaver Lake and the surrounding watershed are located on the ancestral lands of the Lək̓ʷəŋən and W̱SÁNEĆ Nations. The support and context they have provided for the history of the land and current interest and vision for the region is a valuable contribution to this plan. An intergovernmental working group has also been critical to providing guidance and support for collaborative decision making to improve water quality in a complex, multi-jurisdictional lake, particularly the District of Saanich, which significantly supported this process. A huge amount of gratitude goes to the community members and volunteer stewardship groups that have continued to care for the future of Elk/Beaver Lake and have dedicated their time and energy to support this initiative. Contributions of funding and in-kind support have supported the success of this initiative from a variety of grantors, funders and partners.

This document aims to acknowledge all key contributors and partners that supported the Elk/Beaver Lake Initiative within the Partnerships section of this document. Any omissions were unintentional.

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1. INTRODUCTION

Elk/Beaver Lake is the most visited Regional Park, valued for its many benefits at local, regional, provincial and national scales. Water quality issues at Elk/Beaver Lake were formally identified in the 1960s and have continued to decline, having significant impacts on the environment, social, cultural and recreational values of the lake and surrounding lands. At the direction of the Capital Regional District (CRD) Board, the Elk/Beaver Lake Initiative was established in 2016, driven by community concern and supported by an intergovernmental working group to improve water quality at the lake. The priority actions identified by the Elk/Beaver Lake Initiative include reducing blue-green algae (also known as cyanobacteria) blooms, managing invasive aquatic plant growth and improving fish habitat, all related to the overall water quality of the lake.

1.1 Background

Work to date has confirmed that the primary cause of lake issues is the elevated nutrient levels in the lake. Approximately 30% of these nutrients come from run-off, groundwater and air particles (dust) that enter the lake from the surrounding land, known as the external nutrient load. The remaining 70% of nutrients are accumulated in bottom sediment and recycled back into the lake, known as the internal nutrient load. From 2016-2019, staff worked with government and community partners to develop two complementary plans to address the internal and external nutrient loads in the lake and improve water qualities. This watershed management plan directly addresses external nutrient loads, while an in-lake remediation plan is underway to address the internal nutrient load.

1.2 Purpose, Scope and Timeframe

The **purpose** of the watershed management plan is to identify goals, objectives, recommended actions and an implementation plan to improve water quality in Elk/Beaver Lake.

The **scope** of this plan is geographically focused to Elk/Beaver Lake and the surrounding sub-watershed that drains into the lake. The scope of recommended actions within the plan is focused on reducing the external nutrient load in the lake. The internal nutrient load issue is addressed through a separate in-lake remediation plan and will not be specifically addressed within this document. The in-lake remediation process is guided by CRD staff, expert consultants and intergovernmental agencies. On September 11, 2019, staff brought forward a report and business case to the CRD Board outlining the environmental, recreational, community and economic values of the lake (over $10 million annually) and a recommendation to remediate the lake. The CRD Board approved the recommendation to move ahead with the in-lake remediation of Elk/Beaver Lake, subject to receiving at least 50% capital grant funds for the project.

During the public consultation process, a number of ideas and suggestions were brought forward for consideration within the plan. Some ideas and suggestions, however, were excluded if they did not fall within the scope of the plan. Recommended actions within this plan include active, on-the-ground restoration activities, in addition to actions relating to public outreach, education and community-led stewardship.

The timeframe of this management plan guides actions for at least the next 10 years (2020–2030). Following 2030, the plan should be reviewed and revised, as necessary.

1.3 Approach

The watershed management plan is one component of a multi-pronged, holistic approach to improve water quality in Elk/Beaver Lake. The watershed management plan addresses the land use activities and practices within the watershed that contribute to an ongoing, external nutrient load. Through a coordinated and parallel process, the in-lake remediation plan identifies actions to manage elevated nutrients accumulated in the lake sediments to reduce the internal nutrient load. This community-driven, collaborative approach will address immediate health and environmental concerns, while making a long-term, sustainable plan to address the source of the water quality issues within the watershed.

Given known constraints within the watershed, ensuring the success of this plan requires that it is sustainable, achievable, informed by science and supported by the agencies, community members, landowners and stakeholders needed to implement it. The plan includes a summary of our current understanding of lake issues, leading techniques and best management practices to support measurable objectives, a robust monitoring plan to assess the effectiveness of the plan and an adaptive management framework, essential to supporting continuous learning through an iterative, decision-making process.

1.4 Partnerships

A number of partnerships were critical to the development of this plan, as indicated in the Acknowledgements section. Table 1-1 below identifies the agencies, governments, community groups, landowners, funders and individuals for their vital contribution to this plan and the health and enjoyment of Elk/Beaver Lake.

Table 1-1 Elk/Beaver Lake Initiative Partners

Government
• Capital Regional District • District of Saanich • District of Central Saanich • Island Health (also known as Vancouver Island Health Authority) • BC Ministry of Environment and Climate Change Strategy • BC Ministry of Forests Lands and Natural Resource Operations & Rural Development • Transport Canada • BC Ministry of Transportation and Infrastructure • Fisheries and Oceans Canada • Peninsula and Area Agricultural Commission • Saanich Environment & Natural Areas Advisory Committee
First Nations
• Lək'ʷəŋən Nations: Esquimalt and Songhees Nation • W̱SÁNEĆ Nations: Pauquachin, Tsartlip, Tsawout, Tseycum
Non-Governmental Organizations/Community groups
• Colquitz Watershed Stewardship Coalition (also known as Colquitz Coalition) • Victoria Golden Rods and Reels Fishing and Social Club • Victoria Rowing Society, Rowing Canada Aviron, and Victoria City Rowing Club • University of Victoria Vikes: University of Victoria Varsity Athletics • BC Lake Stewardship Society • Beaver Elk Environmental Stewards • Habitat Acquisition Trust • Haliburton Brook Stewardship Coalition • Urban Biodiversity Enhancement and Restoration Group (UBER) at Haliburton Watershed • Victoria Natural History Society (birding) • Elk Beaver Lake Equestrian Society • Retriever Club • Haig-Brown Fly Fishing Association • World Fisheries Trust • Royal Oak Burial Park • Elk/Beaver Lake Recreational Advisory Group • Peninsula Streams Society • Amalgamated Conservation Society • South Vancouver Island Anglers Coalition

Table 1-1, cont'd

Academic Partners
• University of Victoria Engineering • University of Victoria Restoration of Natural Systems • University of Victoria Environmental Law Centre • Simon Fraser University Restoration Program • Camosun College Environmental Technology Program • Vancouver Island University Resource Management Program
Experts
• Richard Nordin, PhD • Ken Ashley, PhD • Purnima Govindarajulu, PhD • James Miskelly, Natural Resources Canada • Ian Bruce, Peninsula Streams • Christian Englestoft, MSc and Kristiina Ovaska, PhD • Gertrud Nurnberg PhD • Bruce LaZerte, PhD • Patrick Lucey and Cori Barraclough, Aqua-Tex Scientific Consulting Ltd • Northwest Hydraulic Consultants Ltd.
Agriculture
• Haliburton Organic Farm • Arabian Horse Farm • Hobby farms
Funding Contributors
• Canadian Wildlife Federation • BC Wildlife Federation • Habitat Conservation Trust Foundation • Freshwater Fisheries Society of BC • Victoria Fish and Game Protective Association • Community to Community Forum (C2C) – Union of BC Municipalities • District of Saanich (in-kind) • Victoria Golden Rods and Reels Fishing and Social Club (In-kind) • Peninsula Streams Society (in-kind) • Victoria Rowing Society, Rowing Canada, and Victoria City Rowing Club (in-kind)
Key Community Champions
• Mick Collins (Victoria Golden Rods and Reels Fishing and Social Club) • Robert McConnell (Victoria Golden Rods and Reels Fishing and Social Club) • Jamie Disbrow (Beaver Elk Environmental Stewards)

1.4.1 Intergovernmental Working Group

An intergovernmental working group was formed in 2014 by the Ministry of Environment and Climate Change Strategy (ENV) to address increasing concern for water quality in Elk/Beaver Lake. In 2016, the CRD established the Elk/Beaver Lake Initiative and coordinated the working group's efforts to improve water quality. The intergovernmental working group supports the Elk/Beaver Lake Initiative by providing guidance and support for in-lake remedial recommendations, participating in decision making, supporting the securement of funds, and helping to guide future adaptive management. Membership of the intergovernmental working group include ENV, the Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNRORD), Island Health, the District of Saanich and the CRD. After December 2019, the intergovernmental working group was formally decommissioned, however, all partner agencies are available to support the Elk/Beaver Lake Initiative, as needed.

1.4.2 First Nations

The CRD acknowledges that Elk/Beaver Lake and the surrounding watershed are located on the ancestral lands of the Lək̓ʷəŋən and W̱SÁNEĆ peoples for thousands of years. As caretakers and stewards of the land, First Nations play an important part in providing insight on current values and the values of the land pre-settlement, and are important partners moving forward with this plan. Continued consultation and collaboration with First Nations will be supported throughout the implementation of this plan.

1.4.3 Community Groups

Community support and engagement has been a vital component of driving and coordinating actions to improve water quality at Elk/Beaver Lake. Partnerships with the University of Victoria Civil Engineering and Restoration of Natural Systems programs have provided valuable project planning that have contributed to improvements to stormwater management within the watershed surrounding Elk/Beaver Lake. Numerous expert scientists have also provided expertise that has led to the selection of lake and watershed improvement options.

Numerous community groups and volunteers have contributed to aquatic weed monitoring, water quality monitoring, invasive plant removal, and riparian restoration efforts. Volunteer participation is a critical component to ongoing riparian area enhancement. The enjoyment of recreation activities, such as rowing, hiking, swimming and fishing have driven the objectives of the Elk/Beaver Lake Initiative and this watershed management plan. Communications and collaboration with local interest groups, lake users and stakeholders are ongoing.

1.4.4 Private Landowners

Private landowners that live within the watershed surrounding Elk/Beaver Lake are a critical component to ensuring the success of this plan. Landowner support and participation have already contributed to external nutrient reduction and better stewardship of the watershed as a whole. Building partnerships and

providing support and resources to landowners, to help shift current behaviours and land management practices, will make a significant impact on the efficacy of the plan.

1.5 Public Engagement and Plan Development

Public engagement was a key part of developing the watershed management plan for Elk/Beaver Lake to address external sources of nutrients. This plan was developed with an effort to involve the intergovernmental working group, First Nations, private landowners, park visitors and interest groups in our region through a public engagement process. The planning process involved a multi-phased approach to gather available data, identify key issues, share ideas on appropriate solutions and develop a plan to address those issues. Following the initial public engagement phase, the plan was developed, reviewed, revised and finalized for endorsement by various levels of government, field experts, stakeholders, landowners and community groups.

For a complete summary of the public consultation process, see Appendix A.

1.6 Vision, Goals, Objectives and Outcomes

The following vision, goals, objectives and outcomes for the watershed were developed and informed by the public consultation process.

Vision: The vision expresses the desired end state; a vision for where one wants to be in 15-20 years.

> *The vision for Elk/Beaver Lake watershed is to have a healthy and diverse lake ecosystem that supports environmental values, safe recreation and community activities for generations to come.*

Goal: Succeeding the vision, the following goal was identified for Elk/Beaver Lake watershed.

> *The primary goal is to improve water quality in Elk/Beaver Lake*

Objectives: The objectives were developed to specifically address the primary goal of improving water quality, specifically addressing the external nutrient load from phosphorus:

1. *Improve land management practices within the watershed to reduce total phosphorus entering the lake.*
2. Improve watershed structure and function to reduce total phosphorus entering the lake.
3. *Improve lake health and function to reduce total phosphorus within the lake.*

Outcomes: The anticipated outcomes of this watershed management plan include:

- *Restored habitat for native aquatic species*
- *Reduced growth of Eurasian milfoil*
- *Reduced frequency of blue-green algae blooms*
- *Improved community awareness and understanding of watershed stewardship*

1.7 Jurisdiction

The Elk/Beaver Lake watershed falls within multiple jurisdictions, as outlined in Figure 1-1.

Those jurisdictions include the following, with associated responsibilities identified as they relate to the Elk/Beaver Lake Initiative.

Jurisdiction	Responsibilities
District of Saanich	Responsible for planning regulations and bylaw enforcement for residential properties in the watershed are within the jurisdiction of the Saanich
ENV	Responsible for the effective protection, management and conservation of BC's water, land, air and living resources
FLNRORD	Manages and monitors fisheries within British Columbia
Island Health (AKA Vancouver Island Health Authority)	Provides guidance and expertise on water quality issues impacting human health, such as toxic blue-green algae blooms
Transport Canada	Regulates water surface activities on Elk/Beaver Lake
CRD Regional Parks	Manages Elk/Beaver Lake Regional Park

The CRD also works collaboratively with Island Health, and ENV to facilitate lake water quality monitoring, and the detection and public communication of blue-green algae toxins in the lake.

Additional jurisdictional responsibilities are held by the Ministry of Agriculture. This ministry provides tools and information to support farmers and growers to ensure sustainable and environmentally friendly use of these resources. Significant agricultural land use takes place in the Elk/Beaver Lake watershed and provincial legislation is important to protecting soil, water, air and biodiversity in the agricultural sector. The provincial Agricultural Land Commission is an independent administrative tribunal dedicated to preserving agricultural land and encouraging farming in British Columbia. The Agricultural Land Commission specifies land use permitted within the Agricultural Land Reserve, which covers a significant portion of the Elk/Beaver Lake watershed.

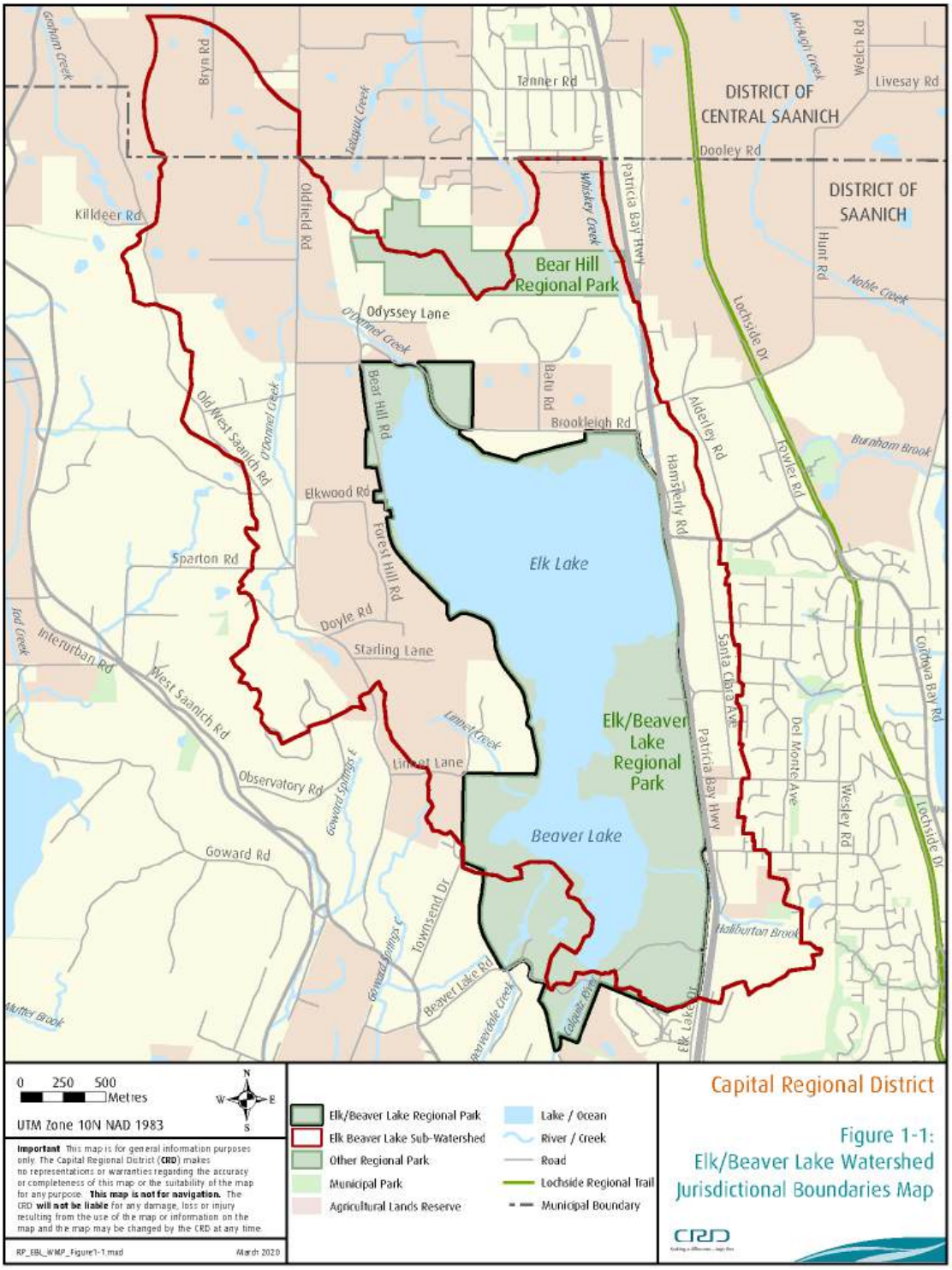


Figure 1-1: Elk/Beaver Lake Watershed Jurisdictional Boundaries

1.8 Policy

Key legislation, policy and bylaws that impact and/or guide activities within the Elk/Beaver Lake watershed are as follows:

District of Saanich: Watercourse Bylaw, Zoning Bylaw, Deposit of Fill Bylaw, Tree Preservation Bylaw, Subdivision Bylaw, and Official Community Plan policies.

- Capital Regional District: Elk/Beaver Lake Regional Park Management Plan (Bylaw No.3698; CRD 2010), Regional Parks Regulation Bylaw (4225), and Septic Maintenance Bylaw (3470).
- Agricultural Land Commission: The *Agricultural Land Commission Act* and associated regulations.
- Ministry of Agriculture: *Code of Practice for Agricultural Environmental Management* regulates land use and impacts of the environment.
- BC Provincial Legislation: *Environmental Management Act*, *Water Protection Act*, *Riparian Areas Protection Act*, *Wildlife Act* and *Water Sustainability Act*.
- Federal Legislation: *Fisheries Act*, *Canada Wildlife Act* and *Species at Risk Act*.

For more information on these policies and regulations, please see Appendix C – Policy & Regulation.

Additional reports and strategies that guide or support recommendations within this plan include:

- Ministry of Environment and Climate Change Strategy: Water Quality Objectives and Water Quality Attainment Report. (McKean, 1992; Ministry of Environment, 1996)
- Capital Region District: CRD Regional Climate Action Strategy (2017), Regional Parks Strategic Plan (2012), Regional Canada Goose Management Strategy (2012)

2. ELK/BEAVER LAKE AND WATERSHED

The Elk/Beaver Lake sub-watershed is the headwaters for the Colquitz River system, which flows through the District of Saanich and into the ocean at Portage Inlet. Elk/Beaver Lake is composed of two basins, Elk and Beaver, separated by a shallow inter-lake channel. The 2.24 km^2 combined lake area receives water from a 7.82 km^2 upstream sub-watershed drainage area. Water flows into Elk/Beaver Lake from 25 drainage tributaries, but the primary inflows are from O'Donnell Creek, Hamsterly Creek, Haliburton Brook and Linnet Creek. A comprehensive understanding of the historic and current conditions and trends of water quality is critical to the development of a watershed management plan. This section provides a summary of our understanding of the watershed and water quality issues in Elk/Beaver Lake.

2.1 Land Use Summary

Historic and current land use impacts the quality of the surface waters within a given watershed. Land use describes a category of usage, such as urban/rural residential, agricultural, and forested, often associated with the zoning of the land. Land use can be valuable in better understanding the type of land management practices and activities that occur on the land, such as the application of fertilizers in rural areas, animal manure storage on agricultural lands and the paving of roads or parking lots in urban areas. Land cover provides useful information of the physical state of the environment at a particular time, often using aerial imagery of a region.

Water quality in Elk/Beaver Lake has been affected by human activities for at least the past 150 years (Groeneveld, 2002). Prior to colonization, the Indigenous people of this territory managed the lands in such a way as to provide for many of their cultural, sustenance and economic needs. The disturbed meadows on the east side of the park represent a high-quality native meadow complex that were historically farmed. This area was not originally forested, partly due to the clay soils, and likely partly due to Indigenous land management. The first Euro-Canadian settlers described this area as a prairie (Pearson, 1981). Today, there are many remnants of the original prairie, including pockets of diverse native meadow, a few original Garry oak trees, and many vernal pools.

In the late 1800s, land use changed significantly and included forestry, agriculture, urbanization, and increasing recreational uses, which have all influenced the water quality in Elk/Beaver Lake in different ways. The surface area and depth of the lake was significantly altered between 1873 and 1879 by the construction of three dams to supply drinking water to the City of Victoria until 1914 and to the Saanich Peninsula until 1977. The construction of these dams has resulted in the lake surface area increasing by 21% (from 1.84-2.24 km^2) and the shoreline perimeter increasing by 19% (Groeneveld, 2002), flooding surrounding lands. The Patricia Bay Highway (BC-17) was constructed in the 1950s and is located directly adjacent to the east of the lakeshore. The construction of the highway and shoreline trail may have resulted in the disappearance of many small, natural drainages around the lake (Groeneveld, 2002).

The first signs of water quality concerns in the lake were identified in 1968 during provincial water quality monitoring, and the lake was concluded to be highly eutrophic (high in nutrients) by 1972. A paleo-limnological study indicates that the rate that sediment was moving into the lake was increasing even before 1850 and increased exponentially after that, until at least 2000 (Groeneveld, 2002). In natural systems, lakes become more eutrophic over time through natural processes over hundreds of years. However, in urban areas, such as Elk/Beaver Lake, human-related activities sped up this process. This accelerated process of sedimentation and subsequent eutrophication of the lake is a common consequence of land clearing, water impoundment (damming), agricultural activities, and increasing impervious surfaces, all of which have occurred in the Elk/Beaver Lake watershed, most intensely since the 1950s.

The majority of the watershed is privately owned, with the exception of Elk/Beaver Lake Regional Park, which surrounds the perimeter of the lake. Aside from Elk/Beaver Lake Regional Park, zoning within the watershed is primarily Rural (A-1) indicating 2ha lots. There is also higher density, single family zoning (RS-12) on the east side of Patricia Bay Highway (BC-17). There are a number of lots zoned Commercial (C-6; C-2, C1C) on the northeast side of the lake and east of BC-17 (District of Saanich, 2015). There are also a small number of properties zoned as Public (P-1) within the watershed as well.

The majority of residential properties to the north and west of the lake, and just east of BC-17, reside outside the Urban Containment Boundary. This boundary identifies the division between the urban area to the south-east of Saanich and the rural area to the north-west. As a result, properties outside the Urban Containment Boundary have septic systems and fields to manage human waste, while properties within the boundary are on sewage systems. There are currently no commercial forestry or large industrial agricultural activities occurring in the watershed. Land cover in the watershed, as demonstrated in Figure 2-1 is primarily tree cover, lake and pond, agricultural fields and grass, shrub, bare ground and exposed rock. There is also a network of urban area (buildings, roads, and parking lots) and pockets of riparian and wetland areas scattered throughout the watershed.

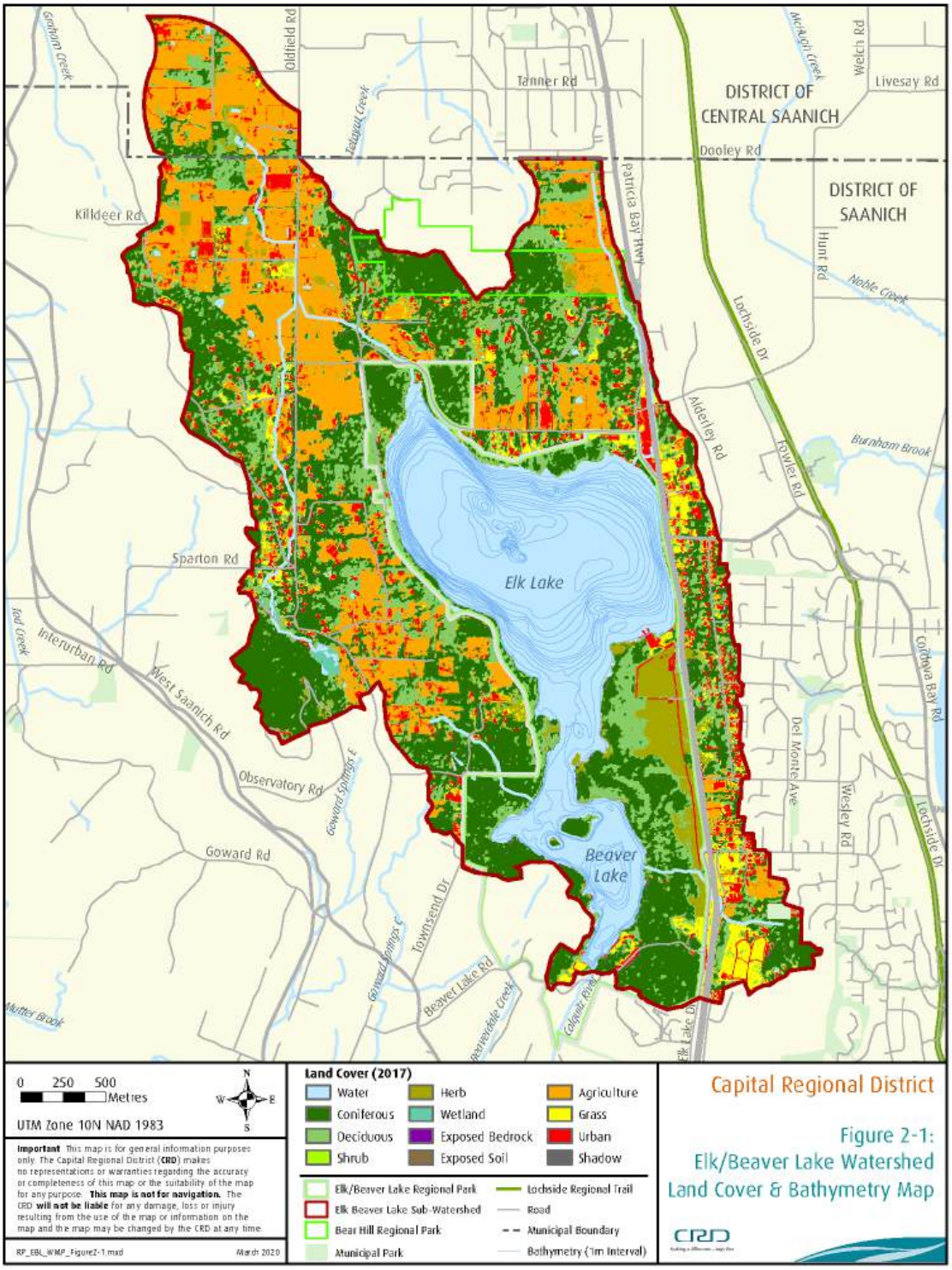


Figure 2-1: Elk/Beaver Lake Watershed Land Cover Map (2017)

2.2 Lake and Watershed Values

Elk/Beaver Lake and surrounding watershed provide significant environmental, cultural, social and economic values to the region and its residents. Some of these values are intangible and cannot be quantified, while others provide significant economic benefit to the region. A more detailed summary of the values provided by Elk/Beaver Lake can be found in the Elk Beaver Lake Business Case (CRD, 2019).

2.2.1 Cultural Values

Elk/Beaver Lake and surrounding Saanich Peninsula have been inhabited and taken care of by the Lək'ʷəŋən and W̱SÁNEĆ peoples for thousands of years. The area is still used for hunting, fishing and collecting plants for food, medicine and ceremonial purposes. The Indigenous people of this territory managed the lands in such a way as to provide for many of their cultural, sustenance and economic needs.

2.2.2 Social Values

Elk/Beaver Lake Regional Park is the only park designated as a recreation park in all of CRD Regional Parks system (CRD, 2012). This means that the park is managed to support a variety of recreational activities, and the management of the natural environment is focused toward the enjoyment of park users. The park is the most heavily used regional park, and a focal point for multiple-use outdoor recreation, with an estimated 1.57 million visits in 2018. Although the national rowing team is expected to relocate, the lake is home to numerous competitive and recreational rowing teams and will continue to support other significant rowing clubs. The lakes are also the site of an annual national triathlon and other sporting events. The park also hosts many day camps and nature programs that educate and benefit citizens year-round. Elk/Beaver Lake supports the largest freshwater fishery on Vancouver Island with 15,000-18,000 angler days per year. The lake and surrounding park is a popular destination for hiking, walking, equestrian activities, youth camping opportunities, dog-walking, swimming, water skiing, canoeing, kayaking and more. The park offers opportunities for social interactions, team building, community events and fitness. Elk/Beaver Lake provides opportunities for many outdoor experiences, activities and events, and is managed to accommodate a variety of shoreline and in-lake recreational activities.

Elk/Beaver Lake also provides significant benefits to CRD residents and visitors by supporting increased mental well-being. Positive experiences and interactions in nature are closely linked with improved mental and physical health. This lake and surrounding watershed supports a connected, vibrant and healthy community.

2.2.3 Environmental Values

The Elk/Beaver Lake watershed is located within the Coastal Douglas-fir moist maritime (CDF-mm) biogeoclimatic zone. It is composed of sensitive ecosystems, including older forest mixed conifer and deciduous, older second growth forest (mixed and coniferous), dry-open woodland and wetland (swamp) habitat that support a diversity of species. Provincially, red-listed ecological communities include: Western Red cedar/Indian-plum (*Thuja plicata/Oemleria cerasiformis*), Grand Fir/Three-leaved Foamflower (*Abies*

grandis/Tiarella trifoliate), Douglas-fir/Dull Oregon-grape (*Pseudotsuga menziesii/Mahonia nervosa*) and Grand Fir/Dull Oregon-grape (*Abies grandis/Mahonia nervosa*). A number of wildlife trees have been designated within this watershed, as well, that are important in supporting biodiversity. These natural areas provide habitat for a diversity of plants and animals in an otherwise degraded and fragmented urban area.

Natural Garry oak (*Quercus garryana*) woodlands and associated ecosystems are among the most endangered in Canada. Less than 5% of the natural ecosystems in southwest British Columbia remain, and over 100 species of plants, animals, reptiles, birds and insects are officially listed as "at risk", due to the degradation and disappearance of these ecosystems. Shallow vernal pools form on the heavy clay soils and support a unique flora, including rare plants. The disturbed meadow habitat on the east side of Elk/Beaver Lake Regional Park provides a rare opportunity to restore important Garry oak prairie habitat for future generations. These meadows have a very complex history and have been altered significantly in recent history, demonstrating a unique example of some of the most endangered habitats in the CRD. Two rare plant species are known to occur in the open meadows on the east side of Elk Lake basin: Needle-leaved Navarretia (*Navarretia intertexta*, provincially blue-listed) and Graceful Cinquefoil (*Potentilla gracilis var. gracilis*, provincially red-listed species). These meadows are also suspected to be a historical site for federally endangered Rosy Owl-clover (*Orthocarpus bracteosus*) under the *Species at Risk Act*, which was collected at Patricia Bay Highway (BC-17) in 1954.

Species at Risk, including critical habitat for western painted turtles (*Chrysemys picta bellii*), a federally designated species-at-risk and the only remaining species of native turtle on Vancouver Island, live in this watershed for year-round habitat, including nesting grounds. (Canada G. , 2018). There is also critical habitat identified for the Barn Owl (*Tyto alba*) and Batwing Vinyl Lichen (*Leptogium platinum*). Occurrences of the Green Heron (*Butorides virescens*), provincially blue-listed species, have also been identified along shorelines in Beaver Lake and the channel. The lake provides ecosystem services, such as stormwater management, water filtration, and provision of aquatic and riparian habitat for many species in the lake and downstream.

The Elk/Beaver Lake watershed further supports environmental values downstream within one of the largest watersheds in the CRD, the Colquitz River watershed. Elk/Beaver Lake drains water into the Colquitz River and plays an important role in flood mitigation, nutrient cycling, and providing important habitat for species downstream. The Colquitz River has a native fish habitat for Coho salmon (*Oncorhynchus kisutch)* and coastal cutthroat trout (*Oncorhynchus clarkii clarkii*). A number of environmental values are indicated in Figure 2-2.

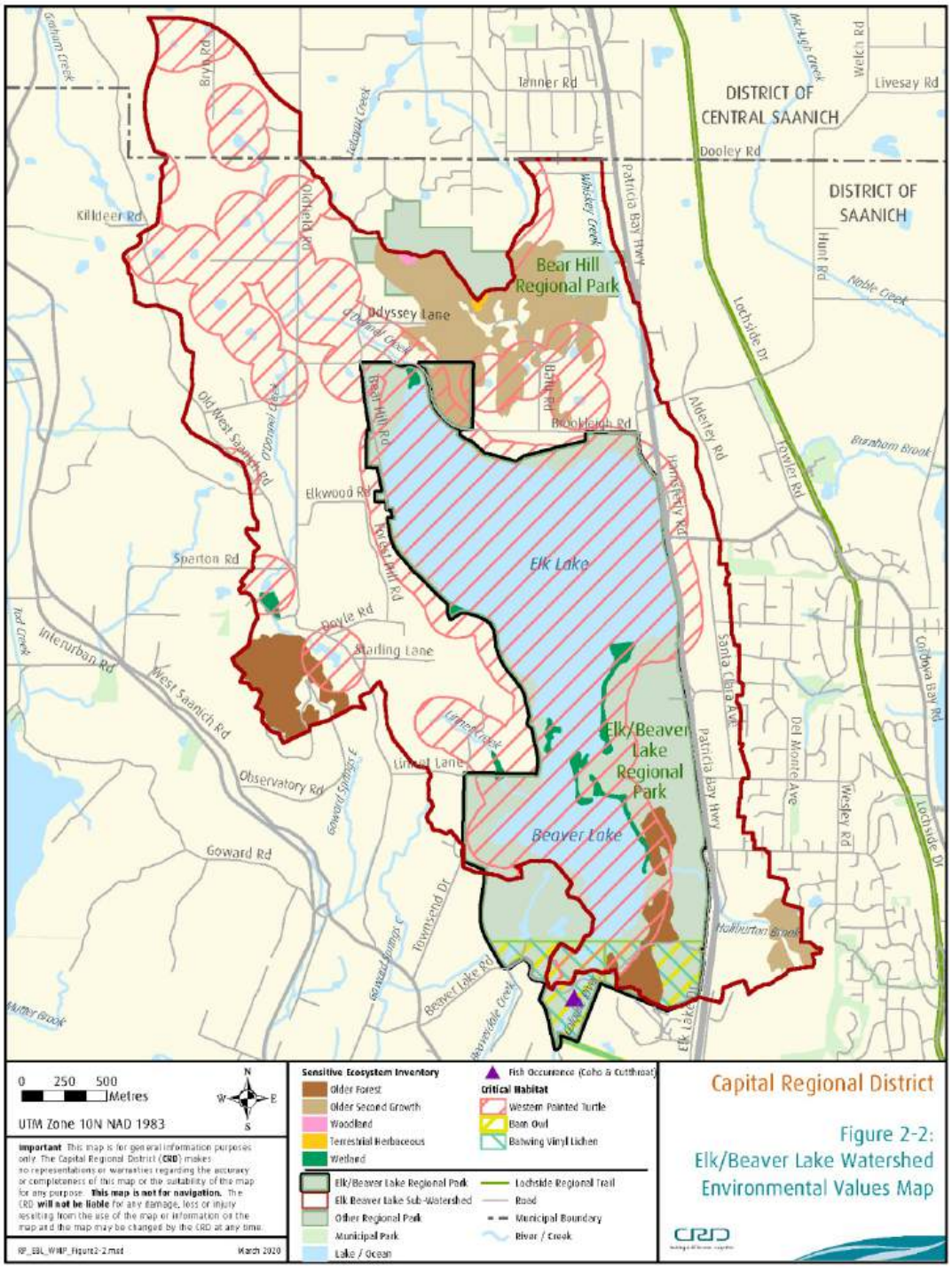


Figure 2-2: Map of Environmental Values in Elk/Beaver Lake Watershed

2.2.4 Economic Values

The economic value of Elk/Beaver Lake is approximated from best available information, and does not account for intangible social, aesthetic, cultural, health benefits and environmental services that are difficult to monetarily quantify. The following Table 2-1 summarizes all available data on sources of economic value.

Table 2-1 Annual Economic Value of Elk/Beaver Lake

Sources of Economic Value		Annual Value
Recreation	Rowing	$2.80 million*
	Fishing	$2.35 million
	Triathlon	$5 million
Leases & Permits		$15,300
Total Annual Economic Value		**$10.2 million**

* Excludes the value of the National Rowing Center ($3.4 million), as it is expected to relocate in near future.

2.3 Lake and Watershed Issues

Deterioration of the aquatic environment at Elk/Beaver Lake was formally identified in 1972 and has been well documented since the 1980s (Nordin, 2015). Multiple stressors on the lake have impacted the health and function of the ecosystem, biodiversity and ecosystem services, which have further deleterious implications for the social, cultural and economic values of the lake.

Poor water quality in Elk/Beaver Lake has led to the following key issues that have been identified as priorities within the lake:

- Blue-green algae (cyanobacteria)
- Invasive plants (Eurasian milfoil)
- Poor fish habitat

2.3.1 Blue-Green Algae

Elk/Beaver Lake experiences frequent blue-green algae (also known as cyanobacteria) blooms throughout the year. These native, naturally occurring blue-green algae are responsible for life as we know it on earth, by providing oxygen in our atmosphere. In high abundance; however, blue-green algae produce a visible blue-green scum on the surface of water that may become toxic. In Elk Lake basin, blooms typically occur over the winter months from November-March. Blooms in Beaver Lake have historically occurred from August-September; however, in 2018 and 2019, blooms have continued in Beaver Lake throughout winter, as well. Some of the common blue-green algae species in Elk/Beaver Lake (*Microcystis, Aphanizomenon*, and *Anabaena*) have the potential to produce cyanotoxins, which are dangerous to human health.

Ingesting water with cyanotoxins may cause a range of symptoms, including headaches, abdominal pain, damage to liver and brain tissue in humans, and can lead to liver damage or death in dogs and other small mammals. Scientists have also uncovered a possible link between Parkinson's Disease and Amyotrophic Lateral Sclerosis with neurotoxins found in blue-green algae (Costanza L. Vallerga, 2020). The CRD works closely with Island Health to issue advisories and warning signage for the public to avoid recreational use of the lake when testing confirms the presence of cyanotoxins in concentrations exceeding guidelines for water contact. In 2019/2020, significant efforts were made, in collaboration with government partners, to improve public communication about the blooms and risk to public health.

In the Elk Lake basin, a thermocline forms during the summer, separating warm surface waters from cooler deep waters. At the surface, photosynthesis and atmospheric oxygen-exchange occurs and maintains a high level of dissolved oxygen. In deep waters below the thermocline, water becomes very low in oxygen (hypoxic), as it is isolated from oxygenated surface waters. Decomposers like bacteria found in benthic habitat in sediments use any available oxygen to break down organic materials, further reducing available oxygen. In low oxygen conditions, phosphorus is released (p-release) from sediments into the deep lake waters. As surface waters cool in the fall, the thermocline dissolves and the deep and surface waters mix. This allows the phosphorus in the deep water to become available at surface waters and support rapid growth of blue-green algae.

In the Beaver Lake basin, a strong thermocline does not form during the summer. Instead, deep and shallow waters mix readily under windy conditions and nutrients are immediately available to promote blue-green algae blooms. This allows for blooms to occur throughout the summer and into the fall. Following rapid growth of both blue-green algae and aquatic plants during the summer and fall, decomposition of these organic materials further contributes to excessive nutrients in the sediments. This high level of biological activity also reduces dissolved oxygen levels, perpetuating water quality issues in the lake.

2.3.2 Invasive Plants (Eurasian water-milfoil)

Eurasian water-milfoil, referred to as milfoil, is a non-native aquatic plant that grows abundantly in Elk/Beaver Lake. Under high phosphorus conditions, milfoil grows particularly well and outcompetes other native species. Eurasian water-milfoil is very aggressive and once introduced to a waterbody will displace native aquatic vegetation in a couple of years. The extensive coverage and dominance of this species is the result of high nutrient levels and ongoing disturbance (boat propellers, weed harvester) that favour its rapid growth. Not only does milfoil thrive in elevated phosphorus conditions, this invader also further contributes to the nutrient issues in the lake. As the plant dies back in the fall, it begins to decompose and contribute phosphorus back into the lake sediments and water column, compounding the nutrient issue.

2.3.3 Poor Fish Habitat

As a result of high nutrient levels and low oxygen levels in the lake, the community of organisms that live in the lake are under increased stress. The current conditions support a phytoplankton community that is dominated by blue-green algae. The zooplankton and benthic community in Elk/Beaver Lake is also reduced in abundance and diversity, as a result of poor food availability, low oxygen conditions and increased predation by invasive fish. These environmental conditions further impact fish, reptile and amphibian habitat. In particular, fish habitat has been significantly impacted for those fish that prefer deep, cold, oxygenated waters. As deep waters have become hypoxic (low in oxygen) or anoxic (no available oxygen) in Elk/Beaver Lake, fish are forced to inhabit shallower, warmer habitat where they can access sufficient oxygen. This is well documented in a fish inventory study (Hemmera Envirochem, 2017), where no fish were captured in depths greater than 12 m in Elk Lake, likely as a result of deep-water, anoxic conditions.

2.4 Eutrophication

Water quality issues identified at Elk/Beaver Lake are primarily the result of high levels of nutrients in the lake, also known as eutrophication. Through a process of lake ageing, water bodies fill with sediments and become enriched in nutrients over time. At Elk/Beaver Lake, this natural process has been accelerated by human-related activities in and around the lake that increase the amount of nutrients that enter the lake and trap nutrients within the lake (damming). Phosphorus, in particular, is considered to be the most important factor impacting water quality. Eutrophic lakes are those lakes that are highly productive. In urban areas, these highly productive lakes are also associated with excessive aquatic plant growth, poor water clarity, reduced oxygen levels, deteriorated aquatic habitat, low biodiversity and frequent blue-green algae blooms. The source of excessive nutrients in a lake is often a combination of internal and external nutrient loading.

2.4.1 External Nutrient Sources (from the watershed)

In Elk/Beaver Lake, it is estimated that between 11-29% of total phosphorus in the lake water is attributed to external sources of nutrients (Nordin, 2015; Nurnberg, 2016). This source of nutrients is carried by water, sediments and dust particles from external sources within the Elk/Beaver Lake watershed and deposited into the lake. The sources of external nutrients in Elk/Beaver Lake come largely from land management practices and activities in rural, residential, urban, agricultural pasture and cropland, wetlands, streams and some open grass lands (prairie). The movement of nutrients (particularly phosphorus) continues to occur naturally in some areas, flowing from the watershed into tributaries and making its way into Elk/Beaver Lake downstream. However, in areas that are heavily impacted by humans, higher levels of nutrients enter the watershed and make their way into the lake. Nutrient inputs vary across the landscape, depending on land use, management practices and activities, soil acidity and permeability, impervious surfaces, proximity to transport by streams, creeks and groundwater, and ecosystem function and health.

Increasing urbanization, particularly in areas near marine and freshwater shorelines, has significantly shifted landscapes from natural areas to agricultural, suburban, and urban land use that have accelerated sources and delivery rates of nutrients and sediments into aquatic ecosystems. The main sources of excess phosphorus in urban and rural environments are fertilizers, manure, and human waste, but other sources also play a role in contributing the nutrient inputs within the watershed. (Goonetilleke, 2019; Hobbie, et al., 2017). These key sources that contribute to water quality issues in Elk/Beaver Lake are summarized below:

- Fertilizers: Phosphorus is one of the critical nutrients needed to support for plant growth and one of the three major nutrients found in most fertilizers, along with nitrogen and potassium. Although adding phosphorus to the soil can improve your home lawn and garden, or agricultural crop productivity, adding too much and too often can lead to excess phosphorus run-off into nearby streams, groundwater and may build-up on soils. Fertilized soils, as well as livestock operations, are also vulnerable to nutrient losses to the air. Management of agricultural phosphorus has been in effect for decades (Stackpoole, Stets, & and Sprague, 2019). The *Fertilizers Act* and Regulations require that all regulated fertilizer and supplement products must be safe for humans, plants, animals, and the environment. Regulated products include farm fertilizers, micronutrients, lawn and garden products (R.S.C, 1985). While regulation of fertilizer use has been greatly improved, fertilizer use still impacts water quality in nearby aquatic environments. In Elk/Beaver Lake watershed, we expect that significant nutrient inputs originate from residential and agricultural lands where fertilizers are often used to support lawn and crop growth. Addressing this issue, by shifting behaviours and supporting landowner stewardship, will make a significant impact on overall nutrient inputs in the watershed.
- Compost: Compost retains a large volume of water, thus helping to prevent or reduce erosion, run-off and establish vegetation. Composting can improve downstream water quality by retaining pollutants, such as heavy metals, nitrogen, phosphorus, oil and grease, fuels, herbicides, and pesticides. Nutrients and hydrocarbons adsorbed and/or trapped by compost are decomposed by naturally occurring microorganisms, improving soil structure and nutrient content, which reduces the need for chemical fertilizers. However, the storage and management of compost is important to ensure it is not contributing to nutrient levels downstream.
- Pet Waste (Manure): Animal waste is one of the many seemingly small sources of nutrients that can lead to significant issues for water quality. Dog, horse and other farm animal waste is rich in nitrogen and phosphorus, and when it makes its way into storm drains and local streams, it may contribute significantly to nutrient issues in the lake. In a recent study with high urban density, household nutrient inputs from pet (dog) waste contributed up to 76% of total phosphorus inputs and 28% of total nitrogen inputs into a local water body (Hobbie, et al., 2017). Although currently, we expect dog and horse waste has a lower relative impact on water quality compared to other inputs in Elk/Beaver Lake, the relative importance of pet waste is likely increasing, as use in the regional park and density in the surrounding watershed increases. Currently, CRD Regional Parks has signage indicating the importance

of dog waste pick-up throughout Elk/Beaver Regional Park and complementary dog waste bags are provided at high use areas. There are a number of designated trails for horse riding in the regional park, and all riders are required to keep manure to trail edges.

- Septic: Septic systems containing human waste contain a high degree of phosphorus and nitrogen. Estimates of phosphorus contribution from septic was initially estimated to account for up to 21% of the total annual external phosphorus load (Nurnberg & LaZerte, 2016; Nordin, 2015); however, general septic system models have been found to overestimate the actual phosphorus contribution. It is expected, that in the case that septic systems are maintained and cared for, very little phosphorus would reach the lake through infiltration, due to the low mobility of phosphorus in local soils and septic field set-backs of at least 30 m (Hodgins, 2016). If septic systems are not well maintained, phosphorous may reach surface or sub-surface waters and enter into nearby streams and creeks through run-off. Actions to improve septic maintenance practices and reduce transport of septic nutrients by run-off could significantly reduce inputs from this source.
- House Cleaners: Federal regulations are in place to protect Canada's environment from the release of phosphorus from certain products that could contribute to the over-fertilization of freshwater ecosystems, and the growth of harmful algae blooms that are proliferating in Canada's lakes and rivers (Canada E. , 2011). The regulations apply to the manufacturers and importers of laundry detergents, household dishwashing compounds (including hand dishwashing soap and automatic dishwashing detergents) and household cleaners. Bans on phosphorus-containing detergents have strongly reduced sanitary sewer phosphorus inputs from cities to surface waters. We anticipate that this source has minimal inputs into the Elk/Beaver Lake watershed, however, improving awareness of this potential source of watershed pollution is worthwhile to support more natural house cleaning products.
- Hyper-abundant Wildlife (Canada Geese): Non-migratory Canada geese were introduced in the 1960s and 70s and are now an ongoing concern in the regional district. Large populations of these geese contribute to heath, economic and environmental issues affecting municipalities, parks, farmers, businesses, health agencies and airport authorities. A number of studies have shown that the presence of birds in high densities in the catchment of lakes and ponds has an impact on nutrient levels in the lake. The impact that Canada geese may have on total phosphorus in Elk/Beaver Lake likely varies seasonally with rainfall and changes in population and distribution. Populations residing within the beach areas of the regional park would have the greatest impact on water quality, including both nutrient inputs and *E.coli* contamination. Estimates of nutrient loads from birds suggested that they contributed 2-4% of the total external phosphorus load in the lake (Nordin, 2015; McKean, 1992; Nurnberg & LaZerte, 2016).

  We expect that relative input of phosphorus from geese is relatively low compared to inputs from other sources. However, without addressing this source, populations of geese are expected to increase and continue to impact water quality in the lake. Proactive efforts to address this increasing concern

would remediate future ongoing water quality issues at the lake, particularly as it relates to *E.coli* and human health concerns. Currently, the CRD is guided by the *Regional Canada Goose Management Strategy* (CRD, 2012) and practices, including goose waste removal and hazing practices to reduce resident population. Land uses within the watershed, and associated phosphorus sources that contribute to the nutrient load, are summarized in Table 2-2.

Table 2-2: Land Cover and Associated Phosphorus Sources within Elk/Beaver Lake Watershed

Land cover	Common phosphorus sources
Urban and Rural residential (buildings, roads, parking lots)	• Fertilizers • Pet waste • Septic • Cleaners • Compost
Agricultural (pastures, crop fields)	• Manure • Inorganic fertilizer
Parks and Natural areas (forest, wetland, streams and meadows)	• Hyper-abundant and invasive wildlife • Pet waste

2.4.2 External Nutrient Transport

Nutrients are carried from their source into the lake by run-off, groundwater (infiltration) and dust particles (atmospheric deposition). In similar urban/rural watersheds, studies have shown that phosphorus enters surface waters primarily through run-off, rather than atmosphere deposition or groundwater infiltration (Hobbie, et al., 2017). Groundwater is expected to contribute lower levels of phosphorus into the lake, due to the low mobility, and high retention of phosphorus in sediment. Increased amounts of impervious surfaces (not allowing liquids to pass through) within the watershed also reduces infiltration and increases impacts or run-off in more urban environments. Impervious surfaces enable phosphorus to move across the large areas easily, by preventing retention of phosphorus in vegetation and preventing infiltration of phosphorus by soil sorption and biotic uptake. Phosphorus therefore becomes cut off from natural ecosystem processes, resulting in increased phosphorus levels in streams and storm drains. (Hobbie, et al., 2017). Atmospheric deposition carries nutrients from rain and dust that is picked up by winds and evaporation from the land and deposited into the lake. External phosphorus loads from the atmosphere is estimated at about 17% (Nurnberg & LaZerte, 2016), however, this source is challenging to quantify (Goonetilleke, 2019).

In Elk/Beaver Lake, it is estimated that run-off is the primary mechanism of transport, carrying nutrients across partially and fully impervious surfaces, through stormwater drains, ditches, creeks and streams until it makes its way to the lake. Run-off from O'Donnell Creek and other ephemeral creeks are estimated to make up to 58% of annual external nutrient load (Nurnberg & LaZerte, 2016; McKean, 1992). Three major

streams contribute the majority of nutrients in the watershed, largely from run-off: Haliburton, O'Donnell and Hamsterly.

- O'Donnell Creek: This creek is the major inflow to the lake, supplying a significant proportion of the water (and some nutrients) to the lake. This creek was the subject of a major restoration effort in the 1990s by the Golden Rods and Reels Society and local landowners. The watershed is made up of mostly agricultural lands, including a number of small operation farmland (less than 5 ha) and low-density rural residential lots. Spatial data acquired from the National Hydrologic Network indicate that portions of the creek have been diverted from their natural course into roadside drainage ditches to accommodate the subdivision of lands into low-density residential and small agricultural parcels. Tributaries of O'Donnell Creek, and the creek itself, drain a land area totalling 2.6 km^2.
- Haliburton Brook: Haliburton Brook is a non-fish bearing first order stream, which begins in a forested area of the Royal Oak Burial Park (Cordova Bay) and runs a total length of approximately 841 m above-ground with approximately 200 m flowing in pipes under the highway and road, eventually flowing into Beaver Lake within the Elk/Beaver Lake Regional Park (Saanich GIS Mapping 2012). Haliburton Brook and the Haliburton Watershed are divided by the Patricia Bay Highway, separating the upper and lower reaches of Haliburton watershed. The upper watershed has been modified for farming, and later for urban development, and the lower watershed is largely within the CRD regional park lands, previously also farmland. There is significant evidence of stream degradation, due to channeling and ditching of streams that diverted water away from natural habitats and wetland were filled. Tributaries to Haliburton Brook, and the brook itself, drain a land area totalling 0.75 km^2, mostly collecting water from highway run-off and drainage from Royal Oak Burial Park and a medium-density residential area east of the Patricia Bay Highway.
- Hamsterly Creek (Whiskey Creek): This creek flows into the northeastern part of Elk Lake basin and has been subject to significant channeling and ditching. Run-off from urbanized landscape and impervious surfaces have degraded the watershed, reducing nutrient cycling and uptake in plants and soil. Water flow is quite low in this creek and is expected to contribute relatively low phosphorus inputs, as well.
- Linnet Creek: Linnet Creek originates on the southwest side of Elk Lake and flows southeast to Beaver Lake. The main stem of the creek flows from a low-density residential area, and through forested lands before entering the northwest corner of Beaver Lake. The small tributaries and Linnet Creek collect run-off from a land area of approximately 56,500 m^2 (~0.057 km^2). Very minimal inflow of water and nutrients have been reported for this creek.

Water and nutrients from Elk/Beaver Lake are exported primarily from the lake at Colquitz River, flowing over a dam at the south end of Beaver Lake. The Colquitz River collects water from numerous tributaries throughout the District of Saanich, as well as Central Saanich, and enters the ocean at Portage Inlet. Water quality in Elk/Beaver Lake is critical to ensuring the health of the downstream ecosystems and habitats:

- Colquitz River Outflow: Water from Elk Lake flows south into Beaver Lake where a dam controls downstream flows to the Colquitz River. The crest of the dam spillway is at 60.54 m (McKean, 1992), slightly below the elevation of the surrounding shoreline (70 m). Most of the year, the well-mixed water in Elk and Beaver Lake basins is carried out of the lake via outflows to the Colquitz River, along with the concentration of nutrients and other substances in the water. Due to minimal mixing between the hypolimnion (deeper waters) and the epilimnion (shallow waters) in the summer, only water and any nutrients from the epilimnion exit the lake.

2.4.3 In-lake Nutrient Sources

There are a number of nutrient sources within the lake that also contribute to the water quality issues and can be addressed through active management. These sources include:

- Internal Nutrient Loading: In Elk/Beaver Lake, it is estimated that between 71-89% of total phosphorus in the lake water comes from internal nutrient sources (Nordin, 2015; Nurnberg, 2016). Internal nutrient loading occurs when the nutrients in the bottom sediments of the lake are recycled back into the water column. The nutrients in lake sediments accumulate over time and are a direct function of the amount of external nutrients deposited into the lake from the surrounding watershed. This accumulation of phosphorus in lake sediments is a natural process, but it has been significantly accelerated by human activities in and around the lake. Nutrients locked in the lake sediments are released into the water column by a variety of mechanisms and environmental conditions. The dominant driver for the release of phosphorus from sediments is low oxygen levels at the sediment-water interface. Under low oxygen conditions, phosphorus is released from the sediment and made available in the water column. Under high oxygen conditions, phosphorus remains bound to the sediment. As previously described, the internal nutrient load issue is addressed through a separate in-lake remediation plan and will not be specifically addressed within this plan.
- Non-native Fish: In 2017, a fish inventory was conducted to characterize the overall fish community in Elk/Beaver Lake. After employing a variety of sampling techniques at multiple sites around the lake, no native fish species were captured or observed. A total of 732 fish were captured, including yellow perch (55%), largemouth bass (12%) and pumpkinseed (11%), followed by smaller numbers of bullhead, common carp, smallmouth bass and rainbow trout. The abundance of non-native fish in Elk/Beaver Lake is detrimental to the health of the overall lake ecosystem, because it upsets the food-web, reduces biodiversity, and contributes to poor water quality. Yellow perch, for example, consume native zooplankton and benthic organisms. Largemouth bass are aggressive predators of desirable recreation fish, such as rainbow trout, that are annually stocked in the lake by the Province. Common carp consume benthic invertebrates and desirable aquatic plants, facilitating the growth of nuisance plants, such as Eurasian water-milfoil. Carp are also known to root around in bottom sediments causing declines in native aquatic vegetation and increases in water turbidity. This foraging behaviour of many non-native fish, particularly carp, stirs up lake-bottom sediments and contributes to nutrient release

from sediments in the lake, in a process known as bioturbation. In the case of Elk/Beaver Lake, the presence of carp likely supports the rapid growth of invasive Eurasian milfoil, which thrives in disturbed environments. Efforts to reduce the population of invasive fish, particularly common carp would be beneficial in improving water clarity, reducing nutrient inputs and restoring natural aquatic plant communities in the lake system (Przemyslaw G. Bajer, 2015).

- Invasive plants: Excessive growth of submerged invasive aquatic plants has become a nuisance in Elk/Beaver Lake, impacting the ecological health of the ecosystem and associated recreation values. An aquatic plant survey conducted in 2016 found 11 aquatic plant species (compared to 60 species in a previous survey conducted in 1985). Native whorled water-milfoil (*Myriophyllum verticillatum*) and invasive Eurasian water-milfoil (*Myriophyllum spicatum*) were the most dominant, accounting for more than 95% of aquatic plants. These plants grow very long strands (1-3 m long) and float just under the lake surface in a thick mat. The rapid growth of Eurasian water-milfoil is related to nutrient issues in the lake. This invasive species grows aggressively in the summer, and in the fall decomposes and contributes to nutrient levels in the sediment, later available for release into the water column. The extent of milfoil growth during the summer is significant, covering a total of 106.84 ha (30.6%) and contributing between 55-150 tonnes of dry weight the surface area (Vadeboncoeur, 2019), as indicated in Figure 2-3. While these invasive species are expected to support some nutrient uptake in the lake, shifting to native aquatic plants would be more beneficial for supporting native habitat and less eutrophic conditions in the lake.

  The CRD has harvested invasive aquatic plants annually from Elk/Beaver Lake since 1979, using a mechanical weed harvester (with the exception of a few years). A new weed harvester was purchased in 2016. Staff have reported that, on average, 300-450 tonnes (wet weight) of aquatic weeds are removed from Elk/Beaver Lake each year. The weed harvester improves the recreational values of the lake by clearing surface plant material for boats, rowers and swimmers. However, the weed harvester is not an effective treatment to fully remove the plant material and reduce the environmental impacts to the overall lake health, water quality and wildlife habitat.



Figure 2-3: Eurasian Milfoil Density and Distribution in Elk/Beaver Lake

The above polygon colours correspond with density classifications (yellow = ultra-high; beige = high; green = medium)

2.5 Environmental Stressors

A number of stressors indirectly contribute to the water quality issues in Elk/Beaver Lake. The following factors have been identified as putting significant stress of water quality and nutrient loading issues in the lake.

- Residence Time: Residence time of a lake is calculated by the amount of time water spends in a lake, before being flushed downstream. A long residence time can put added stress on the lake system, as nutrients and water move very slowly through the system. Dams trap sediments that would otherwise be flushed downstream, and cause nutrients to settle in the lake sediment more readily and increase internal nutrient loading. The approximate seven-year residence time of Elk/Beaver Lake is a significant driver of high nutrient levels and elevated lake productivity, largely a response to the three dams constructed on the lake.
- Anoxia: Low oxygen (hypoxia) or no oxygen (anoxia) conditions in a lake can further exacerbate existing water quality issues. In Elk Lake basin, the deeper waters are severely hypoxic throughout the summer and fall. Typically, hypoxia starts as soon as the lake stratifies in the spring, indicating a high sediment oxygen demand from accumulated organic substances. Stratification of the water column reduces mixing in the summer months, and oxygen depletion is quite severe. This anoxia impacts habitat for native species (cutthroat trout) and also causes the release of phosphorus from the sediments. In Beaver Lake basin, low oxygen conditions can occur throughout the year. High levels of decomposition of organic material have significantly increased the sediment oxygen demand, leading to hypoxic and, occasionally, anoxic conditions. Due to the shallow depth of Beaver Lake, winds can cause mixing throughout the basin and introduce more oxygen, seasonally.
- Climate Change: Predicted changes in the climate are expected to further stress the lake environment and compound nutrient issues. Increasing temperatures and longer growing seasons will improve growing conditions for invasive plants and blue-green algae. Heavier winter rains are also expected to cause increased stream erosion and flooding and contribute higher levels of nutrients into the lake.

3. WATERSHED MANAGEMENT ACTIONS

3.1 Implementation

The implementation of this plan requires collaboration and coordination among government and community partners. In particular, agencies that have jurisdiction for land use within the Elk/Beaver Lake watershed have direct responsibility for coordinating, facilitating and/or implementing the recommended actions, including District of Saanich, Central Saanich and regional parks (CRD). Each recommended action is phased in over time and identifies which agency is involved, and how, to ensure the successful implementation of that action. Private landowners will play an essential function in applying the recommended actions on their own properties. Funding to support this plan is currently limited and will require cost-sharing approaches, creative partnerships and successful grant applications to solicit necessary funds to support the phased implementation plan.

3.2 Prioritization

The recommended actions have been prioritized based on our understanding of key sources of phosphorus and how phosphorus moves throughout the Elk/Beaver Lake watershed. Maintaining the ecological function and structure of important natural areas are a critical component to watershed management and reducing nutrient inputs. Healthy ecosystems support effective nutrient cycling, infiltration, flood and sediment control. Following our understanding of the nutrient transport, the creeks and associated watersheds that contribute the greatest phosphorus into the lake are Haliburton, O'Donnell and Hamsterly Creek. These major inflows will be prioritized.

3.3 Recommended Actions

The following actions have been associated with each watershed objective. A summary of all recommended actions can be found in Appendix E. Detailed descriptions of the actions, timelines and implementation plan follow below:

Objective 1: Improve land management practices within the watershed to reduce total phosphorus entering the lake.

This objective specifically aims to reduce phosphorus sources within the watershed that contribute to elevated phosphorus levels within the lake. Landowners and land managers can significantly improve water quality by changing their current practices and support a healthier watershed, with the following actions:

ACTION 1.a: Improve rural/urban land management practices to reduce and manage the source of phosphorus inputs into the watershed.

Responsibility	Local landowners, Districts of Saanich and Central Saanich, CRD
Primary Focus	Lands within Haliburton, O'Donnell & Hamsterly sub-watersheds
Priority	High
Timeframe	2020-2022
Performance Indicator	Contact 90% of landowners within Elk/Beaver Lake Watershed

- *Landowners:* to adopt best management practices for rural and urban landowners. See Appendix D for best management practices for rural and urban landowners. Primary recommendations include:
    - Use fertilizers wisely
    - Pick up pet waste
    - Care for and maintain your septic system
    - Conserve water
    - Use landscaping practices that reduce erosion and run-off
    - Reduce use of high phosphorus house products
    - Maintain healthy lawn practices
- *Districts of Saanich and Central Saanich:*
    - Maintain daylighted (open-air) vegetated streams and ditches along roadsides and keep storm drains clear of organic matter to support improved stormwater management.
    - Contact local landowners, stewardship groups and knowledge holders to share information about the importance of phosphorus use reduction and best management practices for reducing run-off of phosphorus into the watershed.
- *CRD:* to improve public access to resources on the importance of nutrient reduction and management within the watershed and impacts to the overall health of the lake system.

ACTION 1.b: Improve agricultural land use practices to reduce and manage nutrient use.

Responsibility	Local farmers, Districts of Saanich and Central Saanich
Primary Focus	Farmlands within Elk/Beaver Lake watershed (priority for new and small operation farmers (>5 hectares)
Priority	High
Timeframe	2020-2025
Performance Indicator	Contact 90% of farmers within watershed

- *Farmers*: to comply with Code of Practice for Agricultural Environmental Management & adopt Nutrient Management Plan, as needed (over 5 ha, nutrients applied to land, and nutrient levels test high). Farmers to enroll in Environmental Farm Plan. See Appendix D for additional resources on beneficial management practices for agricultural lands. Primary recommendations include:
    - Use fertilize wisely
    - Store manure appropriately
    - Conserve and effectively manage water use
    - Manage livestock activity
    - Reduce soil erosion
    - Vegetative buffers
- *Districts of Saanich/Central Saanich:*
    - Improve public awareness of provincial compliance requirements with Code of Practice for Agricultural Environmental Management and adopt Nutrient Management Plan, as needed (over 5 ha, nutrients applied to land, and nutrient levels test high).
    - Support landowners to enroll in Provincial Environmental Farm Plan to complement and enhance existing stewardship practices. Adopt beneficial management practices for optimum farming practices that minimize input of nutrients to nearby streams and riparian habitat.

ACTION 1.c: Ensure proper function of septic and sewerage systems to reduce phosphorus inputs.

Responsibility	Landowners and CRD
Primary Focus	Landowners with septic systems
Priority	Moderate
Timeframe	2020-2022
Performance Indicator	Ensure 85% compliance with Septic System Bylaw 3479

- *Landowners:* Ensure compliance with septic bylaws and adopt practices that support a healthy septic system. Further information on the septic maintenance bylaw can be found in Appendix A, and septic system care and maintenance can be found in Appendix D.
- *CRD:* Continue providing educational resources to local residents on effective system care and educate about compliance requirements for Bylaw 3470. Provide incentives for landowners to support septic system function and maintenance to ensure compliance with CRD bylaw.

ACTION 1.d: Reduce waste input from non-native Canada goose population.

Responsibility	CRD
Primary Focus	High goose activity areas (Eagle, Beaver and Hamsterly beaches)
Priority	Moderate
Timeframe	2020-2030
Performance Indicator	Reduction of resident Canada goose population at Elk/Beaver Lake Regional Park

- *CRD:* Continue to work with federal and provincial partners to adopt practices within the Elk/Beaver Lake Regional Park that will discourage hyper-abundance of resident, non-native Canada goose population. Recommended approaches, as identified the *Regional Canada Goose Management Strategy* (CRD, 2012) include waste removal, habitat modification, hazing/scaring, and population control (egg addling). More information on the strategy can be found in Appendix A.

ACTION 1.e: Reduce waste from dogs and horses on park trails.

Responsibility	Park users, CRD
Primary Focus	Horse trails and high dog-use areas (Eagle, Beaver and Hamsterly Beaches)
Priority	Low-moderate
Timeframe	2020-2030
Performance Indicator	Continued enforcement and outreach efforts throughout the regional park

- *Park Users:* Maintain compliance with the Parks Regulation Bylaw (No.4225). Dog walkers are encouraged to carry dog waste bags and pick up after their pets and properly dispose of waste. Horseback riders are encouraged to dismount and move waste into vegetation buffers off of main trails.
- *CRD*: Provide improved information to park users along trail system and at major contact points for reducing animal waste on the trail. CRD bylaw officers will continue to issue warnings and enforce the Parks Regulation Bylaw (No.4225) that requires a person, with care and control of a dog in a regional park, must immediately remove any faeces deposited by that dog (8.1.d). CRD to investigate options to encourage horseback riders to pick up and dispose of horse waste within the park.

OBJECTIVE 2: Improve watershed structure and function to reduce total phosphorus entering the lake.

This objective specifically aims to increase the ability of the watershed to mitigate the impacts of nutrient loading before nutrients reach the lake. Improving watershed function, structure and health will increase nutrient uptake in soils and vegetation, while supporting improved habitat for native species. Landowners

and land managers can make a significant impact on water quality by restoring native habitat with the following actions:

ACTION 2.a: Restore and enhance stream and watershed function (Haliburton Brook).

Responsibility	Landowners, stewardship groups, CRD, and District of Saanich
Primary Focus	Haliburton Brook and watershed
Priority	High
Timeframe	2020-2024
Performance Indicator	60% of stream habitat restored

- *All:* work collaboratively to restore habitat and function of stream from upper watershed (east of Highway-17) to the lower watershed (west of Highway-17) to establish a series of functional wetland and stream habitat to reduce sediment erosion and increase nutrient uptake. Creating and maintaining wetland habitat would reduce erosion, support natural flooding, manage run-off from the highway and improve buffering capacity of the environment to take up phosphorus. Wetlands would also provide important habitat for waterfowl and shorebirds, stopover habitat for migratory birds, breeding and foraging habitat for frogs and toads, and foraging habitat for bats, breeding and foraging habitat for aquatic insects, and drinking water for all wildlife.
- *CRD:* In lower watershed (west of BC-17) support efforts to improve Haliburton Brook function and create wetland habitat.
    - Recommended stream restoration activities include bank stabilization and de-compaction, invasive plant removal, native riparian plantings, and alleviate stream blockages that inhibit fish passage.
    - Recommended wetland enhancement activities include creating bioswales and wetland habitat to support natural flooding, slow water movement and increase infiltration at the Haliburton Field. (see map – red)
- *District of Saanich:* In upper watershed (east of BC-17), support community efforts to restore ecological function of the stream and surrounding watershed.
    - Support landowner and community efforts to improve stream and riparian habitat (wetland creation, stream restoration and stabilization)
    - Collaborate with Ministry of Transport and Infrastructure to improve watershed function along highway (BC-17) through native plantings, raingardens and vegetation buffers.
- *Landowners:* support stream restoration efforts and opportunities to participate in public workshops to adopt best management practices and restoration techniques for stream habitat. For example, enroll in the Streamkeepers workshops provided by the Pacific Streamkeepers Federation (Taccogna, 1995). Further resources on best management practices for stream restoration is found in Appendix D.

ACTION 2.b: restore and enhance stream and watershed function (O'Donnell Creek).

Responsibility	Landowners, Stewardship Groups, CRD, Districts of Saanich & Central Saanich
Primary Focus	O'Donnell Creek and watershed
Priority	High
Timeframe	2024-2026
Performance Indicator	60% of stream habitat restored

- *All:* Restore stream and watershed function to reduce erosion and increase nutrient uptake.
- *CRD*: Support efforts to improve stream function for water filtration, retention and improve habitat quality within CRD regional park boundary.
    - Alleviate stream blockages that inhibit fish passage and plant native vegetation along length of stream within park.
    - Install bioswales at inflow site to reduce sedimentation and increase infiltration before entering the lake. (see map – red)
- *Districts of Saanich/Central Saanich*: Support community and landowner efforts outside of the regional park boundary to restore ecological function and structure of the stream.
- *Landowners (particularly farmers) and Stewardship Groups:* initiate stream restoration projects along O'Donnell Creek by stabilizing and enhancing streamside with native plantings, and installation of raingardens and bioswales, where appropriate. Learn more about stream restoration and opportunities to participate in public workshops to learn and adopt best management practices and restoration techniques for stream habitat. For example, enroll in the Streamkeepers workshops, provided by the Pacific Streamkeepers Federation (Taccogna, 1995). Further resources on best management practices for stream restoration is found in Appendix D.

ACTION 2.c: Restore and enhance stream and watershed function (Hamsterly Creek).

Responsibility	Landowners, Stewardship Groups, CRD and District of Saanich
Primary Focus	Hamsterly Creek and watershed
Priority	Moderate-high
Timeframe	2026-2028
Performance Indicator	60% of stream habitat restored

- *All:* Restore stream and watershed function to reduce erosion and increase nutrient uptake.
- *CRD*: Support efforts to improve stream function in water filtration, retention and improve habitat quality.
    - Alleviate stream blockages that inhibit fish passage and plant native plants along length of stream within park.
    - Install bioswales or settling ponds at inflow site to reduce sedimentation and increase infiltration before entering the lake (see map – red)
- *District of Saanich*: Support community efforts along stream outside of regional park boundary to restore ecological function and structure of the stream.
- *Landowners and Stewardship groups:* Support stream restoration projects through stabilizing and enhancing streamside with native plantings, installation of raingardens and bioswales, where appropriate. Learn more about stream restoration and opportunities to participate in public workshops to learn best management practices and restoration techniques for stream habitat, for example the Streamkeepers workshops, provided by the Pacific Streamkeepers Federation (Taccogna, 1995). Further resources on best management practices for stream restoration is found in Appendix D.

ACTION 2.d: Restore and enhance riparian habitat along lake shoreline.

Responsibility	CRD
Primary Focus	Overflow sites on perimeter of lake, adjacent to paved parking lots and highly compacted soils (impervious surfaces)
Priority	low-moderate
Timeframe	2024-2028
Performance Indicator	Reduced overflow flooding at priority sites and support seasonal flooding where feasible

- *CRD:* enhance and restore riparian habitat at critical areas along the perimeter of the lake where overflow occurs. This activity reduces flooding and increases infiltration and nutrient uptake at the lakeshore.
    - Create bioswales and/or raingardens along Hamsterly Beach and Beaver Beach shoreline (see map – purple)
    - De-compact and revegetate riparian habitat along Orchian Wall (see map - purple)
    - Where feasible, support natural floodplains to allow seasonal flooding.

Further resources on bioswale and raingarden design can be found in Appendix D.

ACTION 2.e: Maintain ecological function of sensitive ecosystems and ecological communities (forest, woodland and prairie habitat).

Responsibility	CRD
Primary Focus	Sensitive ecosystems and important ecological communities (Garry Oak Meadow and coastal-Douglas fir habitat)
Priority	Moderate
Timeframe	2020-2024
Performance Indicator	Restored native habitat in target area (60%)

- *CRD*: Support natural areas restoration in sensitive and rare ecological communities.
    - Support Garry oak meadow restoration on the east side of Elk/Beaver Regional Park, adjacent to the Patricia Bay Highway, BC-17 (see map). This area totals approximately 11 acres. In addition to planting Garry oak trees, native herbaceous plants can be introduced that are well suited to site conditions, including flowering plants, such as common camas, Fool's onion (*Triteleia hyacinthina*), chocolate lily (*Fritillari affinis*), chickweed monkey-flower (*Mimulus alsinoides*), and many other provincially endangered species. (see map)
    - Improve water infiltration by reducing ditching, as well as trail creation and braiding within park boundaries to reduce soil compaction throughout park. This will slow movement of water across the watershed and increase nutrient infiltration before it reaches the lake.
    - Support restoration of forest and woodland habitat through planting of native tree and shrub species to support improved nutrient uptake, support urban forest canopy and reduce flooding. These actions should be focused on areas of historically forested habitat (in open field areas south of Haliburton Creek) and should be coordinated with removal of high priority terrestrial invasive plants.

OBJECTIVE 3: Improve lake health and function to reduce total phosphorus within the lake.

This objective specifically aims to improve the overall health and function of the lake ecosystem. Improving the structure and function of the lake will help to shift the trophic status to being less eutrophic (mesotrophic) and will better support native habitat and species. Sources of nutrients within the lake will be reduced and nutrient uptake will be increased. Landowners and land managers can make a significant impact on water quality by restoring native habitat within the lake with the following actions:

ACTION 3.a: Restore and enhance shallow water habitat.

Responsibility	CRD, Stewardship groups
Primary Focus	Shallow water zones (< 3 m depth), adjacent to Orchian wall, and in Beaver Lake basin
Priority	Low-moderate
Timeframe	2026-2030
Performance Indicator	60% of shallow water habitat restored

- *CRD*: Enhance shallow water (littoral) habitat zones by establishing native vegetation and supporting (where feasible) natural floodplains. This activity increases nutrient uptake, prevents shoreline erosion and provides habitat for amphibians, turtles, young fish, and zooplankton (see map – yellow). Floating vegetation islands and buffers may be used to support native habitat and shade out non-native plant species. Efforts to first remove invasive plants in the lake should be prioritized before establishing native plants.

ACTION 3.b: Reduce non-native fish populations.

Responsibility	CRD, stewardship groups, fisher-people
Primary Focus	Non-native fish species (Common Carp, Yellow Perch)
Priority	Low-moderate
Timeframe	2020-2030
Performance Indicator	Reduction of invasive and non-native fish population (30% reduction in biomass)

- *CRD:* Support provincial efforts to enhance the recreational fishery and community efforts to harvest and remove non-native/invasive fish species. Recommendations include providing the public with resources on non-native fish and the impact of non-native fish on environmental, cultural and recreational values within the lake.
- *Stewardship groups and fisher-people*: Catch and remove any non-native fish caught in Elk/Beaver Lake. Support building awareness of the importance of removing non-native fish from the lake.

ACTION 3.c: Manage and reduce growth of invasive Eurasian milfoil population.

Responsibility	CRD
Primary Focus	Shallow water habitats (< 6 m depth)
Priority	Moderate-high
Timeframe	Ongoing (2020-2030)
Performance Indicator	70% of Eurasian milfoil biomass removed

- *CRD*: Continue efforts to reduce population on invasive plants in Elk/Beaver Lake.
    - Continue harvesting Eurasian milfoil with weed harvester to remove at least 400 tonnes of biomass annually. This approach removes the surface portion of the plant up to 2 m deep. The biomass should continue to be collected from surface waters and along the beach to reduce re-infestation from cuttings. This approach reduces impacts to recreation, such as rowing, swimming and fishing, however, it does not reduce the milfoil population over time and does not support efforts to improve water quality.
    - Harvested plant material should be removed from the lake, dried and disposed of to ensure minimal likelihood of re-infestation. Any fragments produced during plant harvest, should be raked and removed from the shoreline. The dried biomass should be re-located to an area further from the lake (ideally outside of the watershed) to reduce potential nutrient loading back into the lake.
    - Investigate and consider adopting an additional approach to meaningful reduction of Eurasian milfoil. Appropriate strategies for sustained population reduction include manual removal by trained divers, or rototilling technologies. Significant consideration should be made for timing of these approaches and protection for Western Painted Turtle critical habitat.

ACTION 3.d: Reduce incidences of new invasive species introductions and growth.

Responsibility	CRD, park users
Primary Focus	Park users operating vessels (boats, canoes, kayaks, rowing shells) in the lake
Priority	Low-moderate
Timeframe	2020-2030
Performance Indicator	No new occurrences of invasive species in lake

- *CRD*: Provide public educational materials and resources to lake users about the impacts of invasive species and their introduction into freshwater environments. CRD to endorse provincial efforts to reduce invasive species introductions into the lake, such as the Clean-Drain-Dry campaign for boat, paddles and fishing gear cleaning practices before and after lake use. Signage posted at primary lake access points (point ramps and docks).

The following map, Figure 3-1 illustrates the locations of recommended restoration activities.

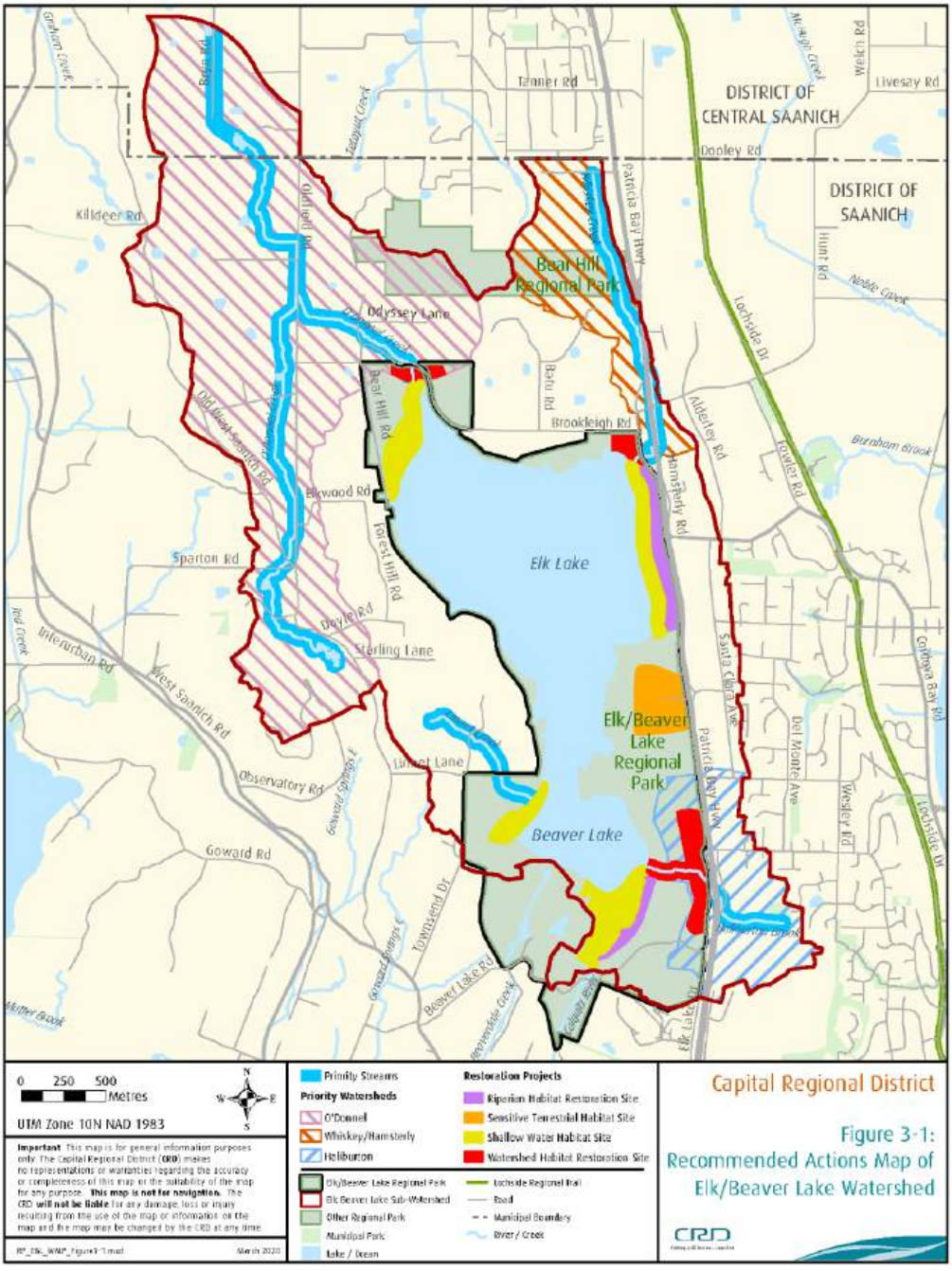


Figure 3-1: Recommended Actions Map of Elk/Beaver Lake Watershed

(red – stream restoration; purple – riparian restoration; orange – Garry Oak restoration; yellow – littoral restoration)

3.4 Performance Indicators

Identifying key performance indicators are an important component of any plan to ensure the recommended actions are successfully addressing the objectives and goals and achieves the long-term vision. The following indicators will be used to assess whether the goal, objectives and recommended actions are implemented and achieved. These indicators will be monitored, as defined in the Monitoring Program (Appendix F) and progress will be assessed fully in 2030.

3.4.1 Primary Goal

In order to assess the overall goal of improving water quality in Elk/Beaver Lake, the water quality will be monitored and evaluated against Water Quality Objectives established by the ENV. McKean (1992) identified these objectives for two water uses (primary contact water recreation, and aquatic life) for Elk/Beaver Lake.

These performance indicators include:

- Reduce year-round total phosphorus concentrations to 5-15 ug/L to support aquatic life and lake recreation.
- Temperature shall not exceed a maximum of 15°C in the hypolimnion layer of the lake.
- Dissolved oxygen shall not be less than a summer minimum of 5 mg/L 1 m above the sediment in the lake.
- Chlorophyll-A shall have a mean summer range of 1.5-2.5 g/L.
- Secchi depth, an indication of water clarity, must exceed 1.9 m.
- Phytoplankton community shall not be dominated by blue-green algae (cyanobacteria). The number of blue-green algae shall not exceed 50% of the cells/mL in discrete samples collected at the surface. These samples shall be collected from May-August.

3.4.2 Outcomes

Through the completion of the recommended actions, the following outcomes will be measured as an indication of overall success of the plan, summarized in Table 3-1.

Table 3-1: Anticipated Outcomes and Associated Performance Indicators

Goal	Performance indicator
Restore habitat for aquatic native species	• Reduce population/biomass of non-native fish • Increase biodiversity of zooplankton and invertebrate species
Reduce growth of Eurasian milfoil	• Reduce areal coverage invasive milfoil by at least 50%
Reduce frequency of blue-green algae blooms	• Reduce number of blue-green algae visible bloom days (50% after 3 years and 75% after 8 years)
Build community awareness and understanding of watershed stewardship	• Increase number of landowners engaged in implementation of recommended actions

3.4.3 Objectives and Recommended Actions

The objectives specifically focus on distinct components of nutrient transport to reduce the external nutrient load:

1. Improve land management practices within the watershed to reduce total phosphorus entering the lake.
2. Improve watershed structure and function to reduce total phosphorus entering the lake.
3. Improve lake health and function to reduce total phosphorus within the lake.

Measuring the transport of external inputs of phosphorus throughout the watershed from various non-point sources can be very challenging. In order to effectively measure the success of meeting the objectives of this plan, the reduction of total phosphorus inputs into Elk/Beaver Lake will be used as a performance indicator.

The success of the recommended actions within the Elk/Beaver Lake Watershed Management Plan will be evaluated against the performance indicators identified for each recommended action described in the previous section.

3.5 Monitoring Program

Ongoing data collection, as defined in the monitoring program, will be conducted to monitor success in achieving the water quality performance indicators. After external phosphorus loads are reduced, water quality improvements to facilitate long-term shifts in blue-green algae abundance, invasive plant growth and habitat quality typically take at least five years to become established (Jeppesen, 2005).

Outreach efforts with local landowners should be reassessed to ensure behavioural changes to reduce nutrient inputs are maintained over time.

The following metrics in Table 3-2 should be monitored in the lake for the next 10 years, at the following frequencies (at minimum). A detailed monitoring plan for 2020 has been summarized in Appendix F and should be revisited annually to make any necessary revisions.

Monitoring will be led by CRD in 2020, but will need to be conducted collaboratively by stewardship groups, and responsible government agencies moving forward.

Table 3-2: Monitoring Program for Elk/Beaver Lake

Metric	Frequency
Total lake nutrients (phosphorus, nitrogen)	Monthly (2020-2024), annually (2024-2030)
Total nutrient input and export to/from lake	Monthly (2020-2024), annually (2024-2030)
Total lake dissolved oxygen	Monthly (2020-2024), annually (2024-2030)
Chlorophyll-A	Summer-time, monthly (2020-2030)
Lake temperature	Monthly (2020-2024), annually (2024-2030)
Lake pH	Monthly (2020-2024), annually (2024-2030)
Water clarity (secchi disk)	Monthly (2020-2024), annually (2024-2030)
Blue-green algae abundance/diversity	Annually (2020-2030)
Blue-green algae bloom frequency	Compile annually
Eurasian milfoil coverage and biomass	2025, 2030
Fish Inventory	2025, 2030
Benthic invertebrate abundance/diversity	2025, 2030
Zooplankton abundance/diversity	2025, 2030
Number of engaged landowners	Compile annually

4 MANAGEMENT CONSIDERATIONS

4.1 Species at Risk and Critical Habitat

The implementation of this plan is important to improving water quality in the lake, however, a number of species at risk and critical habitat have been identified within this watershed that need careful consideration. Special consideration for the timing and implementation of actions must be made for those species and their associated habitat to ensure their protection and support their recovery—in particular, critical habitat for the Western painted turtle (*Chrysemys picta bellii*), that resides within the lake and must be considered before any actions are taken within their known critical habitat.

4.2 Adaptive Management

Adaptive management is a framework that provides the rationale and data to support science-based decision making in light of uncertainty. Adaptive management of the Elk/Beaver Lake watershed ensures comprehensive, effective solutions are achieved to restore water quality, lake health and the ecosystems and values they support in the community.

Adaptive management is incorporated into the plan by the regular monitoring of performance indicators. This framework allows for the ability to revisit and revise current strategies to effectively respond to new information on how the lake is responding to the recommended actions and meeting the objectives. This allows the flexibility to make informed decisions in a timely manner. This framework is bounded by the goal, objectives and outcomes, a defined monitoring program and established performance indicators.

4.3 Challenges

A number of challenges have been identified that should be considered and acknowledged throughout the implementation of the plan:

- Managing expectations: Reducing nutrient loads has repeatedly proven to be the most effective approach to sustained control of blue-green algae blooms; however, it may take decades to be effective. (M.A. Burford (Griffith University), 2019).
- Coordination and collaboration: This plan requires coordination and collaboration across jurisdictions, community groups and landowners. To ensure the effective implementation of this plan, strong communication between these groups is critical.
- Limited resources: Significant resources and funds are required to implement this plan effectively. Working collaboratively, identifying appropriate grants and identifying cost-sharing opportunities are important to the success of this plan.

- Monitoring success: Historic sources of phosphorus can be stored in sediments throughout the watershed and move across the watershed over time, serving as a continual nutrient source. This effect may initially mask the effects of conservation efforts to improve water quality through reductions in nutrient inputs to surface waters. (Stackpoole, Stets, & and Sprague, 2019)
- Changing behaviour: Knowledge of the linkages between management practices in the watershed and downstream ecosystems can be improved by outreach and education efforts; however, shifting behaviour is challenging and requires long-term investment. (Hobbie, et al., 2017)

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APPENDICES

Appendix A – Public Engagement Process Summary

Appendix B – Policy & Regulation

Appendix C – Best Management Practices

Appendix D – Summary of Recommended Actions in Elk/Beaver Lake Watershed

Appendix E – Elk/Beaver Lake Water Quality Monitoring Program

APPENDIX A – PUBLIC ENGAGEMENT PROCESS SUMMARY

PHASE 1: Build public awareness: to engage both broad and targeted audiences in the development of this plan, multiple opportunities for the public to become informed and engaged were provided. Key partners and collaborators were also identified and engaged during this process.

- *Broad Outreach*
    - Online website development and updates
    - Public Open House
- *Targeted Outreach (presentations & meetings)*
    - Saanich Environment & Natural Areas Advisory Committee
    - Beaver/Elk Environmental Stewards
    - Intergovernmental working group
    - Local landowners
    - Victoria Golden Rods & Reels
    - Peninsula and Area Agricultural Commission
    - Gorge Waterway Initiative
    - CRD Naturalist volunteer presentations
    - Local experts
- *Outcome*
    - Improved public awareness
    - Summary of public vision, goals and objectives

PHASE 2: Engage and consult on the plan: formal opportunities to share information about Elk/Beaver Lake and water quality concerns were provided during this phase. Public workshops and one-on-one meetings allowed discussion and problem solving. The draft vision, goals and objectives were reviewed, revised and validated during this phase and the outcomes were used to inform the development of the plan.

- *Broad Outreach:*
    - Public Workshop #1 – September 17 (7:30-9:30pm)
    - Public Workshop #2 – September 26 (7:30-9:30pm)
    - Public Workshop #3 – October 3 (7:30-9:30pm)
- *Outcome*
    - Vision, goals, objectives and action items were drafted and reviewed by all participants to inform the content of the plan.

PHASE 3: Develop and finalize the plan: The plan was drafted by staff and reviewed before it was finalized. Interest groups, government agencies and field experts were approached and consulted on the outcomes of the plan for final review before broad public review online.

- *Targeted Outreach:*
    - Workshop participants
    - Intergovernmental working Group
    - First Nations: Lək'ʷəŋən and W̱SÁNEĆ Nations
    - Saanich Environment & Natural Areas Advisory Committee
    - Peninsula and Area Agricultural Commission
    - Biologist Experts

Broad Outreach: The broader public was engaged through an online survey to provide feedback on the plan and make any suggestions or additions. The plan was made public in February for public review and all survey comments and public input were consolidated and reviewed to make any necessary amendments to the plan.

Public Participation Process

The Capital Regional District (CRD) has developed a draft management plan for the Elk/Beaver Lake Watershed. The purpose of the Elk/Beaver Lake Watershed Management Plan is to identify goals, objectives, recommended actions and an implementation plan to improve water quality in Elk/Beaver Lake. Initial public input was conducted in 2019 to gather information to assist in drafting the watershed management plan of this lake. A follow-up engagement process was conducted in 2020 to obtain feedback on the draft watershed management plan.

Online Response Form

The purpose of this report is to summarize the opinions expressed by the public through an online response form on the draft Elk/Beaver Lake Watershed Management Plan (Appendix I). The response form was available online from February 11-27, 2020. The response form entailed seven questions to allow respondents to offer feedback about the Elk/Beaver Lake Watershed Management Plan key sections. Six of the questions were quantitative using a five-point Likert scale ranging from "very satisfied" to "not satisfied" as response options. The last question was qualitative, offering respondents the opportunity to provide additional comments to the draft management plan. All of the questions were optional.

Rationale for Online Response Form

It is important to acknowledge that the aim of the response form was to offer an easy to access venue for the public to provide comments and share their desires for the Elk/Beaver Lake watershed. The information obtained through this participation tool is not intended to be representative of the whole population of the island or the CRD. Hence, the data reported in this document will not be generalized to the broader population.

The response form was used to ensure that the expectations and any concerns of participants engaged in the Elk/Beaver Lake Watershed Management Plan process are documented and considered. The information retrieved through this participatory tool will complement the insights provided through other public participation opportunities conducted in 2019 and 2020. The data in this report should, therefore, be interpreted as part of the overall public participation process outcomes undertaken to develop the Elk/Beaver Lake Watershed Management Plan.

Results

On February 11, 2020, the CRD released the Elk/Beaver Lake Watershed Management Plan for public review. The same day the project webpage was updated, a media release came out and advertising was provided in different venues throughout the public review period.

A total of 89 online response forms were received by midnight of February 27, 2020, for which results are reported below. Of those response forms, 69 questionnaires were completed and another 20 partially filled out. As some of the surveys were not completed, response rate varied by question.

Vision Statement

Participants were asked to rate their satisfaction about the following vision statement: "*The vision for Elk/Beaver Lake watershed is to have a healthy and diverse lake ecosystem that supports natural values, safe recreation and community activities for generations to come.*" Most respondents were very satisfied (n=21; 24%) to satisfied (n=30; 34%) about the vision statement proposed for Elk/Beaver Lake Watershed, with another third being moderately satisfied (n=26; 30%). Only a few respondents were slightly satisfied (n=8; 9%) to not satisfied (n=1; 1%) with the vision proposed.

Management Goal

When asked about the goal proposed for the Elk/Beaver watershed in the draft management plan, respondents were very satisfied (n=30; 34%) to satisfied (n=28; 32%) about the vision statement proposed for Elk/Beaver Lake Watershed. Only few respondents were moderately satisfied (n=10; 11%), slightly satisfied (n=7; 8%) or not satisfied (n=2; 2%) with the goal proposed.

Objectives

More than half of respondents were very satisfied (n=23; 26%) to satisfied (n=34; 39%) with the objectives proposed in the draft management plan, with fewer being moderately satisfied (n=12; 14%), slightly satisfied (n=4; 5%) or not satisfied (n=2; 5%)

Outcomes

Once again, more than half of respondents were very satisfied (n=24; 27%) to satisfied (n=27; 31%) with the objectives proposed in the draft management plan, with fewer being moderately satisfied (n=11; 13%), slightly satisfied (n=3; 3%) or not satisfied (n=1; 1%)

Recommended Actions

Respondents to the survey were very satisfied (n=10; 11%) to satisfied (n=37; 42%) with the proposed management actions, with fewer being moderately satisfied (n=11; 13%), slightly satisfied (n=5; 6%) or not satisfied (n=3; 3%)

Additional Comments

The last question of the survey allowed respondents to provide additional comments about the draft management plan for the Elk/Beaver Lake watershed. The main theme emerging from the 44 qualitative comments provided by respondents was appreciation for this plan and its content (n=12; 27%), followed by the request of enforcing waste management through improvement of sewage treatment and removal of animal waste from the park (n=11; 25%). Other key themes mentioned by respondents were around implementing nutrients removal (n= 9; 20%), speeding up the plan timeline (n=6; 14%) and focussing on the oxygenation of the lake (n=5; 11%). Eradicate invasive species, managing human activities in the park, concerns for funding and the role of CRD Regional Parks department in the management of the lake were also mentioned, yet each of those themes provided less than 5% of the qualitative comments.

Elk/Beaver Watershed Initiative Feedback Survey

The purpose of this comment form is to collect feedback on the draft Elk/Beaver Lake watershed management plan, which aims to address elevated nutrients in the watershed that contribute to poor water quality in Elk/Beaver Lake. The CRD drafted the plan following public consultation and in collaboration with other government agencies and community partners. Read more >>

Comments received by midnight February 27, 2020 will be used to inform regional parks management decisions and to finalize a draft plan for review and approval by the CRD Board.

Comments may be summarized and shared publicly with the CRD Board, CRD Committees and Commissions, as part of the plan's review process and may appear in information provided on the CRD's website. Please do not provide any information that could identify yourself or others in your responses. No individuals will be identified and no comments will be attributed to any individual in any reports or communications resulting from this survey.

Note: Each page of the feedback form will timeout after 30 minutes. Please do not use the back/forward buttons on your browser, but rather use the buttons at the bottom of the page and ensure you **click the 'finish' button at the end of the form,** even if you have not answered all of the questions.

1.*Enter your postal code_____

This information will allow us to understand whether respondents are located within the watershed boundary.

Proposed Vision

The vision for Elk/Beaver Lake watershed is to have a healthy and diverse lake ecosystem that supports natural values, safe recreation and community activities for generations to come.

2. Overall, how satisfied are you with the proposed vision of the draft watershed management plan?

- Very satisfied
- Satisfied
- Moderately satisfied
- Slightly satisfied
- Not satisfied

Proposed Goal

The primary goal of the watershed management plan is to improve water quality in Elk/Beaver Lake.

3. Overall, how satisfied are you with the proposed goal of the draft watershed management plan?

- Very satisfied
- Satisfied
- Moderately satisfied
- Slightly satisfied
- Not satisfied

Proposed Objectives

Objectives were identified to improve water quality in Elk/Beaver Lake watershed. These objectives include the following:

- Improve land management practices within the watershed to reduce total phosphorus entering the lake.
- Improve watershed structure and function to reduce total phosphorus entering the lake.
- Improve lake health and function to reduce total phosphorus within the lake.

4. Overall, how satisfied are you with the proposed objectives of the draft watershed management plan?

- Very satisfied
- Satisfied
- Moderately satisfied
- Slightly satisfied
- Not satisfied

Proposed Outcomes

The proposed outcomes of the watershed management plan include:

- Restored habitat for native aquatic species.
- Reduced growth of Eurasian milfoil.
- Reduced frequency of blue-green algae blooms.
- Improved community awareness and understanding of watershed stewardship.

5. Overall, how satisfied are you with the proposed outcomes of the draft watershed management plan?

- ○ Very satisfied
- ○ Satisfied
- ○ Moderately satisfied
- ○ Slightly satisfied
- ○ Not Satisfied

Proposed Recommended Actions

A series of actions have been identified as priorities under each objective. For a detailed description of the action, timeline and implementation plan please review pages (37- 48) within the draft watershed management plan.

6. Overall, how satisfied are you with the proposed recommended actions of the draft watershed management plan?

- ○ Very satisfied
- ○ Satisfied
- ○ Moderately satisfied
- ○ Slightly satisfied
- ○ Not satisfied

7. Do you have any specific comments you want to make to improve the draft watershed management plan?

Thank you for taking the survey.

APPENDIX B – POLICY & REGULATION

Key legislation, policy and bylaws that impact and/or guide activities within the Elk/Beaver Lake watershed are as follows:

District of Saanich

The District of Saanich bylaws apply to all private lands within the Elk/Beaver Lake watershed.

Relevant bylaws are as follows:

- The **Watercourse Bylaw** prohibits activities which might pollute a watercourse or change water flows. Violations of this bylaw could include allowing, or failure to exclude, livestock entering a watercourse, or allowing high nutrient substances, such as soil fill, manure, or grey-water to wash into a watercourse.
- The **Zoning Bylaw** establishes a minimum setback of 7.5 m for buildings and structures from the natural boundary of a watercourse.
- The **Deposit of Fill Bylaw** prohibits the deposit of fill within 15 m of the centre line of designated watercourses.
- The **Tree Preservation Bylaw** prohibits the removal of trees within 15 m of the natural boundary of streams, and trees within a floodplain.
- **Streamside Development Permit Area** establishes setbacks to protect and enhance riparian habitat buffers.
- The **Subdivision Bylaw** requires all new development to protect downstream habitat and water quality, by providing drainage structures, both during and after development, to decrease the speed and volume of stormwater run-off, while at the same time improving run-off water quality. This means that best management practices, such as sediment ponds and silt fencing should be properly maintained to prevent discharges from disturbed soils into downstream habitat and drainages.
- The **District of Saanich Climate Change Adaptation Plan** (Saanich 2020) identified sectors for which climate impacts and adaptation were developed.

Relevant policies outlined within the official community plan are as follows:

- **Policy 5.1.1.8***:* Support efforts of farm operators and other agencies to enhance farmland and increase crop yield, by improving water supply and undertaking drainage improvements and improving soil capabilities, while considering environmental impact.
- **Policy 5.1.1.9***:* Encourage environmentally sound agricultural practices by promoting the BC Environmental Farm Program Local Initiatives.

- Policy 5.1.1.19: Encourage the development of a Property Assessment policy that primarily supports local food production, and does not inadvertently result in ecological degradation

Capital Regional District

Relevant CRD plans, strategies and bylaws include the following:

- The Elk/Beaver Lake (and Bear Hill) Regional Parks Management Plan (Bylaw No.3698; CRD 2010) amended previous bylaws which govern management in Elk/Beaver Lake Regional Park.
- Regional Climate Action Strategy: Supports community-focused climate mitigation and adaptation through 2021. At the community level, the Regional Climate Action Strategy guides the CRD's services to support community-focused climate mitigation and adaptation action over the next five years. The strategy aligns with federal, provincial and regional initiatives, to ensure a coordinated approach that identifies all opportunities and maximizes region-wide benefits. (CRD, 2017)
- Capital Regional District Parks Regulation Bylaw No.1, 2018 (Bylaw No.4225): This bylaw governs the use of regional parks and trails. In particular, it governs how animals in the regional park should be managed by their owners.
- Septic Maintenance Bylaw: Ensuring septic systems are well maintained will help protect our local water quality. The bylaw requires owners with Type 1 systems to have their septic tank pumped out at least once every five years. Five years is intended to be a maximum time frame. Some systems need more frequent pumping depending on the size of the tank and the conditions in the home. Owners of Type 2 or Type 3 systems (often package treatment plants) are required to maintain their system according to the maintenance plan for the system, and ensure it is maintained by an Authorized Person at least once per calendar year. Owners should ensure their Authorized Person completes a Certification of Maintenance and sends it in to the CRD. Owners should keep a copy of this form, however, as proof of service.
- Regional Canada Goose Management Strategy: A steering committee of stakeholders has developed a Regional Canada Goose Management Strategy that provides guidance on controlling the population of resident Canada geese in the regional district. The objectives of the Regional Canada Goose Management Strategy are:
    - To reduce the damage to agricultural crops by Canada geese that results in economic losses to farmers;
    - To develop a knowledge base for the CRD and its member municipalities, federal and provincial agencies, First Nations, Vancouver Island farmers and non-government environmental organizations on Canada geese population management methods;
    - To reduce Canada geese impacts on parks and recreational areas in the regional district.

Agricultural Land Commission

- *Agricultural Land Commission Act* and associated Regulations: The *Agricultural Land Commission Act* and Agricultural Land Reserve regulations are the legislative framework for the establishment, administration, and procedures of BC's agricultural land preservation program. The *Agricultural Land Commission Act* is a high-level statute that sets out principles and broad rules for the protection of agricultural land in BC. The *Agricultural Land Commission Act* takes precedence over, but does not replace, other legislation and bylaws that may apply to the land. Local and regional governments, as well as other provincial agencies, are expected to plan in accordance with the provincial policy of preserving agricultural land

BC Provincial Government

The ENV works together with FLNRORD, Ministry of Health, Ministry of Agriculture, and other provincial agencies to manage and protect water in BC.

- *Water Sustainability Act*: Was brought into force on February 29, 2016 to ensure a sustainable supply of fresh, clean water that meets the needs of BC residents today and in the future.
- *Water Protection Act*: Protects BC's water by reconfirming the Province's ownership of surface and groundwater, clearly defining limits for bulk water removal, and prohibiting the large-scale diversion of water between major provincial watersheds and/or to locations outside of BC.
- *Environmental Management Act*: Regulates industrial and municipal waste discharge, pollution, hazardous waste and contaminated site remediation. *Environmental Management Act* provides the authority for introducing wastes into the environment, while protecting public health and the environment. The *Environmental Management Act* enables the use of permits, regulations and codes of practice to authorize discharges to the environment and enforcement options, such as administrative penalties, orders and fines to encourage compliance. Guidelines and objectives for water quality are developed under the *Environmental Management Act*.
    - Code of Practice for Agricultural Environmental Management: On February 28, 2019, a new regulation called the Code of Practice for Agricultural Environmental Management came into effect. The new Code of Practice for Agricultural Environmental Management applies to all agricultural operations in BC, from small hobby farms to large commercial operations that are rearing and keeping livestock or poultry, or growing and harvesting agricultural products.
    - Organic Matter Recycling Regulation of B.C.: Governs the construction and operation of compost facilities, and the production, distribution, storage, sale and use of biosolids and compost. It provides guidance for local governments and compost and biosolids producers, on how to use organic material, while protecting soil quality and drinking water sources.

- *Riparian Areas Protection Act*: Protects riparian areas, while facilitating urban development that embraces high standards of environmental stewardship. The *Riparian Areas Protection Act* calls on local governments to protect riparian areas during residential, commercial, and industrial development by ensuring that a Qualified Environmental Professional conducts a science-based assessment of proposed activities.
- *BC Wildlife Act*: Management of wildlife in Canada is shared by the federal, provincial, and territorial governments. The provincial act ensures conservation and management of wildlife populations and habitat, issuing licences and permits for fishing, game hunting, and trapping, guidelines for safe angling and trapping and outfitting policies

Government of Canada

- *Wildlife Act*: Management of wildlife in Canada is shared by the federal, provincial, and territorial governments. Federal responsibility includes protection and management of migratory birds, as well as nationally significant wildlife habitat, and responsibilities for endangered species, control of international trade in endangered species, research on wildlife issues of national importance, and international wildlife treaties and issues.
- *Fisheries Act*: Protects our fish and fish habitat for future generations. This includes protections against the harmful alteration, disruption, and destruction of fish habitat, and protecting biodiversity and addressing urgent threats to conservation and fisheries.
- *Species at Risk Act*: The purposes of the *Species at Risk Act* are to prevent wildlife species in Canada from disappearing, to provide for the recovery of wildlife species that are extirpated (no longer exist in the wild in Canada), endangered, or threatened as a result of human activity, and to manage species of special concern to prevent them from becoming endangered or threatened. A series of measures applicable across Canada provides the means to accomplish these goals. Some of these measures establish how governments, organizations, and individuals in Canada work together, while others implement a species assessment process to ensure the protection and recovery of species. Some measures provide for sanctions for offences under the *Species at Risk Act.*

APPENDIX C – BEST MANAGEMENT PRACTICES

Best management practices describe ways to manage your land and activities to mitigate pollution of surface and groundwater near you. These practices are usually simple and low tech and benefit your household and land in many ways.

Urban/Rural Landowners

Best Management Practices: The following practices are generally recommended for residential homeowners in urban, sub-urban and rural landscapes. For further information regarding the implementation of these practices, consult an expert or review the resources provided below.

- Use fertilizers wisely
    - Reduce use of commercial and inorganic fertilizers.
    - Apply at the right time and in the right amounts. If more fertilizer is applied than the grass can utilize, it can wash into nearby streams and lakes.
    - Get a soil test to see what your soil needs.
    - Fertilizer with slow release nitrogen is better for the environment.
- Pick up pet waste
    - Pick up pet waste from your yard on a daily basis.
    - Carry disposable bags, while walking your dog to pick up and dispose of waste in the garbage.
- Care for and maintain your septic system
    - Check function of system annually.
    - Have tank pumped out regularly (every two-fiver years).
    - Make sure your system has an effluent filter to reduce the amount of solids entering your drain-field.
- Conserve water
    - Reduce overall water consumption.
    - Collect and conserve with rain barrels, use soaker hoses and drip irrigation.
    - Plant native species that require less water.
- Use landscaping practices that reduce erosion and run-off
    - Protect soil by planting native groundcover vegetation.
    - Use pervious surfaces as ground cover to support infiltration. Roofs, driveways, patios, and other impermeable surfaces force a large amount of water to quickly run off into storm drains, ditches, and waterways. Permeable surfaces allow rainwater to seep into the ground. They can include grass swales, gardens, forests, as well as special paving materials, called permeable pavers.

- Restore and maintain forest cover, wetlands, ponds, riparian areas.
- Create raingardens. A rain garden is a planted depression in the yard that absorbs rainwater from hard surfaces. It contains native grasses, wildflowers, and shrubs that thrive in wet conditions.
- Reduce nutrient inputs from yard waste by storing compost heaps away from riparian habitat. The use compost blankets, filter socks or a compost filter berm can help retain sediment and reduce erosion.

- Reduce use of high-phosphorus house products
  - Look for alternative cleaning products (laundry detergent, dish-washing soaps and detergents, and household cleaners) that have low phosphate components.
  - Do not pour household chemicals (particularly those containing phosphates), such as paint or oil onto the yard or directly into storm drains. Dispose of chemicals appropriately, according to local waste disposal guidelines.
- Maintain a healthy lawn
  - The best way to support your watershed is by planting native groundcover vegetation, rather than a non-native species.
  - If you have a lawn, maintain longer grass (6-8 cm in length) to support a healthier lawn by absorbing more water and nutrients, leading to improved root and soil structure.
  - Aerate the soil to create small holes, loosen the soil, and remove thatch (dead grass) to allow water, nutrients, and oxygen reach the root system.
  - Reduce foot traffic during wet periods, compacted soils decrease the ability of roots to grow. Consider foot paths or stepping-stones in high-traffic areas.
  - Reduce watering, a healthy lawn does not require much water. It only needs 2-3 cm (1 inch) per week, either by rainfall or watering.
  - Use compost, instead of fertilizer. Compost is considered a soil amendment and contains limited nutrients. Organic matter will improve the drainage and aeration of clay soil and help sandy soil hold water and nutrients.

Homeowners Stewardship Resources

- Environmental Best Management Practices for Urban and Rural Land Development (Section 8: Pollution Prevention and Management): This document provides information to support developers, landowners and local government to protect the environment and human health and safety by ensuring clean and safe water, land and air; and maintain and restore the ecological diversity of fish and wildlife species and their habitats. (Ministry of Water, 2004)

- CRD Environmental Sustainability a Homeowner's Guide to Outdoor Water Use: This booklet, prepared by CRD Environmental Sustainability Department, offers information, tips and techniques for wise outdoor water use. These simple techniques will help you use water more efficiently and save money. They will also help your garden flourish, as about 70-80% of all plant problems are related to incorrect watering. Follow this guide, and you will cut down on your costs, maintenance time and effort and, most importantly, conserve our precious water resource. (CRD, 2011)
- BC Stewardship Guide (Stewardship Options): This book helps landowners identify natural features on their property and provides both practical and legal options for private stewardship. Part One provides hands-on suggestions for identifying, retaining and restoring wildlife and fish habitat. Part Two describes legal options and current tax incentives available to private landowners to protect that habitat. Private land stewardship is essential to conserve BC's unique biological diversity and maintain fish and wildlife populations. There are many rewards for land stewards, such as personal enjoyment, a better quality of life, creating economic opportunities, and the chance to leave a living legacy for future generations. (Penn, 1996)
- Rural Landowners Stewardship Guide (for Ontario Landscape): The overriding goal of the Rural Landowner Stewardship Guide is to protect and enhance the quality of our natural environment – both groundwater and surface water, such as streams, rivers, ravines, creeks, wetlands and lakes, and the natural landscape features that support these ecosystems. (Caldwell, 2013)
- Gardening with Native Plants: Creating a naturescape (native plant garden) on your land is part of the solution to habitat loss. The actions of many individual landowners can make a big difference for wildlife in our region. This guide shows how showy native plants in your garden can also save you time and money; forget about watering, artificial fertilizers, and toxic pesticides. Because native plants have evolved in this climate for countless generations, they attract local songbirds and insect pollinators. The various plants in this guide fit into any type of garden setting. (Trust, 2017)
- Landowner Guide to Protecting Water Quality in the Kawarthas: The tips provided in this handbook are intended to help you identify sources of nutrients, such as phosphorus and nitrogen, while providing information on best management practices for your property. At the same time, we believe that these practices have the potential to improve your property value, enhance personal enjoyment of our urban, shoreline, and rural environments, and contribute to healthier lifestyles. (Conservation, 2013)

Additional Restoration Resources

- The Streamkeepers Handbook: The Streamkeepers Program has been developed in response to the concerns of the many volunteers working on stream enhancement projects. In spite of volunteer efforts and government regulations, development pressures from our expanding population continue to threaten our aquatic habitats. Everyone, from residents to land developers, foresters, and farmers, needs to become aware of how important good watershed practices are to the long-term protection of our environment. (Taccogna, 1995)

- Raingarden Handbook for Western Washington: This handbook will guide you through the following stages: plan, build, plant, and maintain. The handbook is written for conditions specific to western Washington, including appropriate plant selections and sizing recommendations based on regional soils and rainfall patterns. (Hinman, 2013).
- Building a Rain Garden (CRD): This guide provides general principles for building a raingarden in the CRD. (CRD, 2019)

Agricultural Landowners

There are significant resources available to farmers within BC that guide nutrient management practices. Landowners are encouraged to:

- Comply requirements with Code of Practice for Agricultural Environmental Management and adopt Nutrient Management Plan, as needed (over 5 ha, nutrients applied to land, nutrient levels test high)
- Consider enrolling in the provincial Environmental Farm Plan to complement and enhance existing stewardship practices. Adopt beneficial management practices for optimum farming practices that minimize input of nutrients to nearby streams and riparian habitat. (Partnerships, 2020)

The following practices are generally recommended for landowners that manage agricultural landscapes. This is a summary of the key practices to consider, but is not exhaustive:

- Fertilize Wisely: Effectively manage use and application of fertilizers, ensure nutrients are available to meet crop needs, while reducing nutrient run-off.
- Store manure appropriately: Ensure manure is stored and contained effectively, with appropriate set-back from riparian habitat.
- Conserve and effectively manage water use
    - Consider use of bioswales and Keyline design landscape practices to manage water flow.
    - Increasing irrigation efficiency can reduce non-point source pollution of ground and surface waters.
- Manage activity of livestock: Use appropriate fencing set-backs and grazing practices to lessen the water quality impacts (e.g., reduce erosion potential).
- Reduce soil erosion: Use vegetation strips to increase nutrient uptake and prevent potential pollutants from running off into surface waters.
    - Plant winter cover crops.
    - Leave harvested plant materials on the soil surfaces.
    - Use vegetation buffers.
    - Minimize soil compaction.

For additional information regarding the implementation of these practices, consult an expert or review the resources provided below.

Resources

Watershed Stewardship Guide for Agriculture: This guide is designed for all agricultural producers – from ranchers to greenhouse growers. Farmers are key to ensuring protection for aquatic environments. The stewardship principles discussed within this guide enable farmers to improve their operations and enhance the quality of their local environment. (Nener, Heinonen, Derksen, & John, 1997)

Beneficial Management Practices Program: Producers who develop and have a completed and current Environmental Farm Plan may be eligible to apply for cost-shared incentives through the Canadian Agricultural Partnership Beneficial Management Practices Program to implement actions identified in their on-farm environmental action plans.

APPENDIX D – SUMMARY OF RECOMMENDED ACTIONS IN ELK/BEAVER LAKE WATERSHED

Objective	Action	Performance Indicator	Timeframe	Lead Responsibility	Primary focus
1. Improve land management practices within the watershed to reduce total phosphorus entering the lake	1.a. Improve rural/urban land management practices to reduce and manage the source of phosphorus inputs into the watershed.	Contact 90% of landowners within Elk/Beaver Lake Watershed	2020-2022	Local landowners, Districts of Saanich and Central Saanich, CRD	Lands within Haliburton, O'Donnell & Hamsterly sub-watersheds
	1.b. Improve agricultural land use practices to reduce and manage nutrient use.	Contact 90% of farmers within watershed	2020-2025	Local farmers, Districts of Saanich and Central Saanich	Farmlands within Elk/Beaver Lake watershed [priority for new and small operation farmers (>5 ha)]
	1.c. Ensure proper function of septic and sewerage systems to reduce phosphorus inputs	Ensure 85% compliance with Septic System Bylaw 3479	2020-2024	Landowners, CRD	Landowners with septic systems
	1.d. Reduce waste input from non-native Canada goose population	Reduction of resident Canada goose population at Elk/Beaver Lake Regional Park	2020-2030	CRD	High goose activity areas (Eagle, Beaver and Hamsterly beaches)
	1.e. Reduce waste from dogs and horses on park trails	Improve educational materials within park and improve waste disposal opportunities	2020-2030	Park users, CRD	Elk/Beaver Lake Regional Park (trail system, park system)

Summary of Recommended Actions in Elk/Beaver Lake Watershed, cont'd

Objective	Action	Performance Indicator	Timeframe	Lead Responsibility	Primary focus
2. Improve watershed structure and function to reduce total phosphorus entering the lake	2.a. Restore and enhance stream and watershed function (Haliburton Brook)	60% of stream habitat restored	2020-2024	Landowners, stewardship groups, CRD, District of Saanich	Haliburton Brook and watershed
	2.b. Restore and enhance stream and watershed function (O'Donnell Creek)	60% of stream habitat restored	2024-2026	Landowners, stewardship groups, CRD, Districts of Saanich and Central Saanich	O'Donnell Creek and watershed
	2.c. Restore and enhance stream and watershed function (Hamsterly Creek)	60% of stream habitat restored	2026-2028	Landowners, stewardship groups, CRD, District of Saanich	Hamsterly Creek and watershed
	2.d. Restore and enhance riparian habitat along shoreline	Reduced overflow flooding at priority sites	2024-2028	CRD	Overflow sites on perimeter of lake, adjacent to paved parking lots and highly compacted soils (impervious surfaces)
	2.e. Maintain ecological function of sensitive ecosystems and ecological communities (forest, woodland and prairie habitat)	Restored native habitat in target area (60%)	2020-2024	CRD	Sensitive ecosystems and important ecological communities (Garry Oak Meadow)

Summary of Recommended Actions in Elk/Beaver Lake Watershed, cont'd

Objective	Action	Performance Indicator	Timeframe	Lead Responsibility	Primary focus
3. Improve lake health and function to reduce total phosphorus within the lake	3.a. restore and enhance shallow water habitat	60% of shallow water habitat restored	2026-2030	CRD, stewardship groups	Shallow water zones (< 3 m depth), adjacent to Orchian wall, and in Beaver Lake basin
	3.b. Reduce non-native fish populations	Reduction of invasive and non-native fish population (30% reduction in biomass)	2020-2030	CRD, stewardship groups, fisher-people	Non-native fish species (Common Carp, Yellow Perch)
	3.c. Manage and reduce growth of invasive Eurasian milfoil population	80% of Eurasian milfoil biomass removed	2020-2030	CRD	Shallow water habitats (< 6 m depth)
	3.d. Reduce incidences of new invasive species introductions and growth	No new occurrences of invasive species in lake	2020-2030	CRD, park-users	Park users operating vessels (boats, canoes, kayaks, rowing shells) in the lake

APPENDIX E – ELK/BEAVER LAKE WATER QUALITY MONITORING PROGRAM

1. Background

The Elk/Beaver Lake Initiative was established by the CRD in 2015 to address the long history of water quality issues at Elk/Beaver Lake. Since the 1980s, research has indicated significant eutrophication of the lake (high nutrient loading), causing harmful algal blooms, deterioration of aquatic habitat and increased growth of invasive weeds. Data was collected in 2016 and 2017 to improve our understanding of lake dynamics and support decision making for remedial actions to improve in-lake conditions.

2. Purpose

This monitoring plan will guide monitoring activities in 2019 to determine the onset of stratification in the spring, and turnover in the fall, to support the development of an in-lake remediation plan, including system design and operations. CRD also wants to gather baseline data that will be used to evaluate and assess the success and monitor any impacts on in-lake remediation.

3. Goals

The goals of the water quality monitoring program:

- To better understand current water quality issues at Elk/Beaver Lake.
- Provide a baseline of water quality conditions to support development of in-lake remediation master plan.
- Monitor changes in water quality through time and in response to future active management, in-lake remediation systems and watershed management at Elk/Beaver Lake.
- Assess compliance with existing regulations and guidelines

4. Water Quality Objectives

a. Addressed by Monitoring Plan

	Objectives	Source
I.	Maintain Chlorophyll-A mean summer range of 1.5-2.5 g/L.	McKean 1992
II.	Reduce year-round total phosphorus concentrations 5-15 ug/L to support aquatic life and lake recreation.	Water Quality Objectives (ENV)
III.	Maintain deep water temperatures below 15°C in the hypolimnion to support aquatic life.	McKean 1992
IV.	Improve year-round dissolved oxygen concentrations >5 mg/L at 1 m above lake bottom.	McKean 1992
V.	Improve water clarity to no less than 1.9 m Secchi depth year-round.	McKean 1992
VI.	Shift the phytoplankton community composition such that blue-green algae make up no more than 50% of the cells/mL.	Nordin 2015

b. Additional Initiative Objectives, addressed and monitored separately:

Objectives	
I.	Reduce number of blue-green algae visible bloom days (50% after three years and 75% after eight years).
II.	Reduced number of beach closure days recorded as response to blue-green algae blooms.
III.	Reduce year-round total blue-green algae and related toxins to 100,000 cells/mL (microcystins < 20 ug/L).
IV.	Reduce areal coverage invasive milfoil by at least 50%.
V.	Reduce total hours spent operating weed harvester by at least 50%.
VI.	Improve water quality for native fish species.

5. In-Lake Water Sampling Plan

Water Quality Parameters

a. Physical Parameters

- Dissolved Oxygen
- Temperature
- pH
- Conductivity
- Water Clarity

b. Chemical Samples

- Total Phosphorus
- Ortho-phosphorus
- Total Nitrogen, Nitrite, Nitrate, ammonia
- Dissolved Organic Carbon

c. Biological Samples

- Chlorophyll-A
- Phytoplankton tow
- Zooplankton tow

Data Collection

- Collect physical profile data every metre, every four weeks (except February-April, collect every two weeks), and weekly from April-June for oxygen depletion rate analysis.
- Collect chemical data at surface (0.5 m) and at depth, every four weeks (except February-April, every two weeks).
- Collect total phosphorus and orthophosphate every metre below the thermocline, from May-October.
- Collect biological samples at surface (Chlorophyll-A, phytoplankton) with integrated tube sampler, below surface (zooplankton), May-August, every four weeks.
- Sediment samples in Beaver Lake: Repeat sampling by Groenveld in 2002 in Elk Lake. Sampling to be conducted as soon as possible.

Sampling locations

- ELK-2 is the traditional sample point used by the ENV and is located over the deep location in the north end of the Elk basin. (17 m)
- BVL-1 is the deepest part of Beaver basin and is most typically the sample point in Beaver Lake. (7 m)

Location	Surface Surveys: Epilimnion	Deep Surveys: Hypolimnion
Elk Lake (ELK-2)	1 m (from surface)	15-18 m (or 1 m from bottom)
Beaver Lake (BVL-1)	1 m (from surface)	5-8 m (or 1 m from bottom)

6. Stormwater (SW) Sampling

Water Quality Parameters

a. Physical Parameters

- Dissolved Oxygen
- Temperature
- pH
- Conductivity
- Water Clarity

b. Chemical Samples

- Total Phosphorus
- Ortho-phosphorus
- Total Nitrogen, Nitrite, Nitrate, ammonia
- Dissolved Organic Carbon
- Dissolved metals

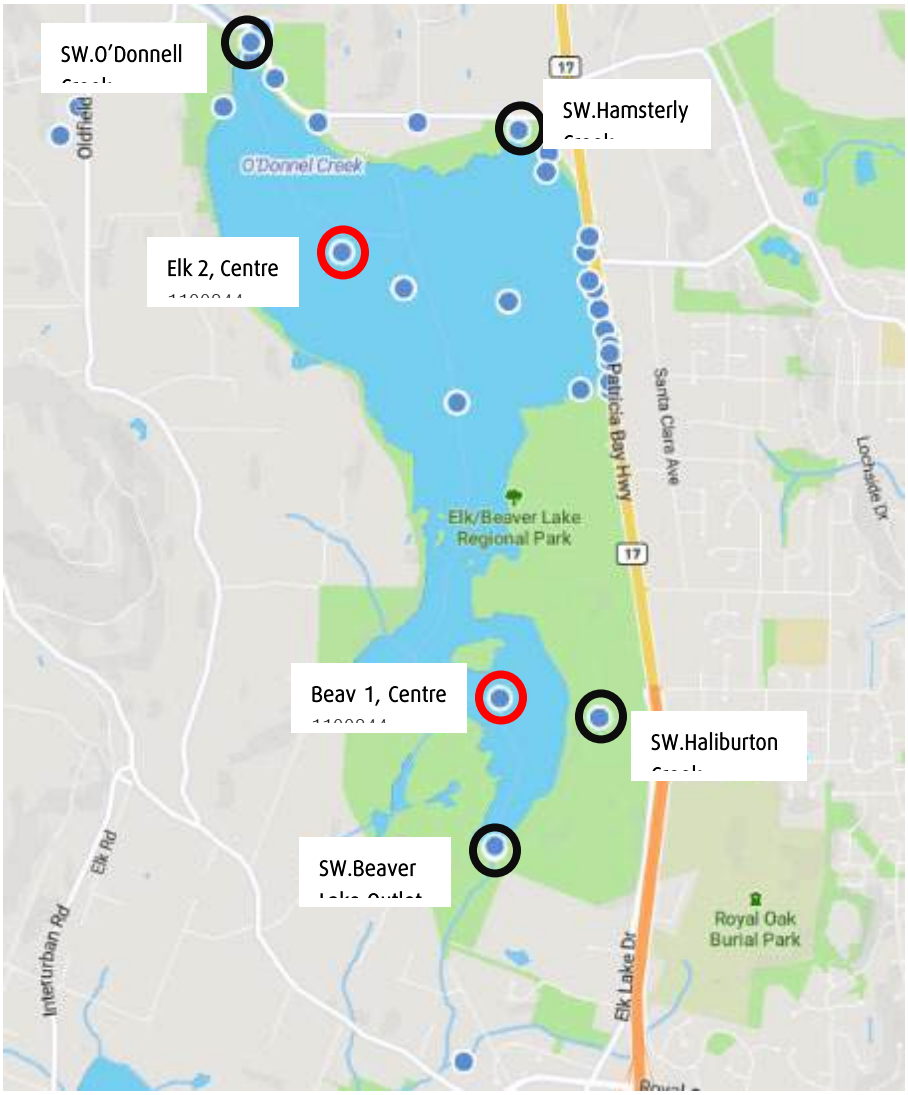
Data Collection

- All parameters every four weeks (August-October)

Sampling Locations

a. Inflow: O'Donnell Creek, Haliburton, Hamsterly
b. Outflow: Sampling the head of Colquitz River to monitor outflows

Sampling Map



Monthly Sampling (chemical/physical)

- Number of locations: 2
- Number of samples per location: 2 (surface and deep)
- Frequency: once/month

Increased Frequency Sampling (2x month)

- Number of locations: 2
- Number of samples per location: 2 (surface and deep)
- Frequency: twice/month

Monthly Hypoliminion Sampling (sampling below thermocline to bottom)

- Number of locations: 2
- Number of samples per locations: varies by month (Elk: average 8.5; Beaver 2.5)
- Parameters: Orthophosphate and Total Phosphorus ($22/sample)
- Frequency: once/monthly

Technical Definitions and descriptions:

- **Thermocline** is where temperature change is >1^{0}C/m.
- **Statification** in spring (Februry to mid-April) indicates when to turn an aeration/oxygenation system on.
- **Trophic status** is used to describe a lake's level of productivity, depending on nutrients available for plant growth. Measured with water clarity (secchi disc depth); Chlorophyll-A (algal pigments); and phosphorus concentration (limiting nutrient for nitrogen fixing algae)

Trophic Status	Chl-*a*(µg/L) growing season mean (Jun-Sept)	Secchi (m) growing season mean (Jun-Sept)	TP (µg/L) at spring overturn	TN (mg/L) at spring overturn
Oligotrophic	0-2	>6	1-10	<0.10
Mesotrophic	2-5	3-6	10-20	0.10-0.50
Eutrophic	>5	<3	>20	>0.50

- **Temperature:** Temperature can affect the life cycles and survival of organisms (including algae) and the ability of the water to hold oxygen. By building a vertical profile of temperature, we will be able to make inferences about lake mixing patterns, identify timing and location of thermal stratification (thermocline).

- Dissolved Oxygen: Dissolved oxygen, or oxygen present in the water, can also impact the type of aquatic life a water body can support. Low levels of dissolved oxygen can kill sensitive organisms and are generally undesirable, as they can indicate that organic matter is decomposing in the water column (i.e., after an algal bloom dies).
- pH: Predict conditions when bloom may occur.
- Total Phosphorus: Total phosphorous in early spring will be an indication of biological productivity in summer.
- Spring Overturn Phosphorus: The best method of monitoring long-term trends in phosphorus loading. Phosphorus in early spring (while lake is mixed) indicator of what the biological productivity in the summer might be, as it is a reasonable representation of the summer nutrient supply.
- Orthophosphate: Bioavailable phosphorus.
- Total Nitrogen: Organic N + ammonia + nitrate + nitrite.
- Water Clarity: A Secchi disk is a black and white checkered disk that is lowered into the water column to measure water clarity. As one of the oldest formalized methods of measuring water clarity, taking Secchi depth allows comparisons of current and historic water clarity measurements.
- Dissolved Organic Carbon: In general, organic carbon compounds are a result of decomposition processes from dead organic matter, such as plants or marine organisms. Moreover, dissolved carbon is an indicator of organic loadings in streams, as well as supporting terrestrial processing (e.g., within soil, forests, and wetlands) of organic matter.
- Conductivity: This is an indicator of the concentration of dissolved electrolyte ions in the water. Significant increases in conductivity may be an indicator that polluting discharges have entered the water (good indicator of land disturbance). This is dependent on temp and salinity, as well as water flow and water level changes.

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REPORT TO PLANNING, TRANSPORTATION AND PROTECTIVE SERVICES COMMITTEE MEETING OF WEDNESDAY, SEPTEMBER 16, 2020

SUBJECT **Regional Growth Strategy Consistency – Port Renfrew Comprehensive Community Development Plan**

ISSUE SUMMARY

To consider whether the proposed Port Renfrew Comprehensive Community Development Plan (CCDP) – Bylaw No. 4096, "Comprehensive Community Development Plan for Port Renfrew, Bylaw No. 1, 2003, Amendment Bylaw No. 10, 2018" – is consistent with the 2018 Regional Growth Strategy (RGS).

BACKGROUND

Section 445 of the *Local Government Act* requires that all bylaws adopted by a regional district be consistent with its RGS. The Capital Regional District (CRD) Board adopted Bylaw No. 4017 "Capital Regional District Regional Growth Strategy Bylaw No.1, 2016" in 2018.

The Juan de Fuca Land Use Committee (JdF LUC) is considering first and second reading of a proposed amendment to the Port Renfrew CCDP on September 15, 2020. Staff are bringing the proposed bylaw amendment No. 4096 to the Planning, Transportation and Protective Services Committee for consideration of RGS consistency in advance of the October 14, 2020 Board meeting. Appendix A provides a summary of the evaluation for consistency.

The proposed amendment creates a new comprehensive development designation – Pacific Gateway Marina (PGM) – in Port Renfrew to support development of a mix of community uses, year-round residential accommodation, vacation properties and commercial tourism, recreation and marina services for the general public. Appendix B provides detailed information about the proposed CCDP amendment.

On September 18, 2018, the JdF LUC referred the amendment application to appropriate CRD departments and other agencies for comment. Regional and Strategic Planning staff had no comments on the proposed amendment.

ALTERNATIVES

Alternative 1:
The Planning, Transportation and Protective Services Committee recommends to the Capital Regional District Board:
That proposed Bylaw No. 4096, "Comprehensive Community Development Plan for Port Renfrew, Bylaw No. 1, 2003, Amendment Bylaw No. 10, 2018" be reviewed as it relates to Bylaw No. 4017 "Capital Regional District Regional Growth Strategy Bylaw No.1, 2016" and be deemed consistent with the 2018 RGS Bylaw No. 4017.

Alternative 2:
The Planning, Transportation and Protective Services Committee recommends to the Capital Regional District Board:
That proposed Bylaw No. 4096, "Comprehensive Community Development Plan for Port Renfrew, Bylaw No. 1, 2003, Amendment Bylaw No. 10, 2018" be reviewed as it relates to Bylaw No. 4017 "Capital Regional District Regional Growth Strategy Bylaw No.1, 2016" and be deemed not consistent with the 2018 RGS Bylaw No. 4017.

Alternative 3
That the Regional Growth Strategy Consistency – Port Renfrew Comprehensive Community Development Plan report be referred back to staff for further review based on Committee direction.

IMPLICATIONS

Regional Growth Strategy Implications
Staff have evaluated the proposed amendments in relation to the 2018 RGS. Proposed changes to the Port Renfrew CCDP increase housing, provide for economic development opportunities and establish a future trails network in a manner aligned with 2018 RGS policy.

The proposed amendments provide for a mix of land uses that align to the Urban Containment Policy Area and respond to the needs of a complete community in Port Renfrew's unique context. The proposed amendments also identify infrastructure policies related to improvements and requirements for water and sewer services. Finally, the proposed amendments support economic development, provide for tools that protect healthy ecosystems and provide for integrated active transportation uses.

Service Delivery Implications
An amendment to the Port Renfrew water service area will be required to satisfy the proposed OCP and zoning amendments and enable development to proceed. Any amendment to the service area will require a determination of RGS consistency prior to adoption.

CONCLUSION

All bylaws adopted by the CRD must be consistent with its RGS. The proposed CCDP amendments to create a new comprehensive development designation and re-designate the subject properties in order to permit a mix of community uses aligns with the 2018 RGS. A determination of consistency allows for adoption of Bylaw No. 4096 following completion of the JdF LUC planning process.

RECOMMENDATION

The Planning, Transportation and Protective Services Committee recommends to the Capital Regional District Board:
That proposed Bylaw No. 4096, "Comprehensive Community Development Plan for Port Renfrew, Bylaw No. 1, 2003, Amendment Bylaw No. 10, 2018" be reviewed as it relates to Bylaw No. 4017 "Capital Regional District Regional Growth Strategy Bylaw No.1, 2016" and be deemed consistent with the 2018 RGS Bylaw No. 4017.

Submitted by:	Emily Sinclair MCIP, RPP, Senior Manager, Regional & Strategic Planning
Concurrence:	Emily Sinclair MCIP, RPP, Acting General Manager, Planning & Protective Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT(S)

Appendix A: RGS Evaluation Table – Proposed Bylaw 4096
Appendix B: Local Area Planning Staff Report to JdF LUC

APPENDIX A

RGS EVALUATION TABLE – PROPOSED BYLAW NO. 4096

2018 RGS Objective		Considerations for RGS Consistency
1.1	Keep Urban Settlement Compact	The subject properties are located within the Urban Containment Policy Area, as shown on the 2018 RGS Map 3A. This policy area is intended to accommodate 95% of the region's new dwelling units and provide a mix of residential, employment, commercial and industrial uses. The proposed amendment supports a mix of community uses that are consistent with the RGS land use designation for this policy area.
1.2	Protect the Integrity of Rural Communities	N/A – The subject properties are within the Urban Containment Policy Area.
2.1	Protect, Conserve and Manage Ecosystem Health	The 2018 RGS Policy 2.1.4 states: identify, protect, enhance and restore ecosystems using tools that may consist of policies, regulations, development permit area guidelines, incentives, initiatives and education and outreach delivered at the local level. Policy 2.1.5 states: protect ecological integrity of watersheds and marine areas through collaborative initiatives consistent with the principles set out in the Protect, Conserve and Manage Ecosystem Health objective of the 2018 RGS. The subject properties were previously cleared and altered as part of construction of a breakwater approved by the Province in 2016. Remaining natural areas have been identified for conservation by a Registered Professional Biologist. Three new development permit areas were recently adopted to manage potential development impacts to the shoreline and sensitive riparian areas. These proposed amendments increase protection of freshwater, marine, and adjacent ecosystems, thus adhering to RGS policy.
2.2	Manage Regional Infrastructure Services Sustainably	Some of the subject properties are located outside of the Port Renfrew Water Service Area. The proposed amendment identifies that the subject properties must be connected to a community water system to achieve their full development potential. An amendment to the water servicing bylaw will require CRD Board determination of consistency prior to adoption, as set out in RGS policy 2.2.1. In order to determine consistency, the Board will consider: the population to be serviced, how growth in water demand will be addressed, full lifecycle costs and financial impacts to users and long-term water supply availability, taking climate change into consideration. This information can then be used to update the Port Renfrew Comprehensive Community Development Plan, at such time that the Plan is amended, in accordance with RGS policy 2.2.2(a).

APPENDIX A

2018 RGS Objective		Considerations for RGS Consistency
3.1	Create Safe and Complete Communities	The 2018 RGS policy 3.1.3 states: avoid locating new development in the Growth Management Planning Area in areas with high seismic hazard associated with ground-motion amplification, liquification, slope instability or in areas prone to flooding, or incorporate appropriate engineering and planning measures to mitigate risk. The proposed amendments support the RGS policy.
3.2	Improve Housing Affordability	The proposed amendments provide for a mix of uses and diverse housing types in support of RGS policy and targets.
4.1	Improve Multi Modal Connectivity and Mobility	The 2018 RGS policy 4.1.3 is to prioritize transit and active modes of transportation in community planning. The proposed amendment includes a requirement for the construction of a trail connection and staircase, to be secured by a maintenance agreement and statutory right-of-way. This new community trail link contributes to the multi modal network in the community in alignment with RGS policy.
5.1	Realize the Region's Economic Potential	The proposal supports a range of economic development activities in alignment with the RGS policy 5.1.1. In addition to supporting tourism activities the marina area includes space for boat docks, food services and retail establishments, community uses, office uses, and tourist facilities. This area could include a future fishing lodge and/or small conference centre.
6.1	Foster a Resilient Food and Agriculture System	The 2018 RGS Policy 6.1.1 is to implement initiatives to achieve a healthy, vibrant and resilient local food and agriculture system, including expanding food system economic activities. The additional space for tourists and provision for added restaurant and retail space could help increase the market and demand for local food, which aligns with RGS policy.
7.1	Significantly Reduce Community-Based Greenhouse Gas Emissions	The 2018 RGS Policy 7.1.1 is to prioritize investment in a low-carbon built form that supports efficient energy use. The proposed amendments support more efficient use of lands through higher density housing and mixed use developments. This further adds to the efficient use of infrastructure and services, providing daily needs and recreation opportunities in closer proximity to where people stay. Therefore, this aligns with the RGS objectives for greenhouse glass emissions and climate action.

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SUPPLEMENTARY REPORT TO
JUAN DE FUCA LAND USE COMMITTEE
MEETING OF TUESDAY, SEPTEMBER 15, 2020

SUBJECT **Comprehensive Community Development Plan Amendment Application for: That Part of Section 97, Renfrew District as Shown Coloured Red on Plan 344R (PID: 009-592-342); Lot 1, Section 97, Renfrew District, Plan EPP24972 (PID: 028-991-125); That Part of District Lot 17, Renfrew District Shown Outlined in Red on Plan 347R (PID: 009-575-006); and Those Parts of Block A and B, District Lot 751, Together with Unsurveyed Crown Foreshore or Land Covered by Water Being Part of the Bed of Port San Juan, All Within Renfrew District, Shown Outlined in Red on Licence V905027, Containing 3.86 Hectares, More or Less**

ISSUE SUMMARY

This report provides supplementary information and a revised recommendation for the Report tabled by the Juan de Fuca Land Use Committee (LUC) on June 16, 2020, as a result of correspondence received from Pacheedaht First Nation on June 16, 2020.

BACKGROUND

Prior to consideration of this application by the LUC on June 16, 2020, JdF Community Planning received correspondence from Pacheedaht First Nation (Appendix A) highlighting a number of concerns and questions related to the consultation process and governance, and regarding various aspects of the development of the subject lands within Pacheedaht's traditional territory. The LUC determined that the concerns warranted tabling the item to its September 15, 2020, meeting, in order to give staff time to work with the applicant and Pacheedaht to address the noted concerns and questions.

Subsequent to the June 16, 2020, meeting, JdF Community Planning received an Archaeological Impact Assessment (AIA), dated July 31, 2018, and accompanying geotechnical report, dated November 19, 2015. Having received and reviewed this new information, staff recommend a revised recommendation.

ALTERNATIVES

Alternative 1
That the Land Use Committee recommends to the Capital Regional District (CRD) Board:

a) That the referral of proposed Bylaw No. 4096, "Comprehensive Community Development Plan for Port Renfrew, Bylaw No. 1, 2003, Amendment Bylaw No. 13, 2020" to a Public Information Meeting in Port Renfrew, the Juan de Fuca Electoral Area Parks and Recreation Advisory Commission; CRD departments; BC Hydro; Cowichan Valley Regional District; Department of Fisheries and Oceans; District of Sooke; Island Health; Ministry of Environment and Climate Change Strategy; Ministry of Forests, Lands and Natural Resource Operations; Ministry of Transportation and Infrastructure; Pacheedaht First Nation; RCMP; Sooke School District #62 be approved and the comments received;
b) That proposed Bylaw No. 4096, "Comprehensive Community Development Plan for Port Renfrew, Bylaw No. 1, 2003, Amendment Bylaw No. 13, 2020" be introduced and read a first time and read a second time;
c) That in accordance with the provisions of Section 469 of the *Local Government Act*, the Director for the Juan de Fuca Electoral Area, or Alternate Director, be delegated authority to hold a public hearing with respect to Bylaw No. 4096; and

d) That prior to adoption of the bylaws, the applicant:
   i. Register a covenant on the title of the lands pursuant to Section 219 of the *Land Title Act* in favour of the CRD securing the Archaeological Impact Assessment prepared by Duncan McLaren, PhD, dated July 31, 2018, and the geotechnical report prepared by Bruce Dagg, P.Eng., dated November 19, 2015.

Alternative 2
That the CRD Board not proceed with proposed Bylaw No. 4096.

Alternative 3
That more information be provided.

IMPLICATIONS

In their correspondence dated June 16, 2020, Pacheedaht First Nation raised a number of concerns regarding the application review and consultation processes, and potential impacts on the environment and damage to sites of cultural importance. They also asked several questions regarding site servicing, including community water and sewage disposal.

Consultation Implications
The CRD's development application processes are established through Bylaw No. 3885 and the *Local Government Act*. The process allows for referral by the Juan de Fuca Land Use Committee and the CRD Board to agencies and departments they determine may have interests that are affected by proposed development. Comments received from external agencies, including Pacheedaht, were included in the staff report for the June 16, 2020, LUC meeting and part of the staff recommendation was intended to address their original concerns. However, as a result of ongoing dialogue between CRD and Pacheedaht, CRD has acknowledged the desire for greater participation on the part of the Nation, and has committed to providing an avenue for more meaningful dialogue with those First Nations in whose traditional territory a development application is being considered.

Land Use Implications
As part of the Licence of Occupation application process for the marina, a consultation process involving the proponent and Pacheedaht was required by the Province. That process was to have addressed concerns related to the impact on the marine environment, including shellfish harvesting and underwater noise, and resulted in moving the marina infrastructure and breakwater to their present location. As part of the current development application, we are in receipt of an environmental report for the upland portion of the development. The report was attached to the June 16, 2020, LUC report.

Subsequent to the June 16, 2020, LUC meeting, JdF Community Planning received a copy of an archaeological inventory and impact assessment report, dated July 31, 2018, prepared by Duncan McLaren, PhD, (Cordillera Archaeology). The report provided details on the results of assessment of the land in the vicinity of the Pacific Gateway Marina, and focused on a number of sea cave features along the foreshore. The report affirmed Pacheedaht's concerns regarding vibrations from blasting and machinery activities in the vicinity of the sea caves, including those that would originate from the "Little Renfrew" site directly above the caves. The Report also included a 2015 Ryzuk geotechnical report (the "Geotechnical Report") that commented on the stability of the caves and provided vibration threshold recommendations. In light of this information, staff recommend registration of a covenant on the title of the lands to require that all future development be conducted in accordance with the recommendations of the Archaeological and Geotechnical Reports. This would address future land alteration and construction activity on District Lot 17, and ensure that it follows the recommendations for a vibration threshold, monitoring and impact mitigation.

With regards to water supply, the proponent has partnered with Port Renfrew Management Ltd. to install a 100,000 gallon water tank to increase the overall storage capacity of the Port Renfrew water system. In exchange for that work and based on the value of the contract, under an agreement with the Port Renfrew Utility Services Commission and CRD Integrated Water Services, 32 single-family equivalents (SFEs) are to be allocated to Pacific Gateway Marina, 32 SFEs to Port Renfrew Management Ltd, and 8 SFEs to Port Renfrew Business Park Ltd. As a result of this increase in capacity, approximately 75 SFEs presently remain unallocated and available for other development proposals within the local service area upon payment of the amenity fee.

At the present time, sewage treatment is proposed to be via a community system constructed in partnership with Port Renfrew Management Ltd., on the south side of Parkinson Road. The system would require approval from Island Health under the *Sewerage System Regulation* of the *Public Health Act*. Such a system is limited to a flow rate of 22,700 L/day. At such time as the development proposes to exceed this threshold, a larger system, involving approvals from the Ministry of Environment under the *Environmental Management Act* and *Municipal Wastewater Regulation*, will be required.

As a result of the concerns raised by Pacheedaht and the additional information received from the applicant regarding the culturally sensitive areas within the development area, staff recommend a revised Land Use Committee recommendation to include a covenant securing the 2018 Duncan McLaren archaeological assessment and associated 2015 Ryzuk geotechnical report.

RECOMMENDATION

That the Land Use Committee recommends to the Capital Regional District (CRD) Board:

a) That the referral of proposed Bylaw No. 4096, "Comprehensive Community Development Plan for Port Renfrew, Bylaw No. 1, 2003, Amendment Bylaw No. 13, 2020" to a Public Information Meeting in Port Renfrew, the Juan de Fuca Electoral Area Parks and Recreation Advisory Commission; CRD departments; BC Hydro; Cowichan Valley Regional District; Department of Fisheries and Oceans; District of Sooke; Island Health; Ministry of Environment and Climate Change Strategy; Ministry of Forests, Lands and Natural Resource Operations; Ministry of Transportation and Infrastructure; Pacheedaht First Nation; RCMP; Sooke School District #62 be approved and the comments received;

b) That proposed Bylaw No. 4096, "Comprehensive Community Development Plan for Port Renfrew, Bylaw No. 1, 2003, Amendment Bylaw No. 13, 2020" be introduced and read a first time and read a second time;

c) That in accordance with the provisions of Section 469 of the *Local Government Act*, the Director for the Juan de Fuca Electoral Area, or Alternate Director, be delegated authority to hold a public hearing with respect to Bylaw No. 4096; and

d) That prior to adoption of the bylaws, the applicant:
   i. Register a covenant on the title of the lands pursuant to Section 219 of the *Land Title Act* in favour of the CRD securing the Archaeological Impact Assessment prepared by Duncan McLaren, PhD, dated July 31, 2018, and the geotechnical report prepared by Bruce Dagg, P.Eng., dated November 19, 2015.

Submitted by:	Iain Lawrence, MCIP, RPP, Manager, Juan de Fuca Community Planning
Concurrence:	Michael Barnes, MPP, Acting General Manager, Planning & Protective Services
Concurrence:	Ted Robbins, B. Sc., C. Tech., Acting Chief Administrative Officer

ATTACHMENT:

Appendix A: Correspondence from Pacheedaht First Nation, June 16, 2020

Appendix A: Correspondence from Pacheedaht First Nation

Pacheedaht First Nation
350 Kalaid Street
Port Renfrew, BC
V0S 1K0
Phone: (250) 647-5521
Fax: (250) 647-5561

June 16, 2020

VIA EMAIL

Capital Regional District
625 Fisgard Street
Victoria, BC V8W 1R7

Attention: **Mike Hicks, Director**
Chair, Juan de Fuca Land Use Committee
(mhicks@crd.bc.ca)

Dear Sirs/Mesdames:

Re: Proposed New Pacific Gateway Marine Comprehensive Development Zone
Comprehensive Community Development Plan Amendment Application for:
That Part of Section 97, Renfrew District as Shown Coloured Red on Plan 344R (PID: 009-592-342); Lot 1, Section 97, Renfrew District, Plan EPP24972 (PID: 028-991-125);
That Part of District Lot 17, Renfrew District Shown Outlined in Red on Plan 347R (PID: 009-575-006); and Those Parts of Block A and B, District Lot 751, Together with Unsurveyed Crown Foreshore or Land Covered by Water Being Part of the Bed of Port San Juan, All Within Renfrew District, Shown Outlined in Red on Licence V905027, Containing 3.86 Hectares, More or Less

On behalf of the Pacheedaht First Nation, I am writing in relation to this evening's meeting of the Juan de Fuca Land Use Committee (the Committee).

I understand that tonight's agenda includes an application by Pacific Gateway Marina (PGM) for a rezoning of the properties listed above (the Rezoning Application). The rezoning would seriously change the way the properties are used, allowing year-round residential accommodation, vacation properties, commercial tourism, and increased recreation and marina services.

Before the Committee meets, I wanted to take this opportunity to explain some of Pacheedaht's concerns with the Rezoning Application. I am writing to you directly in advance of the Committee convening as in the background materials for tonight, I do not see a plan for direct engagement with Pacheedaht other than some proposed input on an archaeological report. I wanted to let you know at this early juncture that, due to the nature of the potential impacts it contemplates, a process of direct engagement is needed between the Capital Regional District (CRD) and Pacheedaht in relation to the Rezoning Application before any further steps are taken.

Pacheedaht Concerns with Rezoning Application

As you will be aware, Pacheedaht asserts Aboriginal rights and title to the properties included in the Rezoning Application, as well as the surrounding lands and waters. Our members are worried about what the Rezoning Application could mean for our territory. Some of our concerns are as follows.

Heritage and cultural sites

There are a number of known archaeological sites as well as undocumented sites within the area subject to the Rezoning Application. These sites are of immeasurable value to Pacheedaht and include sacred sea caves and other cultural features. Our oral history tells us these sites were used for burials and were also sites for cleansing, collecting red ochre (a substance sacred to Pacheedaht), and other important cultural rituals. Protecting these sites and the cultural remains they contain is of the highest concern to our Nation.

These sites have already been subject to damage, including by construction of the railway in the 1930s, when burials boxes were removed. As Pacheedaht, we know these sites to be incredibly fragile. Damage to them in the past has resulted in some caves collapsing such that they are no longer accessible.

Were it permitted, the Rezoning Application would allow PGM to build a very dense residential development above these sites. Pacheedaht is deeply concerned that blasting and other heavy machinery work associated with construction near these fragile sites could lead to irreparable damage, including their permanent collapse and the loss or damage to their sacred contents. We simply cannot take the risk that this part of our history and culture could be lost.

I see from the background materials for this evening's meeting that one of the Committee's options in considering the Rezoning Application would be for PGM to submit an archaeological report, created with Pacheedaht's input, to be considered at a public hearing. I stress that it is absolutely crucial that the Committee, and the CRD, hear directly from Pacheedaht in relation to our concerns about preventing and managing impacts to these sites. It is not sufficient or appropriate for consideration of impacts to Pacheedaht to be limited to a report written about us.

Other impacts

Pacheedaht's concerns with the Rezoning Application are not limited to our heritage and cultural sites. I feel compelled to set out some of our additional concerns here because the background materials for this evening's meeting appear to limit our concerns to archaeological impacts.

Our other concerns with the Rezoning Application include impacts to shoreline and marine species from construction activities, ongoing underwater noise, environmental impacts caused by fuel and other vessel discharges, and potential interference with our members' harvesting activities due to increased marine traffic and reduced shoreline access.

Water supply is also a serious concern in our remote community. Pacheedaht understands that PGM is applying for community piped water to be supplied to the properties, but that the usual amenity contributions for water use are being waived due to a cost share of a proposed storage tank. Pacheedaht is requesting more information about this proposal as well as the general water needs for what PGM is proposing. Along these same lines, Pacheedaht also has concerns relating to drainage,

grey water, and sewage disposal. Given the proximity of the properties to our community, and important fishing areas, our members will be deeply impacted by any changes in service levels from PGM's proposed development of the area.

Pacheedaht is also concerned that PGM's plans for the properties may not comply with Port Renfrew's 2003 Official Community Plan (OCP). For example it is not clear to us whether PGM's proposed residential accommodation meets the needs of the area in terms of affordability, and whether the proposed tourist accommodation of cabins, RV and camper rental spaces comply with the OCP. As set out in the May 2019 letter from Pacheedaht's Referrals Coordinator, Kristine Pearson, in our view the OCP needs to be updated in collaboration with Pacheedaht to reflect current land use and needs from both Pacheedaht and the Port Renfrew community. The Rezoning Application is an important opportunity to consider how the CRD, Port Renfrew and Pacheedaht can work together on land and marine use planning in Pacheedaht territory.

Next Steps

As set out above, we have a number of serious concerns with the Rezoning Application, and also the process by which it will be reviewed. A public hearing with consideration of an archaeological report is not sufficient. Rather than being the subject of a report, Pacheedaht needs a seat at the table. There needs to be a meaningful opportunity for our governments to sit down and discuss what is being proposed, and more generally to work collaboratively on applications in Pacheedaht territory.

Given the serious issues it raises, Pacheedaht is requesting the opportunity to work with the CRD to develop a process for ensuring our views and concerns are meaningfully considered in the Rezoning Application. Such a process would be in line with the CRD's Statement of Reconciliation, which includes supporting the participation of First Nations in the CRD's decision-making processes.

As a first step, please contact Kristine Pearson at referrals@pacheedaht.ca to set up a meeting as soon as possible, to be held by way of video conference or teleconference.

We look forward to hearing from you.

Yours truly,

PACHEEDAHT FIRST NATION

Chief Jeff Jones
jeffj@pacheedaht.ca

cc: Capital Regional District, Attn. Colin Plant, Board Chair (**cplant@crd.bc.ca**)
Pacheedaht First Nation, Attn. Kristine Pearson (**referrals@pacheedaht.ca**)
Mandell Pinder LLP, Attn. Rosanne Kyle (**rosanne@mandellpinder.com**)

Making a difference...together

REPORT TO JUAN DE FUCA LAND USE COMMITTEE
MEETING OF TUESDAY, JUNE 16, 2020

SUBJECT **Comprehensive Community Development Plan Amendment Application for:**
That Part of Section 97, Renfrew District as Shown Coloured Red on Plan 344R (PID: 009-592-342);
Lot 1, Section 97, Renfrew District, Plan EPP24972 (PID: 028-991-125);
That Part of District Lot 17, Renfrew District Shown Outlined in Red on Plan 347R (PID: 009-575-006); and
Those Parts of Block A and B, District Lot 751, Together with Unsurveyed Crown Foreshore or Land Covered by Water Being Part of the Bed of Port San Juan, All Within Renfrew District, Shown Outlined in Red on Licence V905027, Containing 3.86 Hectares, More or Less

ISSUE SUMMARY

The applicant has applied to re-designate the subject properties from Marine Protection (M) and Residential (R) to a new Pacific Gateway Marina (PGM) designation, and to rezone the subject properties from Marine (M) and Community Residential – One (CR-1) to a new Pacific Gateway Marina Comprehensive Development (PGM-CD) zone, in order to permit a mix of community uses, year-round residential accommodation, vacation properties and commercial tourism, recreation and marina services to the general public.

BACKGROUND

The subject properties are located in Port Renfrew at 17110 Parkinson Road and 6598 Baird Road (Appendices A and B). The upland properties are designated as Residential (R) and the Licence of Occupation area is designated as Marine Protection (M) under the Comprehensive Community Development Plan (CCDP) for Port Renfrew, 2003, Bylaw No. 3109. The upland properties are zoned Community Residential – One (CR-1) and the Licence area is zoned Marine (M) under Bylaw No. 3109. The subject areas are adjacent to Tourist Commercial – One (TC-1) and CR-1 zoned land to the south and west, Community Use (CU) zoned land to the east, and Port San Juan to the north.

The parcels located at 17110 Parkinson Road and the Licence area are currently located outside the Port Renfrew Water Service Area, while the property located at 6598 Baird Road is located inside the service area. The land based parcels are all located within the Port Renfrew Fire Protection Local Service Area, while the Licence area on which the marina is situated is located outside the service area.

The CR-1 zone allows development in the form of one residential unit per parcel, home based businesses, bed and breakfasts, religious centres, and retail establishments. The Marine zone allows private boat docks.

The Licence of Occupation area, on which the current marina infrastructure is located, was issued by the Province on February 25, 2016. Temporary Use Permit TP000008 was issued by the Regional Board on June 28, 2016, renewed on July 24, 2019, and will expire on June 28, 2022. The Permit authorizes the operation of a 60-slip commercial marina, offices, food services, fuel sales, recreation, boat trailer parking and boat storage within the Licence area and part of the adjoining upland property.

The proposed rezoning to a new Pacific Gateway Marina Comprehensive Development (PGM-CD) zone would establish six development areas, each with a variety of uses including residential, tourist commercial, recreation, community and marina services to the general public (Appendices C and D).

In order to rezone the property, a new Pacific Gateway Marina (PGM) land use designation has been developed. The PGM designation includes policies that support the uses of the proposed zone, that outline the required level of servicing for the proposed development, and that formalize the community's interest in a publicly accessible walking trail through the marina development.

Staff have prepared Bylaw No. 4096 (Appendix E), to re-designate the subject properties and Licence of Occupation area from Residential and Marine Protection to a new Pacific Gateway Marina designation, and to rezone the subject areas from CR-1 and M to a new PGM-CD zone.

At their meeting of September 18, 2018, the Juan de Fuca Land Use Committee recommended referral of the proposed bylaws to agencies and to a Public Information Meeting in Port Renfrew. Comments are included as received in Appendix F.

ALTERNATIVES

Alternative 1
That the Land Use Committee recommends to the Capital Regional District (CRD) Board:

a) That the referral of proposed Bylaw No. 4096, "Comprehensive Community Development Plan for Port Renfrew, Bylaw No. 1, 2003, Amendment Bylaw No. 13, 2020" to a Public Information Meeting in Port Renfrew, the Juan de Fuca Electoral Area Parks and Recreation Advisory Commission; CRD departments; BC Hydro; Cowichan Valley Regional District; Department of Fisheries and Oceans; District of Sooke; Island Health; Ministry of Environment and Climate Change Strategy; Ministry of Forests, Lands and Natural Resource Operations; Ministry of Transportation and Infrastructure; Pacheedaht First Nation; RCMP; Sooke School District #62 be approved and the comments received;
b) That proposed Bylaw No. 4096, "Comprehensive Community Development Plan for Port Renfrew, Bylaw No. 1, 2003, Amendment Bylaw No. 13, 2020" be introduced and read a first time and read a second time;
c) That in accordance with the provisions of Section 469 of the *Local Government Act*, the Director for the Juan de Fuca Electoral Area, or Alternate Director, be delegated authority to hold a public hearing with respect to Bylaw No. 4096 upon receipt by the CRD from the applicant of a report prepared by a professional archaeologist, with input from the Pacheedaht First Nation, to the satisfaction of the CRD and the Archaeology Branch that addresses the known archaeological site and any additional sites identified in the area, and that determines the steps in managing impacts to the site.

Alternative 2
That the CRD Board not proceed with proposed Bylaw No. 4096.

Alternative 3
That more information be provided.

IMPLICATIONS

Legislative Implications
Pursuant to Section 477 of the *Local Government Act (LGA)*, an amendment to a zoning bylaw requires that the local government provide one or more opportunities for consultation it considers appropriate to the persons, organizations and authorities the local government considers may be affected by the adoption, repeal or amendment of a zoning bylaw.

Consultation under the above noted sections of the *LGA* must occur prior to the requirement under Section 477 to hold a public hearing as part of the amendment process. On December 11, 2018, the Electoral Director and staff met with the members of the Port Renfrew community and the applicant at a Public Information Meeting to discuss the proposal.

Regional Growth Strategy Implications
Section 445 of the *LGA* requires that all bylaws adopted by a regional district board after the board has adopted a Regional Growth Strategy (RGS) be consistent with the RGS. Since the proposal includes an amendment to the Official Community Plan (OCP) schedule of Bylaw No. 3109, the bylaw

will be considered by the Planning, Transportation and Protective Services Committee and/or the CRD Board for a determination of consistency with the RGS prior to first reading. An amendment to the water servicing bylaw will also require a determination of consistency prior to adoption.

Referral Process Implications
Referrals were sent to external agencies, CRD departments, the Juan de Fuca Electoral Area (JdF EA) Parks and Recreation Advisory Commission, and to a Public Information Meeting in Port Renfrew. Comments received are noted below and included in Appendix F.

CRD Bylaw Enforcement does not anticipate any significant bylaw enforcement implications as a result of this proposal.

CRD Integrated Water Services commented that water could be supplied to the proposed lots subject to all lots being included in the water service area, and a second reservoir tank being installed and commissioned. Among other things, the owners would be required to provide an amenity contribution of $8,000 per single family equivalent (SFE) for future water system upgrades; however, a total of 32 SFEs are reserved for the development in-lieu of payment due to a cost share of the proposed storage tank.

The Cowichan Valley Regional District commented that the proposal was too remote to impact their interests.

The Department of Fisheries and Oceans commented that the agency does not have a regulatory role related to this application because the proposal does not directly propose works, undertakings or activities that may result in serious harm to fish.

District of Sooke stated no objection as the subject properties are well outside the District's boundaries.

Ministry of Forests, Lands and Natural Resource Operations (FLNRO) – Archaeology Branch commented that there is a documented archaeological site on one of the subject properties. The site is protected under the *Heritage Conservation Act* and must not be altered or damaged without a permit from the Archaeology Branch. The waterfront location and proximity to other nearby archaeological sites increases the potential for unknown/unrecorded archaeological deposits to be present. Prior to any land-altering activities, an eligible consulting archaeologist should be engaged to determine the steps in managing impacts to the site.

FLNRO – Ecosystems commented that they had few concerns with the proposal provided that vegetation clearing was minimized and occurred outside the bird nesting period, and that the development follow other best management practices in the Develop with Care manual.

Island Health commented that they would have regulatory requirements with regards to drinking water supply systems, liquid waste discharges less than 22,700 L/day, food premises, and facilities that include the recreational use of water such as pools and spas. Island Health acknowledged that there were a number of aspects of the development that address their objective of encouraging a healthy built environment.

Ministry of Transportation and Infrastructure stated no objection to the proposed amendment. The Ministry would provide additional comment should the property be subdivided in the future. Commercial access permits for any new access onto Parkinson Road would be required.

Pacheedaht First Nation (PFN) commented that the Nation has concerns regarding the high strength of claim and cultural values in the area of the application. The area has known archaeological sites and undocumented sites, both of which are of vital importance to PFN. The Nation also retains the water lot lease to the southeast of the marina and want to ensure that the impacts of this application are better understood.

Sooke School District #62 commented that the school district does not have any concerns with the development.

A Public Information Meeting was held in Port Renfrew on December 11, 2018. There were 38 members of the public in attendance. One submission was received and read at the meeting and four

supplementary submissions were received after the meeting. Concern was raised regarding enforcement of conditions of the applicant's current temporary use permit, the perceived broad scope of the rezoning application and a lack of related development permits. Concern was also raised regarding the impact on sewage and water capacity, drainage, roads and access, and the volunteer fire department. Support was expressed for continued access to the waterfront trails historically used by the community.

A meeting of the JdF EA Parks and Recreation Advisory Commission was held on January 29, 2019. There was one member of the public in attendance and no written submissions were received regarding the application. The Commission discussed the proposal and passed the following motion:

MOVED by Commissioner Braunschweig, **SECONDED** by Commissioner Sloan that the Commission accept the amenity in the form of a continuous statutory right-of-way, trail and stairway from Lot 64 to Baird Road which is open to the public with the trail and staircase maintained by the development. **CARRIED**

Land Use Implications
The official community plan schedule of the Port Renfrew CCDP, designates the subject properties as Residential (R) and the Licence of Occupation area as Marine Protection (M). The objectives of the Residential designation is to ensure the housing stock in the plan area meets the needs and requirements of the market place for at least five years. This designation identifies mixed residential/commercial uses as viable activities for economic development within the residential designation. The Marine Protection designation prohibits the operation of log booms. Neither the Residential nor the Marine Protection designations are entirely appropriate for use of the property as a comprehensive marina development; therefore a change from the Residential and Marine Protection designations to a new Pacific Gateway Marina (PGM) designation is required.

The proposed PGM land use designation includes policies regarding improvements to the Port Renfrew Water Supply System, as well as the provision of community water and sewer service to the subject properties. The PGM policies also outline the community interest in a publicly accessible trail through the property as part of larger network connecting various areas of Port Renfrew.

The proposed Pacific Gateway Marina Comprehensive Development (PGM-CD) zone establishes six development areas. Each development area includes a specific set of permitted uses and regulations. These uses are conditional upon connection to the Port Renfrew Community Water Supply System, connection to a community sewer system to the satisfaction of Island Health or the Ministry of Environment, and provision of a public walking trail connecting Development Areas A, B and C.

Development Area A is proposed to include a series of courtyard cabins and stacked duplexes that range in size from 70 m^2 to 90 m^2 to a maximum floor area ratio of 0.30, in one- and two-bedroom configurations. Based on the proposed area of DA-A, this would allow a total floor area of 2,334 m^2.

Development Area B is proposed to include six courtyard cabins of approximately 90 m^2, to a maximum floor area ratio of 0.35. Based on the proposed area of DA-B, this would allow a total floor area of 913 m^2.

Development Area C comprises the marina operation itself, and includes boat docks, food services and retail establishments, community uses, office uses, and tourist facilities. This area could include a future fishing lodge and/or small conference centre. A portion of this area may also be dedicated to Canadian Coast Guard operations.

Development Area D is proposed to include tourist accommodation facilities in the form of cabins, and RV and camper rental spaces. Density is limited to a floor area ratio of 0.25, which would allow a total floor area of 859 m^2.

Development Area E includes an existing dwelling unit and may be subdivided from the parent property in the future. The use of this development area would remain as residential to a maximum of one dwelling unit.

Development Area F is proposed to include larger, single-family dwellings with the option of year-

round residency. Units are proposed to be in the 110 m^2 to 150 m^2 range to a maximum floor area ratio of 0.35. Based on the proposed size of DA-F, this would allow a total floor area of 1,454 m^2. DA-F could potentially be used as the site of a small conference centre or spa associated with the fishing lodge proposed for Development Area C.

The proposed PGM-CD zone includes minimum servicing requirements for community water and community sewer, as well as a community amenity requirement in the form of a public trail through Development Areas A, B, C and D, connecting Baird Road and Lot 64. In order to achieve the full development potential permitted in each development area, the property must first be connected to a community water system and a community sewer system. The Port Renfrew community water system requires expansion in order to support the level of development proposed. Construction and commissioning of the expansion must be completed prior to the property being included in the local service area. With regards to community sewer, daily flows to a small community/strata system that fall below 22,700 L/day may be approved by Island Health under the *Sewerage System Regulation*. Flows in excess of this amount will require a larger system approved by the Ministry of Environment under the *Municipal Wastewater Regulation*. The public trail must be constructed and secured via statutory right-of-way in favour of the CRD. Until such time as these services and the amenity are provided, the use and density of the property is limited to one single-family dwelling.

Section 4.2 of the Port Renfrew CCDP outlines the preferred form and methods for acquiring park land. At their meeting of January 29, 2019, the JdF EA Parks and Recreation Advisory Commission reviewed the proposed bylaw amendment and recommended that a trail and staircase connecting Lot 64 to the east and Baird Road to the southwest, be constructed and that the trail be secured by a maintenance agreement and statutory right-of-way. This is in keeping with the policies of the CCDP.

Pacheedaht First Nation noted their strength of claim and cultural values in the area, and the Archaeology Branch advised that there is a known archaeological site within the application area. They also commented that given the waterfront location, there may be additional, unidentified deposits in the area and recommended that prior to any land-altering activities, an eligible consulting archaeologist should be engaged to determine the steps in managing impacts to the site. While the Archaeology Branch could not require a study for development activity beyond the known site, JdF Planning staff recommend that the applicant provide a professional archaeologist's report of the entire subject property, with input from Pacheedaht First Nation and to the satisfaction of the CRD and the Archaeology Branch, prior public hearing. The study would address the known site and any additional sites identified in the area, and determine the steps in managing impacts to the site.

Subsequent to the Public Information Meeting, the applicant has submitted an environmental assessment report prepared by a professional biologist (Appendix G). In addition, three new development permit areas (DPAs) were added to the Port Renfrew CCDP: a Shoreline Protection DPA, a Riparian DPA, and a Sensitive Ecosystem DPA. The property is now partially designated as a Shoreline Protection development permit area (DPA) and a development permit will be required as a condition of subdivision or prior to upland construction activity within 15 m of the natural boundary of the sea. The recommendations of the environmental report could be included as conditions of a future development permit.

Juan de Fuca Community Planning staff recommend receipt of referral comments, proceeding with proposed Bylaw No. 4096 for first and second readings, and that a public hearing be held in the community.

CONCLUSION

The purpose of this Comprehensive Community Development Plan (OCP and zoning) amendment application is to allow a mix of community uses, year-round residential accommodation, vacation properties and commercial tourism, recreation, and marina services to the general public. Referral comments have been received and staff recommend that proposed Bylaw No. 4096 proceed for first and second readings, and that a public hearing be held. Upon closure of the public hearing, a report of the hearing will be forwarded to the Board along with a recommendation regarding further readings of the Bylaw.

RECOMMENDATION

That the Land Use Committee recommends to the Capital Regional District (CRD) Board:

a) That the referral of proposed Bylaw No. 4096, "Comprehensive Community Development Plan for Port Renfrew, Bylaw No. 1, 2003, Amendment Bylaw No. 13, 2020" to a Public Information Meeting in Port Renfrew, the Juan de Fuca Electoral Area Parks and Recreation Advisory Commission; CRD departments; BC Hydro; Cowichan Valley Regional District; Department of Fisheries and Oceans; District of Sooke; Island Health; Ministry of Environment and Climate Change Strategy; Ministry of Forests, Lands and Natural Resource Operations; Ministry of Transportation and Infrastructure; Pacheedaht First Nation; RCMP; Sooke School District #62 be approved and the comments received;

b) That proposed Bylaw No. 4096, "Comprehensive Community Development Plan for Port Renfrew, Bylaw No. 1, 2003, Amendment Bylaw No. 13, 2020" be introduced and read a first time and read a second time;

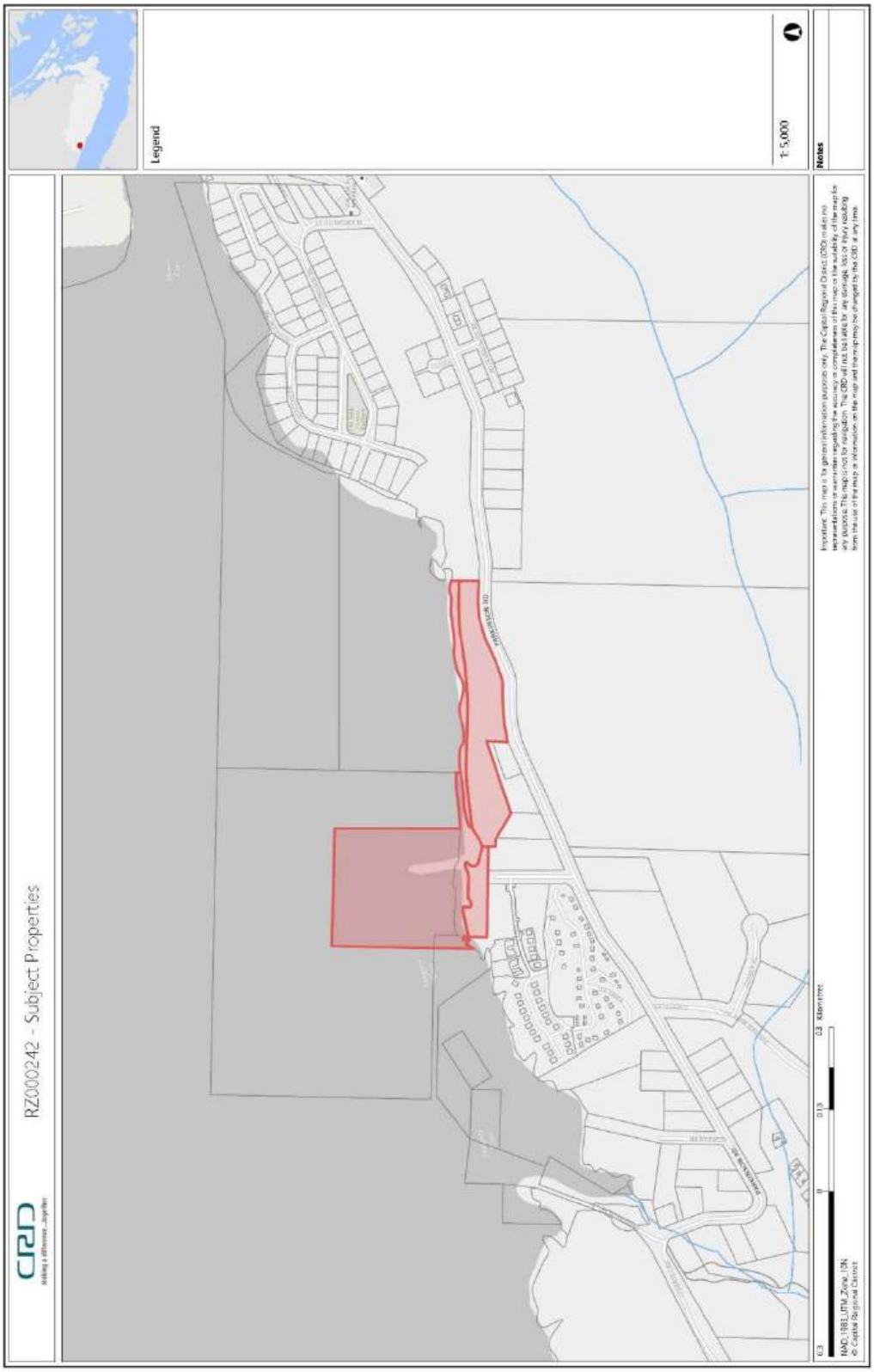
c) That in accordance with the provisions of Section 469 of the *Local Government Act*, the Director for the Juan de Fuca Electoral Area, or Alternate Director, be delegated authority to hold a public hearing with respect to Bylaw No. 4096 upon receipt by the CRD from the applicant of a report prepared by a professional archaeologist, with input from the Pacheedaht First Nation, to the satisfaction of the CRD and the Archaeology Branch that addresses the known archaeological site and any additional sites identified in the area, and that determines the steps in managing impacts to the site.

Submitted by:	Iain Lawrence, MCIP, RPP, Manager, Juan de Fuca Community Planning
Concurrence:	Kevin Lorette, P. Eng., MBA, General Manager, Planning & Protective Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT(S)

Appendix A: Subject Property Map
Appendix B: Orthophoto Plan
Appendix C: Site Plans
Appendix D: Concept Sketch
Appendix E: Proposed Bylaw No. 4096
Appendix F: Referral Comments
Appendix G: Environmental Report

Appendix A: Subject Property Map



Appendix B: Orthophoto Plan



Appendix C: Site Plans




RECEIVED
MAY 03 2018
Draft
Lot 1 18 spaces
(Under Hotel)
Trailer Parking/
Turnaround Area
(confirm)
Lot 4 - 12 spaces
Lot 2 -19 spaces
Additional


Existing Structures:
1 Marina Docks
2 Shelter
3 Single Family Residence
4 Fuel Tanks
5 Marina Office
DA-D
DA-B
DA-A
DA-C
DA-E
DA-F
Easement
Easement
Parkinson Road
Boat Road
RECEIVED
MAY 03 2018
JdF Electoral Area Planning
Pacific Gateway Marina
Topography and Sensitive Areas
Scale 1:2000
50m
May 02, 2018
D'AMBROSIO
architecture + urbanism
For illustration only. Delineation subject to legal survey confirmation

Appendix D: Concept Sketch

RECEIVED
MAY 03 2018
JdF Electoral Area Planning



Appendix E: Proposed Bylaw No. 4096

CAPITAL REGIONAL DISTRICT
BYLAW NO. 4096

****

A BYLAW TO AMEND BYLAW NO. 3109,
THE "COMPREHENSIVE COMMUNITY PLAN FOR PORT RENFREW, BYLAW NO. 1, 2003"

****

The Capital Regional District Board, in open meeting assembled, enacts as follows:

1. Bylaw No. 3109 being the "Comprehensive Community Development Plan for Port Renfrew, Bylaw No. 1, 2003" is hereby amended:

A. SCHEDULE A, SECTION 4.0 DEVELOPMENT POLICIES

(a) By inserting a new Section 4.5 "Pacific Gateway Marina (PGM) Policies" after Section 4.4, to be read as follows:

4.5. Pacific Gateway Marina (PGM) Policies

Objective

The objective of the PGM designation is to provide a mix of community uses, year-round residential accommodation, vacation properties, and commercial tourism, recreation and marina services to the general public. Development within the PGM designation should support the economic, social and cultural well-being of the Port Renfrew community.

4.5.1. Development (PGM) Policies

1) In order to facilitate the increased level of use supported by the PGM designation the following services should be constructed and bylaws adopted prior to development:

a) Installation of a second water reservoir to expand the capacity of the Port Renfrew Water Supply System to the satisfaction of the Capital Regional District.

b) Adoption of an amendment to the Port Renfrew Water Supply Local Service Establishment Bylaw No. 1, 1989, Bylaw No. 1747, to include all those lands and the surface of the water within the PGM land use designation.

c) Adoption of an amendment to the Port Renfrew Fire Protection Local Service Establishment Bylaw, 1989, Bylaw No. 1743, to include all those lands and the surface of the water within the PGM land use designation.

2) The following amenity is of interest to the community and should be completed in accordance with the requirements specified by the Pacific Gateway Marina Comprehensive Development (PGM-CD) zone:

a) Construction of a public trail and staircase providing connectivity between the Juan de Fuca Electoral Area Community Parks and Recreation trail on Lot 64, Plan VIP24755, and Baird Road. The route provided by this trail and staircase should be protected by a statutory right-of-way in favour of the CRD.

3) Areas of known archaeological significance that are located within the area under the PGM designation are to be protected in accordance with Provincial legislation.

and renumbering Section 4 accordingly.

B. SCHEDULE B, PART I, SECTION 1 DEFINITIONS

(a) By inserting a new definition for "COMMERCIAL MARINA" before the words "COMMUNITY SEWAGE SYSTEM", as follows:

"COMMERCIAL MARINA means a facility providing moorage for commercial vessels and private pleasure craft, as well as offices, food service establishments, fuel sales, recreation, boat trailer parking and boat storage."

(b) By inserting a new definition for "CONFERENCE CENTRE" before the words "BED AND BREAKFAST", as follows:

"CONFERENCE CENTRE means an establishment used for the holding of conventions, seminars, workshops or similar activities, and may include dining and lodging facilities for the use of participants, as well as compatible accessory facilities."

C. SCHEDULE B, PART IV ZONES

(a) By inserting a new "Pacific Gateway Marina Comprehensive Development (PGM-CD)" zone after Section 27, to be read as follows:

28.0 Pacific Gateway Marina Comprehensive Development (PGM-CD) Zone

Purpose

The purpose of this zone is to implement the Pacific Gateway Marina (PGM) land use designation in order to provide a mix of community uses, year-round residential accommodation, vacation properties, and commercial tourism, recreation and marina services to the general public.

The PGM-CD zone is divided into Development Areas A – F, which are shown in Section 28.06. Development within each Development Area is to occur in accordance with the regulations indicated below.

Except where otherwise provided for in this Bylaw, only the specified list of permitted uses may be carried out on the parcels within the PGM-CD zone.

28.01 PGM-CD Zone – General Regulations

(a) Permitted uses:
  (i) Single-family residential
  (ii) Accessory buildings and structures
(b) Maximum density:
  (i) One single-family dwelling
(c) Where the following services and amenities are provided, the permitted uses, densities and regulations of Development Areas A-F, as specified in Sections 28.02 to 28.06, shall apply:
  (i) Connection to the Port Renfrew Water Supply System to the satisfaction of the Capital Regional District.
  (ii) Connection to a community sewer system to the satisfaction of Island Health where total daily flows are less than 22,700 L/day, and to the satisfaction of the Ministry of Environment where total daily flows exceed 22,700 L/day.
  (iii) Provision of a public trail constructed in a location and to a standard approved by Juan de Fuca Electoral Area Community Parks and Recreation, connecting Development Area A with Development Areas B and C. The trail is to be protected for public use via statutory right-of-way and maintenance agreement in favour of the Capital Regional District.

(d) The Development Area boundaries, as shown in Section 28.06 shall be deemed to be lot boundaries for the purposes of determining applicable uses, densities and regulations.

(e) Where a survey plan approved by the Surveyor General indicates the adjustment of a parcel boundary due to accretion, the zoning and development area designation applicable to the parcel is deemed to extend to the new parcel boundary despite the zoning designation of the accreted area indicated in Section 28.06.

(f) As a requirement of subdivision, each proposed parcel within the PGM-CD zone must be connected to a community sewer system to the satisfaction of Island Health or the Ministry of Environment, and to a community water system to the satisfaction of the Capital Regional District.

28.02 Development Area A – Specific Regulations

(1) Permitted uses	(a) Single-family residential (b) Duplex residential (c) Accessory buildings or structures to the above permitted uses
(2) Minimum lot size for subdivision purposes	0.75 ha
(3) Minimum front yard setback	6.0 m
(4) Minimum interior side yard setback	3.0 m
(5) Minimum exterior side yard setback	4.5 m
(6) Minimum rear yard setback	4.5 m
(7) Maximum floor area ratio of residential units shall be:	0.30
(8) Maximum lot coverage	40% of the parcel area
(9) Maximum principal building height	11.75 m
(10) Maximum accessory building height	6.0 m

28.03 Development Areas B, D and E – Specific Regulations

(1) Permitted uses	(a) Single-family residential (b) Duplex residential (c) Home based business (d) Staff accommodation (e) Accessory buildings or structures to the above permitted uses
(2) Minimum lot size for subdivision purposes:	
(a) Development Area B	0.26 ha
(b) Development Area D	0.34 ha
(c) Development Area E	300 m^2
(3) Minimum front yard setback	6.0 m
(4) Minimum interior side yard setback	3.0 m
(5) Minimum exterior side yard setback	4.5 m
(6) Minimum rear yard setback	4.5 m

(7) Maximum combined floor area ratio of residential, tourist accommodation and staff accommodation units (a) Development Area B (b) Development Area D (c) Development Area E	 0.35 0.25 0.35
(8) Maximum lot coverage	40% of the parcel area
(9) Maximum principal building height	11.75 m
(10) Maximum accessory building height	6.0 m

28.04 Development Area C – Specific Regulations

(1) Permitted uses	(a) Commercial marina (b) Community uses (c) Conference centre (d) Fish processing (e) Food service establishments (f) Hotels and motels (g) Office uses (h) Retail establishments (i) Staff accommodation (j) Tourist facilities and related amenities (k) Accessory buildings or structures to the above permitted uses
(2) Minimum lot size for subdivision purposes	1.0 ha
(3) Minimum front yard setback	6.0 m
(4) Minimum interior side yard setback	3.0 m
(5) Minimum exterior side yard setback	4.5 m
(6) Minimum rear yard setback	4.5 m
(7) Maximum combined floor area ratio of tourist accommodation and staff accommodation units	0.60
(8) Maximum lot coverage	50% of the parcel area
(9) Maximum principal building height	12.0 m
(10) Maximum accessory building height	6.0 m

28.05 Development Area F – Specific Regulations

(1) Permitted uses	(a) Single-family residential (b) Duplex residential (c) Townhouse residential (d) Community uses (e) Conference centre (f) Food service establishments (g) Home based business (h) Hotels and motels (i) Office uses (j) Retail establishments (k) Staff accommodation (l) Tourist facilities and related amenities (m) Accessory buildings or structures to the above permitted uses
(2) Minimum lot size for subdivision purposes	0.4 ha
(3) Minimum front yard setback	6.0 m
(4) Minimum interior side yard setback	3.0 m
(5) Minimum exterior side yard setback	4.5 m
(6) Minimum rear yard setback	4.5 m
(7) Maximum combined floor area ratio of residential, tourist accommodation and staff accommodation units	0.35
(8) Maximum lot coverage	40% of the parcel area
(9) Maximum principal building height	12.0 m
(10) Maximum accessory building height	6.0 m

28.06 PGM-CD Zone Development Areas Map



D. SCHEDULE A, MAP NO. 2 – LAND USE DESIGNATIONS

(a) By deleting That Part of Section 97, Renfrew District as Shown Coloured Red on Plan 344R (PID: 009-592-342); Lot 1, Section 97, Renfrew District, Plan EPP24972 (PID: 028-991-125); and That Part of District Lot 17, Renfrew District Shown Outlined in Red on Plan 347R (PID: 009-575-006) from the Residential (R) designation and adding said lots to the Pacific Gateway Marina (PGM) designation, as shown on Plan No. 1, attached to and forming part of this bylaw; and

(b) By deleting Those Parts of Block A and B, District Lot 751, Together with Unsurveyed Crown Foreshore or Land Covered by Water Being Part of the Bed of Port San Juan, All Within Renfrew District, Shown Outlined in Red on Licence V905027, Containing 3.86 Hectares, More or Less from the Marine Protection (M) designation and adding said licence area to the Pacfic Gateway Marina (PGM) designation, as shown on Plan No. 1, attached to and forming part of this bylaw.

E. SCHEDULE B, MAP NO. 3 – ZONING

(a) By deleting That Part of Section 97, Renfrew District as Shown Coloured Red on Plan 344R (PID: 009-592-342); Lot 1, Section 97, Renfrew District, Plan EPP24972 (PID: 028-991-125); That Part of District Lot 17, Renfrew District Shown Outlined in Red on Plan 347R (PID: 009-575-006) from the Community Residential – One (CR-1) zone and adding said lots to the Pacific Gateway Marina Comprehensive Development (PGM-CD) zone, as shown on Plan No. 2, attached to and forming part of this bylaw; and

(b) By deleting Those Parts of Block A and B, District Lot 751, Together with Unsurveyed Crown Foreshore or Land Covered by Water Being Part of the Bed of Port San Juan, All Within Renfrew District, Shown Outlined in Red on Licence V905027, Containing 3.86 Hectares, More or Less from the Marine (M) zone and adding said licence area to the Pacfic Gateway Marina Comprehensive Development (PGM-CD) zone, as shown on Plan No. 2, attached to and forming part of this bylaw.

2. This bylaw may be cited as “Comprehensive Community Development Plan for Port Renfrew, Bylaw No. 1, 2003, Amendment Bylaw No. 13, 2020”.

READ A FIRST TIME THIS	day of	, 2020.
READ A SECOND TIME THIS	day of	, 2020.
READ A THIRD TIME THIS	day of	, 2020.
ADOPTED THIS	day of	, 2020.

CHAIR

CORPORATE OFFICER

Appendix F: Referral Comments

Wendy Miller

From: Wilf Marquis
Sent: Wednesday, October 17, 2018 10:10 AM
To: Wendy Miller
Subject: RE: Comprehensive Community Plan Amendment Application RZ000242 (Pacific Gateway Marina - Port Renfrew)

CRD Bylaw Enforcement Services has reviewed the staff report for Comprehensive Community Plan Amendment Application RZ000242 (Pacific Gateway Marina - Port Renfrew) and does not anticipate any significant bylaw enforcement implications as a result of this proposal.

Wilf MARQUIS
Senior Bylaw Officer

Bylaw and Animal Care Services
212-2780 Veterans Memorial Parkway, Victoria, BC, Canada V9B 3S6
Ph. 250.474.3351 ext. 22 \ Fax: 250.391.9727 \ TF: 800.665.7899
email: wmarquis@crd.bc.ca

Memo

TO: Iain Lawrence, Manager, Juan de Fuca Local Area Planning

FROM: Joseph Marr, Manager, Water Distribution Engineering and Planning

CRD FILE: 3360-20-PRENW-18-003

DATE: December 13, 2018

SUBJECT: ZONING AMENDMENT APPLICATION – PACIFIC GATEWAY MARINA

Thank you for the zoning amendment application referral received September 21, 2018, which requests that we examine the above referenced proposal with regard to the water supply regulations and policies of the Capital Regional District (CRD) Integrated Water Services as established for the Port Renfrew Utility Service Committee (PRUSC).

If the CRD receives an appropriate application to supply water, and if the Owner(s) is prepared to meet the conditions of CRD Bylaw No. 1792, and pay the necessary costs and fees as authorized under CRD Bylaw No. 3847, community piped water can be supplied to this proposed development subject to the following:

1) Confirmation that all proposed lots to be serviced by CRD water are within the Port Renfrew water service area.

2) The proposed additional storage tank for the Port Renfrew Water Service area has been installed and commissioned.

3) The water service(s) must comply with all relevant bylaws and applicable codes for servicing (CRD land use approvals, Building Code, MOTI, etc).

4) The Owner(s) provides an amenity contribution of $8,000 per Single Family Equivalent Unit for future water system upgrades. There are currently 32 Single Family Equivalent Units proposed to be reserved in lieu of payment due to a cost share of the proposed storage tank.

5) The Owner(s) pays for all applicable fees, applications, process review, including parcel taxes and/or user fees as required.

6) The Owner(s) provides engineering design drawings for the development showing the proposed water servicing and an associated design brief.

7) The Owner(s) provides metering and appropriate back flow prevention device(s) at the property line(s) to service the proposed lots.

8) The Owner(s) needs to provide confirmation that all approvals have been met for the proposed sewer system.

IWSS-1714139953-3960

9) If a service connection is required for a 'Common Property' disposal field(s), then the Owner(s) pays all applicable connection fees and must install an approved backflow prevention device at his/her own expense. The device is to be tested annually by a certified technician of cross connection control devices and the test results, including repairs performed, are to be submitted to the CRD.

The subject property 6598 Baird Road is located within the Port Renfrew water service area, property 17110 Parkinson Road is not located in the water service area.

This memo is for the purpose of providing you with information regarding the services available from the CRD, and should not be construed as either approval or rejection of the proposed rezoning by the CRD.

These conditions are valid for 180 days from date of writing. However, if at any time there is a change in legislation, regulations or CRD Bylaws, which would cause any of the above conditions to be non-conforming, then the CRD reserves the right to revise any or all of the conditions accordingly, at any time during the 180 day period.

Yours truly,

Joseph Marr, P.Eng.
Manager, Water Distribution Engineering and Planning
Infrastructure Engineering
Integrated Water Services

Jm:eu
Attachments: Report to the Juan De Fuca Land Use Committee – September 18, 2018

cc: Ian Jesney, Senior Manager, Infrastructure Engineering
Wendy Miller, Administrative Clerk, Juan de Fuca Local Area Planning
Malcolm Cowley, Manager Regional Wastewater, Infrastructure Engineering

IWSS-1714139953-3960

RESPONSE SUMMARY
COMPREHENSIVE COMMUNITY PLAN AMENDEMENT APPLICATION RZ000242

/ Interest Affected by Proposal for Reasons Outlined Below

___ Interest Unaffected by Proposal

Comments:

too remote from CVRD for an impact.
Best wishes,

Signed

MANAGER COMM. PLANNING
Title

2018/10/16
Date

CVRD
Agency

Wendy Miller

From: Gravelle, Kristin <Kristin.Gravelle@dfo-mpo.gc.ca>
Sent: Tuesday, September 25, 2018 10:36 AM
To: Wendy Miller
Subject: RE: Comprehensive Community Plan Amendment Application RZ000242 (Pacific Gateway Marina - Port Renfrew) - CRD Referral

Hello Wendy,

The role of the DFO's Fisheries Protection Program (FPP) is to protect and conserve fish and fish habitat in support of Canada's coastal and inland fisheries resources, and to make regulatory decisions under the fisheries protection provisions of the Fisheries Act. The FPP is specifically responsible for reviewing projects for which a s.35(2) Fisheries Act Authorization is required.

DFO does not have a regulatory role related to RZ000242 (Pacific Gateway Marina - Port Renfrew) Proposed Bylaw No. 4096 because it does not directly propose works, undertakings or activities that may result in serious harm to fish.

DFO's Projects Near Water website (http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html) includes information for proponents on how to comply with the *Fisheries Act*, request a DFO review of a project, and request a *Fisheries Act* authorization.

If you have any further questions about DFO's regulatory process or need general information, contact DFO's Fisheries Protection Program toll free: 1-866-845-6776 or email: EnquiriesPacific@dfo-mpo.gc.ca.

Thank you,

Kristin Gravelle

Fisheries Protection Biologist, Fisheries Protection Program
Fisheries and Oceans Canada/Government of Canada
Kristin.Gravelle@dfo-mpo.gc.ca/Tel: 250-756-7292

Biologiste de la protection des pêches, La protection des pêches Programme
Pêches et Océans Canada | Gouvernement du Canada
Kristin.Gravelle@dfo-mpo.gc.ca/Tél 250-756-7292

Wendy Miller

From: Nicholas Deibler <ndeibler@sooke.ca>
Sent: Friday, October 12, 2018 9:27 AM
To: Wendy Miller
Subject: RE: Comprehensive Community Plan Amendment Application RZ000242 (Pacific Gateway Marina - Port Renfrew) - CRD Referral

Good Morning Wendy,

Thank you for your development referral regarding the Comprehensive Community Plan Amendment Application for 17110 Parkinson Road and 6598 Baird Road, received by the District of Sooke on September 21.

The District of Sooke has no objections to the proposed Comprehensive Community Plan Amendment, as the subject properties are located well outside of our boundaries.

Regards,

Nicholas Deibler
Planner 1
District of Sooke
2205 Otter Point Rd
Sooke BC, V9Z 1J2
250-642-1634 ext. 627



Wendy Miller

From: Cooper, Diana FLNR:EX <Diana.Cooper@gov.bc.ca>
Sent: Friday, September 21, 2018 12:37 PM
To: Wendy Miller
Subject: RE: Comprehensive Community Plan Amendment Application RZ000242 (Pacific Gateway Marina Port Renfrew) - CRD Referral

Hello Wendy,

Thank you for your referral regarding a proposed Comprehensive Community Plan Amendment (Application RZ000242) for lands describes as:

- [redacted]

Provincial records indicate previously recorded archaeological site DdSc-24 is recorded on [redacted] (see screenshot below). DdSc-24 is recorded as a cave burial. The site is protected under the *Heritage Conservation Act* and must not be altered or damaged without a permit from the Archaeology Branch.

Additionally, the waterfront location and proximity to other nearby archaeological sites increases the potential for unknown/unrecorded archaeological deposits to be present.

Prior to any land-altering activities (e.g. addition to home, property redevelopment, extensive landscaping, service installation), an Eligible Consulting Archaeologist should be engaged to determine the steps in managing impacts to the archaeological site.

An Eligible Consulting Archaeologist is one who is able to hold a Provincial heritage permit that allows them to conduct archaeological studies. Ask an archaeologist if he or she can hold a permit, and contact the Archaeology Branch (250-953-3334) to verify an archaeologist's eligibility. Consulting archaeologists can be contacted through the BC Association of Professional Archaeologists (www.bcapa.ca) or through local directories.

Occupying an existing dwelling or building without any land alterations does not require archaeological study or permitting.

If a permit is required, proponents should be advised that the permit application and issuance process takes approximately 8-10 weeks and should plan their development schedule accordingly.

If work is planned that is **outside of the red area** as shown in the screenshot below, the Archaeology Branch cannot require the proponent conduct an archaeological study or obtain a permit prior to development. In this instance it is a risk management decision for the proponent. However, the Archaeology Branch strongly encourages engaging an archaeologist prior to development as the site may extend beyond the limits indicated on the attached screenshot.

If any land-altering development is planned and proponents choose not to contact an archaeologist prior to development, owners and operators should be notified that if an archaeological site is encountered during development, activities **must** be halted and the Archaeology Branch contacted at 250-953-3334 for direction. If an archaeological site is encountered during development and the appropriate permits are not in place, proponents will be

in contravention of the *Heritage Conservation Act* and likely experience development delays while the appropriate permits are obtained.

If you or your clients have questions, please visit the FAQ page at http://www.for.gov.bc.ca/archaeology/faq.htm and the Property Owners and Developers web page at http://www.for.gov.bc.ca/archaeology/property_owners_and_developers/index.htm.

If you or your clients have further questions regarding the permitting process, please contact Nathan Friesen (Supervisor, Archaeology Branch) at 250-953-3306 or Nathan.P.Friesen@gov.bc.ca.

Please review the screenshot of the property below (outlined in yellow) in relation to the archaeological site (red area). If this is not the property as described in the data request, please contact me.

Please feel free to contact me should you have any questions regarding this referral response.

Kind regards,

Diana

RESPONSE SUMMARY
COMPREHENSIVE COMMUNITY PLAN AMENDEMENT APPLICATION RZ000242

___ Interest Affected by Proposal for Reasons Outlined Below

X Interest Unaffected by Proposal

Comments:

We have few concerns with the proposed rezoning, providing the following recommendations are followed during subsequent development:

- We recommend that vegetation clearing be minimized and occur outside the nesting period from March 1 to August 31 to reduce impacts on all bird species. A search for the nests of birds (eagles, peregrine falcons, gyrfalcon, ospreys and herons) protected under Section 34(b) of the *Wildlife Act* should be conducted before the start of vegetation clearing. Should the nest of a bird requiring protection under Section 34(b) of the *Wildlife Act* be located, please refer to the recommended buffer distances in Table 4.1 (Section 4) of ***Develop with Care: Environmental Guidelines for Urban and Rural Land Development in British Columbia (MOE 2014)*** available at https://www2.gov.bc.ca/gov/content/environment/natural-resource-stewardship/laws-policies-standards-guidance/best-management-practices/develop-with-care .

- Follow other relevant best management practices in ***Develop with Care.***

- The San Juan River and its estuary provide high value fish habitat and support important salmon spawning activity. It is essential that any future development in the Port Renfrew area does not adversely impact this resource. We recommend that a referral be sent to the Ministry of Forests, Lands, Natural Resource Operations and Rural Development, and Fisheries and Oceans Canada, for any proposed development that may impact fish habitat. This will provide an opportunity for government biologists to assess potential adverse impacts to fish and suggest mitigation measures.

DR. Grant Bracher PAg, RPBio

DR. GRANT BRACHER
Signed

ECOSYSTEM BIOLOGIST
Title

SEPTEMBER 27, 2018
Date

ECOSYSTEMS SECTION
Agency FLNRORD - WEST COAST

Wendy Miller

From: Takeuchi, Kazuhiro <Kazuhiro.Takeuchi@VIHA.CA>
Sent: Friday, October 19, 2018 3:09 PM
To: Wendy Miller
Subject: RE: Comprehensive Community Plan Amendment Application RZ000242 (Pacific Gateway Marina - Port Renfrew) - CRD Referral

Hi Wendy,

Thank you for the opportunity to comment on this Community Plan Amendment. The past few years have seen significant advances in linking urban planning with a variety of health outcomes. These include outcomes such as: the encouragement of physical activity, healthier eating, greater safety, cleaner air and healthier living environments, access to health services, food security, age friendly communities, and improved social interaction amongst other potential health criteria. There are a number of aspects from a *Healthy Built Environment* (HBE) perspective that is inclusive of these health outcomes, however we have some notable regulatory concerns we must bring forward prior to any HBE related comments:

- Drinking water - Under the Drinking Water Protection Act and Regulation, any construction, installation, alteration, or extension of (a) a water supply system, or (b) works, facilities, or equipment that are intended to be a water supply system or part of a water supply system, must be issued a construction permit from our Public Health Engineer. Consultation with our Drinking Water Officer will also be needed (https://www.islandhealth.ca/index.php/learn-about-health/drinking-water/drinking-water-legislation-approval) in light of the developments water needs and the second reservoir to expand capacity.

- Liquid waste – For wastewater systems servicing, under 22,700 L flow/day, this office has jurisdiction under the Sewerage System Regulation. For any new system or alteration to an existing septic system property owners must consult with an Authorized Person (as defined in the Regulation) and submit paperwork to this office. For wastewater systems servicing greater than 22,700 L flow/day, please refer to the Ministry of Environment.

- Food premises - The Health Protection and Environmental Services (HPES) department in Island Health has a regulatory role in food premises from construction to operation (under the Food Premises Regulation). Any changes to the existing food premises and the possible construction of new food premises must be undertaken with the appropriate construction and operating permits.

- Proposed spa may include recreational water, e.g. swimming pool and hot tub, and personal service establishment (PSE) amenities - These types of facilities, depending on public use and the nature of services offered, may be privy to the Pool Regulation and Regulated Activities Regulation respectively under the Public Health Act and overseen by Island Health HPES. Again, we would review these activities from construction to operation.

- HBE commentary - could zero in on public trails, diversity of housing access, greenspace/blue space, commercial space-mixed use, and climate change adaptability. Although, due to the above mentioned concerns (#'s 1-4) we have not provided a HBE lens to this rezoning. If however, after the above infrastructure/issues are addressed and your office would like to hear our comments in this regard, we'd be happy to provide them.

If you have any questions regarding the above information, please do not hesitate to contact me.

Sincerely,

Kazuhiro Takeuchi, B.Sc., B.Tech., CPHI(C)
Environmental Health Officer
Gateway Village Health Unit
Suite 201 – 771 Vernon Avenue, Victoria, BC. V8X 5A7
Phone: (250) 519-3401 Ext 33655
Email: Kazuhiro.Takeuchi@viha.ca

Wendy Miller

From: Schneider, Nikki TRAN:EX <Nikki.Schneider@gov.bc.ca>
Sent: Monday, October 22, 2018 10:48 AM
To: Wendy Miller
Subject: RE: Comprehensive Community Plan Amendment Application RZ000242 (Pacific Gateway Marina - Port Renfrew) - CRD Referral

Good Morning,

Please accept this as official response from the Ministry of Transportation and Infrastructure in regards to the Comprehensive Community Plan Amendment for Pacific Gateway in Port Renfrew; Ministry File 2018-05576.

The Ministry has no objections to the proposed Community Plan Amendment at this time. The Ministry will provide comments should the parcel be further subdivided.
Commercial Developments wishing to construct new access onto West Coast Road are required to apply for a commercial access permit through this office.

If you have any questions please do not hesitate to ask.

Thank you,

Nikki Schneider
District Development Technician
Ministry of Transportation and Infrastructure – Vancouver Island District
Ph: 778-974-2633
Fx: 250-952-4508

EMPLOYEE ADVISORY FORUM

Proud Member of the EAF
For employees, by employees

Pacheedaht First Nation
350 Kalaid Street
Port Renfrew, BC
V0S 1K0
Phone: (250) 647-5521
Fax: (250) 647-5561

May 14, 2019

Capital Regional District
Juan De Fuca Community Planning
3-7450 Butler Road
Sooke, BC V9Z 1N1

Attention: Iain Lawrence

Dear Sirs/Mesdames:

Re: Proposed Bylaw No. 4266 and Referral #RZ000242

Thank you for your efforts to inform Pacheedaht First Nation on the two files above as they relate to Pacheedaht territory and processes.

The proposed Bylaw # 4266 will help to update the parameters in Port Renfrew to bring development into compliance, as required in CRD's jurisdictions. PFN recommends it as an interim step to bring more oversight to hazardous conditions currently being challenged, including slope stability, geotechnical review, and compatible land uses with marine stewardship. The long term solution will still require an updating of the OCP, and therefore it is critical for CRD to implement a plan for the OCP to be updated, to reflect current land use and needs from both Pacheedaht and Port Renfrew Community.

Until such time, PFN would like to discuss the possibility of also integrating developmental considerations around heritage and archeological sites, to recognize Pacheedaht's strong rights and title central to Port Renfrew.

PFN is completing the Land Use Plan for the territory and would like to be involved in CRD land use planning conversations to facilitate communication now; with Treaty negotiations progressing, it is important to facilitate this communication to enable both governments to work collaboratively in the region. In particular, any advances in the understanding of flood risks, tsunami risks, liquefaction, or sea level rise would be very helpful to learn from the CRD's perspective. We would be happy to discuss the initial Pacheedaht Land Use Plan when appropriate.

With respect to Referral #RZ000242, PFN has concerns regarding the high strength of claim and cultural values in the area of the application. The development area has

known archeological sites and undocumented sites, both of which are vitally importance to PFN.

The Nation also retains the water lot lease to the Southeast of the marina infrastructure and want to ensure the impacts from this application are better understood. Any infrastructure improvements relating to drainage, grey water, and sewage contemplated by the new zonation will need further conversation.

We look forward to being informed of the next steps for both files

Respectfully,



Kristine Pearson
Pacheedaht Referrals Coordinator

Wendy Miller

From:	Pete Godau <pgodau@sd62.bc.ca>
Sent:	Friday, September 21, 2018 9:44 AM
To:	Wendy Miller
Cc:	Scott Stinson; Harold Cull; Joanne Kimm
Subject:	FW: Comprehensive Community Plan Amendment Application RZ000242 (Pacific Gateway Marina - Port Renfrew) - CRD Referral
Attachments:	REFFERAL-FORM-AGENCIES-RZ000242.pdf; STAFFRPT-LUC-REFERRAL-RZ000242.pdf

Morning Wendy,

At this time the school district does not have any concerns with this development.

Thank you,

Pete

Peter Godau
Director of Facilities| School District # 62
P (250)474-9840 Ext 203 | C (250)361-7330 | pgodau@sd62.bc.ca
Shaping Tomorrow Today

Making a difference...together

Notes from a Public Information Meeting
Held December 11, 2018 at the Port Renfrew Community Centre, 6638 Deering Road, Port Renfrew, BC

SUBJECT: **Comprehensive Community Plan Amendment Application for:**
That Part of Section 97, Renfrew District as Shown Coloured Red on Plan 344R (PID: 009-592-342);
Lot 1, Section 97, Renfrew District, Plan EPP24972 (PID: 028-991-125);
That Part of District Lot 17, Renfrew District Shown Outlined in Red on Plan 347R (PID: 009-575-006); and
Those Parts of Block A and B, District Lot 751, Together with Unsurveyed Crown Foreshore or Land Covered by Water Being Part of the Bed of Port San Juan, All Within Renfrew District, Shown Outlined in Red on Licence V905027, Containing 3.86 Hectares, More or Less

PRESENT: Director Mike Hicks
Staff: Iain Lawrence, Manager, Local Area Planning; Wendy Miller, Recorder

PUBLIC: Approximately 38

The meeting was called to order at 6:05 p.m.

The Director welcomed everyone to the meeting and introduced staff and the application representatives. It was advised that since the Advisory Planning Commission for Port Renfrew is inactive, the proposal has been referred to a public information meeting to receive comments from the community. The information collected from the meeting and from referral agencies and First Nations will be presented to the Juan de Fuca Land Use Committee (LUC) for recommendation to the CRD Board. It was noted that the LUC representative for Port Renfrew, Roy McIntyre, was in attendance.

Iain Lawrence spoke to the staff report and the request to redesignate the subject properties from Marine Protection (M) and Residential (R) to a new Pacific Gateway Marina (PGM) designation, and to rezone the subject properties from Marine (M) and Community Residential – One (CR-1) to a new Pacific Gateway Marina Comprehensive Development (PGM-CD) zone, in order to permit a mix of community uses, year-round residential accommodation, vacation properties, commercial tourism, recreation and marina services to the general public. It was reported that the proposed PGM-CD zone includes six development areas and that each development area has specific regulations.

The planner for the application spoke to a visual presentation, outlining the six development areas proposed by the PGM-CD zone and the design elements intended to compliment the topography and natural environment and protect identified heritage areas.

The architect for the application spoke to the building layout plan advising that buildings will be sited to meet flood plain elevations and that buffering used to stabilize steep slope areas will be used as a walkway to a proposed waterfront trail. Buildings will generally be long, narrow and terraced to allow for viewscapes and solar capture. A natural colour palette will be used to highlight the natural environment. Roofing will be metal.

The planner for the application advised that as the development area does not have the capacity to accommodate onsite sewer infrastructure, an easement has been secured to permit a land-based system on a property located to the south. The system, which will be able to accommodate 3-5 years of development, will need to be authorized by Island Health. Should the project exceed that capacity, the system will be converted into system authorized by the Ministry of Environment. The proposal includes funding a $500,000 water tower, which will double the current water servicing capacity and

increase fire flow capacity. The development proposal will create jobs, provide a tourism boost, and expand the community trail networks.

Janice Hiles, Port Renfrew, referenced the 2003 Official Community Plan (OCP) for Port Renfrew and stated that the number one goal of the OCP is to protect and preserve the natural ecosystem and that the number one objective of the OCP is to preserve natural amenities including major watercourses and tributaries, wetland areas, steep hill sides and the marine foreshore.

Janice Hiles stated concern regarding enforcement of the conditions of the applicant's current temporary use permit, concern regarding the broad scope of the rezoning application, concern regarding the lack of related development permits and an independent environmental study, and concern for the development's overall impact on:
- sewerage
- water capacity
- drainage
- roads and road accesses and the community's one-way bridges
- the volunteer fire department

Janice Hiles noted the community's current level of internet and telephone service and lack of cell phone coverage, safe pedestrian routes, affordable housing and rental housing.

Peter Hovey, Port Renfrew, stated:
- support for development
- concern regarding the lack of parking proposed by the development scheme
- support for increased water system capacity

Iain Lawrence stated that a condition of the zoning application is the installation of a second water reservoir to expand the capacity of the Port Renfrew Water Supply System to the satisfaction of the Capital Regional District.

The Director stated that the second water reservoir will provide water capacity to allow development of properties outside of the subject application area.

Mike Conlin, Port Renfrew, stated that:
- the community has received assurances in the past from other developers that water system infrastructure will be improved
- there are properties currently located in the Port Renfrew Water Service Area that want to hook up to the system
- the proposed water tower will only be able to service low lying properties due to the proposed location of the tower
- the Beach Camp sewerage system will need to be replaced eventually
- developers should be approached regarding improving the Beach Camp sewerage system to pump effluent upland
- should the rezoning proposal proceed, the applicant's land value will increase substantially
- it is understood that written comment regarding the proposal will be submitted by the Pacheedaht First Nation

A member of the public stated support for having developers pay for infrastructure improvements as opposed to residential taxpayers.

The Director stated that there may be opportunity to utilize gas tax funding to provide a pump station to increase water pressure to upland properties and that sewerage grant opportunities are being monitored.

Iain Lawrence responded to a question from a member of the public confirming the location of the area to be deleted from the Marine Protection designation and added to the new Pacific Gateway Marina (PGM) designation.

A member of the public stated support for continued access to the waterfront trails historically used by the community.

The planner for the application outlined the proposed statutory right-of-way in favour of the CRD which would run from the stairway at Baird Road and along the waterfront to the stairway located at Lot 64.

A member of the public stated concern for the rocks placed in the ocean by the applicant (below proposed Development Area D). It was noted that rock replacement has increased the land base significantly and that campers have been using the land and deposing of greywater inappropriately.

Iain Lawrence reported that the licence of occupation issued by the Province permitted the placement of rock and that the licence required the submission of environmental reports.

A member of the public stated that Port Renfrew has seen a lot of environmental pressure over the years, that developments have started and stopped and that some developments have not been done well. The member of the public stated concern regarding sewerage running down to the foreshore, impacting the local ecosystem. Additional concern was stated regarding waste management for the fish processing proposed by the applicant. Support was forwarded for regular fecal coliform testing. Further support was forwarded for the continued enjoyment of the foreshore by residents and visitors.

Jack Julseth, Port Renfrew, stated that tonight's comments have focused on larger community concerns regarding servicing and the environment and that a separate informal community forum may be required to discuss opportunity to work together as a community to address these concerns. Jack Julseth stated support for providing options for accommodation and activities to draw tourists to the community.

A member of the public stated support for prioritizing tourism promotion after servicing infrastructure is in place to support increased tourism activity. The member of the public stated support for developers providing greater amenities and noted that the community cannot get excited over the prospect of another restaurant when the community does not have a grocery store.

Janice Hiles stated support for an OCP review.

Peter Hovey stated support for opportunities to allow residents to invest and work in the community that they live in.

The meeting adjourned at 7:20 p.m.

Hi I am Janice Hiles. My husband Ken and I have a residence in beach camp. We have always loved Port Renfrew.

If anyone would like a copy of my more technical speech that refers each of my points to the OCP please see me later.

We are here tonight to discuss bylaw 4096, the Pacific Gateway Marina policies. I do believe however that the additional 17 cabins that are listed on the PGM website are notable and apparently currently under a separate subdivision application as they do not require a rezone. I will refer to the upper 17 cabins or townhouses as the upland development.

I appreciate seeing folks out to this meeting 2 weeks before Christmas. I can see locals, business owners and cabin owners and summer residents all in attendance as well as members from the CRD There are many people who care about this community.

In 2003 a group of Port Renfrew citizens along with planners from the Juan de Fuca Capital regional District created an official community plan for Port Renfrew which I will refer to as the OCP. The OCP is an official and legal document which lays out the land use management and planning.

That plan helps to guide services and their costs to residents, and to inform those in the plan area about the type of land use activities that are likely to occur in their neighbourhood.

This information allows residents of the planning area to play a role in determining how and when their community will develop or not.

Bylaw 4096 being the amendment before us states that the PGM policies should support the economic, social and cultural well-being of the Port Renfrew community.

The desires and concerns of the resident's makeup much of the official community plan.

The number one goal listed in the OCP is protection and preservation of the natural eco-system, which impacts upon the special character of Port Renfrew

The number one objective listed in this plan is to preserve the natural amenities of the major watercourse and their tributaries, wetland areas steep hill sides and the marine foreshore.

Clearly in 2003 long before climate change concerns, the people of Port Renfrew valued their environment. The residents that I know still value their beaches, the forests and streams and the beauty all around us here.

Infrastructure is a significant concern.

The development policies in the OCP state we should encourage growth and development based upon the capacity of the community's infrastructure capabilities. These are some of my concerns

1) Sewage, and lack of any referral to it on this amendment.

2) Water, do we really have enough, what study proves this.

3) Drainage, and the lack of any referral to it in this amendment.

4) Roads, the accesses are on curves and sketchy.

5) Sidewalks, if you have ever walked with a child and your dog on Parkinson Road you know what I mean.

6) Fire Protection, how can our fire Department continue to have the volunteers to staff and service the area when the only housing we create is for tourists?

7) One way bridges

8) Internet, telephone and lack of cell phone coverage.

9) Affordable housing and rental housing.

This development further stresses our entire infrastructure!

Currently this Property is Zoned Community Residential One which would allow each property to have a duplex and a cabin. There appears to be only two buildable properties but because maps provided in this document are different from each other it is difficult to even know how many properties there are.

The amendment before us is not clear about what is intended. It states there will be year round accommodation, vacation properties, commercial tourism recreation and Marina services. This includes hotels, motels food services, fish plants, retail establishments, tourist facilities.

How can we really know what or how much construction is going to happen because it seems like they have covered their bases to do just about anything.

This amendment seems to provide two amenities. The first being increased water capacity. Clearly the development of this property needs that extra capacity to support its own growth.

The second is a path. Please note however that there is no mention of that path being along the waterfront.

Now I would like to speak to you about what has been done.

Pacific Gateway Marina was issued a temporary permit by the CRD in May of 2013.

These were the conditions of that permit.

a. The impacts to any of the existing land uses are kept to a minimum.
b. It does not involve the construction or erection of a new building.
c. It does not involve numerous delivery trucks travelling to the site on a daily basis.
d. The activity serves the needs of the community or is a part of the tourism sector.
e. The activity will be carried out wholly within the principal building.

Clearly most of us know what this resulted in.

They have built an enclosed building with a year round restaurant, have had regular deliveries, the mountains were blown up and the vegetation decimated and they have erected numbered RV sites along the waterfront for camping.

In 2013 the people of Port Renfrew were invited to comment or attend a meeting in Sooke regarding this Temporary permit. 16 people wrote letters. That is nearly a tenth of the population who had concerns.

I must question why these contraventions of the temporary permit have not been addressed.

I would also like to bring attention to the fact that no development permit has been asked for in this amendment.

Our own OCP states the CRD will assist the applicable Provincial and Federal ministries in protecting the ecosystem along the foreshore area and estuaries in regards to:

1) Buildings in the foreshore area

2) Removal or addition of fill in the marine foreshore area

3) Retention of foreshore vegetation

A development permit would require an independent study by a qualified environmental professional. This study would look at the foreshore and the streams as well as the remaining vegetation and trees.

I would like to know why a development permit is not being required for both the Pacific Gateway lands and the upland lot.

To summarize I believe that the people of Port Renfrew and many businesses recognize the importance of our natural environment and want to preserve it as best we can. We have concerns about infrastructure, our roads, sewer, water, drainage.

The proposal before us seems to present an unknown amount of development, but most certainly a huge increase in density. The CRD has not held the Pacific Gateway accountable in regards to the terms of the temporary permit, and lastly they have not asked for an independent environmental study.

I have spent many hours studying these bylaws, amendments and zoning documents I cannot identify how amendment 4096 supports the economic, social and cultural wellbeing of this community.

People tell me you cannot fight big business. I am not asking for a fight. I am asking that the rules that were laid out in Port Renfrew's Official Community Plan be adhered to and that the CRD enforces them.

Thank you for listening.

jdf info

From: John Wells
Sent: Saturday, December 15, 2018 10:52 AM
To: jdf info
Subject: Pacific Gateway Project

I'm in full support of this development moving forward. This is great news for our community.

It's not just the employment opportunity's , but the social well being of this community I see the benefits of keeping our young people in town.
The way to do this is supply employment & affordable property where those who wish to stay full time can.
Ownership of your own property is a great motivator.

Pacific Gateway has shown to pay good wages, so those local young members can live here.

I understand we are short on local affordable housing.

I would like to work with CRD on helping to elevate this issue. I believe it's a team (town) effort to help.

For the future growth of our community and social well being this project is what's needed.

Thank you for your time

John Wells

jdf info

From: Ken and Janice Hiles
Sent: Monday, December 17, 2018 8:03 AM
To: jdf info
Subject: Fw: Port renfrew meeting.

Sent: Monday, December 17, 2018 8:00 AM

Thank you for the information meeting On December 11th.
I would like to voice some concerns I have.

1) there should be unit restrictions on each of the zones that the Purdy group has asked for.
2) they stated at the meeting that there would be no camping on part D but show it on their maps on their display boards as having camping.
3) they stated at the meeting that there would be a water front trail but this is not written or shown in any documentation.
4) they show no boat trailer parking so are the locals going to continue to be able to launch boats.
5) in Mill Bay the Purdy group promised to replace our boat launch when they destroyed the existing one when they developed but years later we still don't have one.
6) it is difficult to trust what this group says, we need everything we are willing to agree to extremely clearly written and examined by a number of professionals.

I believe this project should not move forward until we have a new OCP. This project along with the Purdy uplands seems to house about 90 living units. The residents and home owners in Port Renfrew deserve more of a say in the development of their community.

Wendy Miller

From: Wendy Miller
Sent: Tuesday, December 18, 2018 10:11 AM
To: Wendy Miller
Subject: FW: Purdy Group zoning amendment 2018

From: Ken Hiles [mailto
Sent: Monday, December 17, 2018 5:53 PM
To: Ken and Janice Hiles
Cc: jdf info <jdfinfo@crd.bc.ca>
Subject: Re: Purdy Group zoning amendment 2018

On Mon, Dec 17, 2018, 2:20 PM Ken Hiles wrote:

Hello I am writing this email in regard to the 2018 Pacific Gateway Marina rezone amendment. I feel that the PGM (Purdy Group) are not giving near enough ammenities for the upgrade in zoning they are asking for. I own property in Beach Camp and I therefore would like to see the boat launch at the PGM property be covenanted to remain for public use and at no charge. I also have a home in Cobble Hill near in Mill Bay. When the Purdy Group (Mill Bay Marine Group) purchased the Mill Bay Marina in 2010 Andrew Purdy after removing the boat launch on the property promised that he would build a new boat launch and parking for pubic use if the CVRD gave him the go ahead on the marina and condo development. To this day Dec. 17 th 2018 ,no boat launch has been built and the area residents have no means to launch in this area. The nearest boat launch is 12 kilometers north of Mill Bay. Please don't let this happen in Port Renfrew. I would also like to see a covenanted trail along waters edge from the CRD property at the edge of Beach Camp and along the foreshore of the PGM property to the marina. This is where the residents of Port Renfrew have always been able to walk unrestricted.
Thank you for this consideration.
Ken Hiles

Wendy Miller

From: Wendy Miller
Sent: Friday, January 18, 2019 10:20 AM
To: Wendy Miller
Subject: Port Renfrew Pacific gateway proposal

From: Cam Hamilton
Sent: Thursday, January 17, 2019 12:36 PM
To: 'jdinfo@crd.bc.ca'
Cc:
Subject: Port Renfrew Pacific gateway proposal

To whom it may concern,

I am writing this letter for my concerns on the Pacific gateway proposal. I am a concerned home owner with a house in this area, and a volunteer firefighter with another small town ,my concern is with the expansion comes more people and not enough people that live in the town year round for fire fighters , they are hard to get volunteers when there is not enough people living there to pull from. My other concern is not enough water supply for fighting any fire which may arise from this expansion, there is fuel on site and wooden structures that would need protection and not enough water supply. I know they are stating they are going to donate$ 500,000 dollars to help expand the water system but that is probably only half enough for these upgrades .

Yours Truly
Cam Hamilton
Deputy Chief Youbou Fire Dept.

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6. Delegation – Juan de Fuca Community Planning

a) Comprehensive Community Plan Amendment Application - RZ000242

That Part of Section 97, Renfrew District as Shown Coloured Red on Plan 344R (PID: 009-592-342);

Lot 1, Section 97, Renfrew District, Plan EPP24972 (PID: 028-991-125) (17110 Parkinson Road);

That Part of District Lot 17, Renfrew District Shown Outlined in Red on Plan 347R (PID: 009-575-006) (6598 Baird Road); and

Those Parts of Block A and B, District Lot 751, Together with Unsurveyed Crown Foreshore or Land Covered by Water Being Part of the Bed of Port San Juan, All Within Renfrew District, Shown Outlined in Red on Licence V905027, Containing 3.86 Hectares, More or Less

Iain Lawrence spoke to staff report to the Juan de Fuca Land Use Committee and the request to redesignate the subject properties from Marine Protection (M) and Residential (R) to a new Pacific Gateway Marina (PGM) designation, and to rezone the subject properties from Marine (M) and Community Residential – One (CR-1) to a new Pacific Gateway Marina Comprehensive Development (PGM-CD) zone, in order to permit a mix of community uses, year-round residential accommodation, vacation properties, and commercial tourism, recreation and marina services to the general public. Iain Lawrence provided an overview of the six development areas proposed by the PGM-CD zone.

Iain Lawrence responded to questions from the Commission confirming that:
- the current marina is operated under a temporary use permit issued by the CRD
- Bylaw No. 4017, "Capital Regional District Regional Growth Strategy Bylaw No.1, 2016" (RGS) designates the marina properties as an Urban Containment Policy Area
- Section 445 of the *Local Government Act* requires that all bylaws adopted by a regional district board after the Board has adopted a RGS, be consistent with the RGS
- as the application proposes an amendment to the Port Renfrew Official Community Plan (Schedule A, Bylaw No. 3109, "Comprehensive Community Plan for Port Renfrew Bylaw No. 1, 2003"), the bylaw will be referred to the CRD Board for a determination of consistency prior to first reading
- the CRD is reviewing the sewer and water services proposed by Bylaw No. 4096

Iain Lawrence directed attention to Section 4.5.1 of Bylaw No. 4096 which proposes construction of a public trail and staircase providing connection between the Juan de Fuca Community Parks trail on Lot 64 and Baird Road.

Commission comments included:
- stairs at Baird Road are in poor condition
- concern for maintenance costs related to the staircase
- the development will want to keep the staircase in good condition as the focus of the proposal is to draw tourists to the community
- there is a roughed-in trail that has been used by residents that connects to Godman Road
- support for considering locating a trail with guard rails on higher land to avoid pedestrian and boat trailer conflicts
- a trail on the higher land would continue to provide water views

- the buildings proposed by the application have not been built
- the proposed higher land trail may not have the same water views once these structures are built
- the dominant user of the waterfront trail may be limited to the users of the marina
- the public generally desires continued access to and along the waterfront

Iain Lawrence responded to a question from the Commission, confirming that the Commission previously considered park dedication requirements for the 6-lot bareland strata subdivision (SU000687) on Lot 1, Plan EPP24972. It was advised that the CRD Board supported the Commission's recommendation that parkland dedication be received in the form of cash-in-lieu for application SU000687 and that the trail and staircase proposed by Bylaw No. 4096 are amenity provisions.

In response to Commission concerns related to trail standards, Don Closson noted that staff will be working with the developer as proposed Bylaw No. 4096 outlines the requirement that provision of a public walking trail and staircase are to be constructed in a location and to a standard approved by Juan de Fuca Electoral Area Community Parks and Recreation.

MOVED by Commissioner Braunschweig, **SECONDED** by Commissioner Sloan that the Commission accept the amenity in the form of a continuous statutory right-of-way, trail and stairway from Lot 64 to Baird Road which is open to the public with the trail and staircase maintained by the development.

CARRIED

b) Subdivision Application SU000697 - Subdivision of Lot 93, Renfrew District, Except Part in Plan 23812 – West Coast Road

Regina Robinson spoke to staff memo to the Commission and the referral received from the Ministry of Transportation and Infrastructure (MoTI) for a proposed 3-lot subdivision of Lot 93 on West Coast Road. It was confirmed that no park dedication is required for the application; however, Section 75(c) of the *Land Title Act* requires that if land to be subdivided borders on a body of water, the bed of which is owned by the Crown, access must be given by highways 20 m wide to the body of water at distances not greater than 200 m between centre lines, or, in a rural area where the parcels into which the land is subdivided all exceed 0.5 ha, at distances not greater than 400 m between centre lines. A Memorandum of Understanding (MoU) between the CRD and the MoTI allows that subdivision applications that require access to water in accordance with Section 75 will be referred to the Commission prior to issuance of preliminary layout approval. It was further confirmed that the applicant submitted a request to the CRD and the MoTI to waive the statutory requirement to provide access to water.

Don Closson stated that:

- there is a provincial access to water to the east of Fossil Bay Resort, which is located between proposed Lot 1 and proposed Lot 2
- the subject property is steep and benched
- there is little sign of public historic use of the subject property
- should the waiver not be supported, the applicant has proposed that the water access be located at the west end of proposed Lot 2

Appendix G: Environmental Report

Cascadia Biological Services

Cascadia Biological Services
772 Goldstream Ave
PO Box 27034
Victoria, BC
V9B 5S4

March 10th 2019

CRD Planning – Port Renfrew
Attn: Senior Planner

Environmental Impact Assessment
6598 Baird Road/17086 Parkinson Road
Capitol Regional District (CRD) – Juan de Fuca Electoral Area
Port Renfrew BC

Purpose

This report is in response to a request by the CRD (Juan de Fuca Electoral Area) for an Environmental Assessment of potential impacts resulting from proposed disturbances associated with a municipal residential land development located in the community of Port Renfrew. The civic addresses for the proposed development are located at 6598 Baird Road and 17086 Parkinson Road (refer to Attachment I). Specifically, the disturbances are associated with a proposed residential development including a stormwater outfall and walking path required to satisfy requirements of the Preliminary Lot Approval (PLA) issued by the CRD. This letter report will therefore accompany and form an addendum to the development permit application (DPA) or equivalent. The DPA is required as the development and associated infrastructure trigger the DPA at the time of development. Located approximately 700m west of the Port Renfrew town centre, the two parent property(s) being developed measures approximately 4.0 hectares and has approximately 575m of marine shoreline.

Typical site photographs are presented following this letter report in Attachment II.

Background

At the request of the owner, Cascadia Biological Services was retained to conduct an overview environmental impact assessment of proposed works associated with a residential development on parent lot(s) located at 6598 Baird Road and 17086 Parkinson Road located in the Community of Port Renfrew. The proposed disturbances include land alterations and disturbances to 1 hectare of land as shown in Attachment III. These areas are currently in a somewhat natural state and have been left undisturbed from previous development stages within the subject property(s). As a result, Cascadia

Cascadia Biological Services

Biological Services was charged with conducting an overview environmental assessment of the proposed disturbed area. The assessment was completed over a four-day period in January and February of 2019. Prior to the field visit, an overview search of existing environmentally significant areas was conducted including a search of the British Columbia Conservation Data Centre (BC CDC) rare element occurrences of which none were documented.

Environmental Assessment Findings

1) **Land Use –** The proposed disturbed area including the marine riparian zone along the foreshore of the subject properties have been utilized for residential and industrial purposes for many years. Most of the native vegetation in and around the subject property has been replaced by lawns and ornamental gardens comprised primarily of introduced species or by larger areas of crushed rock used for levelling of future building pads. Larger industrial uses are historic and sporadic along the foreshore environment. Some smaller older second-generation polygons do exists in and around the surrounding area however, have been severely fragmented due to urban encroachment. Other environmentally significant features within 500m of the subject property include the steep coastal bluffs/cliffs. Land Use within the marine environment along the subject and adjoining properties is primarily limited to docks, gangways and erosion control platforms extending into and along the water. Most of these structures extend no more than 30m into the harbour waters.
2) **Subject Property** - The potential development permit area within the subject property measures approximately 560m (length along foreshore) X 15m (development permit area width) for a total area of 8400 m^2 and has been previously disturbed (>80%) except for two small polygons located along both the eastern and western sections of the property (refer to Attachment III). Existing vegetation within the proposed disturbed area associated with the new residential development will include disturbances to most of the remaining natural state polygons. Approximately 10 larger trees (older second generation) will be cut within the within the proposed disturbed areas
3) **Rare Plants/Wildlife/Ecosystems** – From our assessment, there are no environmentally significant polygons/attribute along the proposed disturbed area associated with the proposed residential areas. From our assessment, several larger older second-generation Douglas fir and spruce trees will be removed from the natural state area. These trees have been surveyed with drones and spotting scopes as well as assessed on the ground to determine if any raptor nests, nesting cavities or blue heron rookeries were present. None were observed during our assessment of the property (s). No rocky outcrops, wildlife trees/dens, stick nest or other environmentally significant attributes including sensitive ecosysterns were noted along the proposed disturbed area of the property. The Provincial rare element occurrences program which documents the potential for existing rare elements including rare vegetation, ecosystems and wildlife is presented in Attachment IV. Existing mapping shows the potential occurrences of both a

Cascadia Biological Services

vascular plant named nodding semaphonegrass as well as the potential in the area for the northern red-legged frog. Both of the rare elements listed above were not observed on the subject property(s) nor are expected to occur on site given the previous disturbances as well as existing conditions.

Conclusions

From my assessment of the site in January and February of 2019, I have come up with the following conclusions;

1) The subject property(s) along the marine environment and immediate upland areas of the property has been previously disturbed to over 90% of the total property area;
2) No environmentally significant attributes were noted along the proposed natural state areas;
3) No raptor nest, nesting cavities or heron rookeries were observed during our assessment

Options and Recommendations

It is in my opinion that the proposed disturbed area as shown (refer to Attachments III) for the subject property located at 6598 Baird Road and 17806 Parkinson Road in the Community of Port Renfrew will not negatively impact the area at a community scale if the following recommendations are adhered to:

1) All works will be monitored by the designated Qualified Environmental Professional (QEP). The QEP will periodically visit the site during the construction period to ensure the impacts to the environment are negligible. It is anticipated that one site visit each week or even bi-monthly will be sufficient depending on what time of year the disturbances take place. Any contraventions will be forwarded by the on-site biologist to the appropriate agencies;
2) Sediment fencing should be installed immediately outside of the proposed disturbed areas. The designated QEP will advise the appropriate agencies that the sediment fencing is in place and that the proposed works may proceed;
3) All equipment required for the proposed works including backhoes and excavators etc. need to be fuelled outside of the 15m marine foreshore area unless the fuel stations are confined to an absorbent bath containment system. QEP to designate safe fuelling area and/or best management practices directly to the builder;
4) As a result of the proposed disturbed areas near the marine foreshore, Cascadia Biological Services recommends that 2 nesting boxes be erected at select locations within the subject property to improve upon existing passerine nesting cavities. QEP to erect the nesting boxes and notify the appropriate agencies once activities are deemed complete and the nesting boxes are in place;

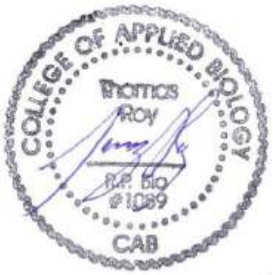
Cascadia Biological Services

5) All trees (approximately 10 in total) to be removed within 30m of the marine foreshore area, must be replaced at a 2:1 ratio on-site within those same areas. QEP to determine where they are to be re-planted;
6) All tree removal should take place outside of the bird nesting season which begins mid-April and ends mid-July.

If you have any questions regarding this assessment, please do not hesitate to contact me by means below.

Thanks for your time.

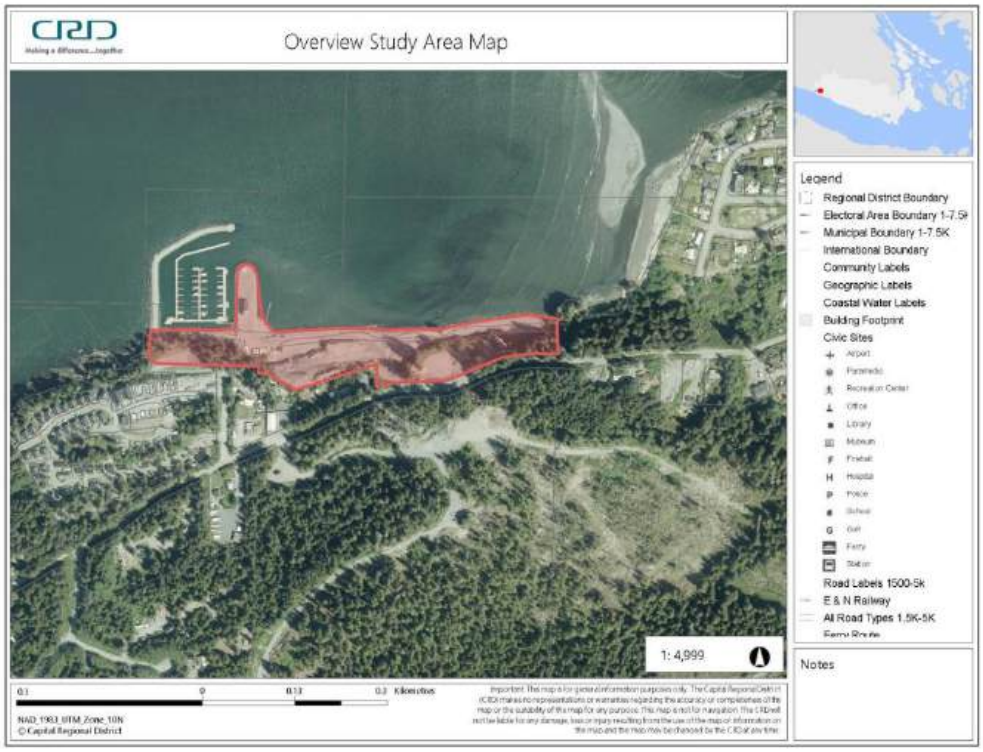




Thomas Roy, R.P. Bio., QEP
Cascadia Biological Services

Cascadia Biological Services

Attachment I – Overview Map of Site



Cascadia Biological Services

Attachment II – Typical Site Photographs



Plate #1. Typical view of the subject property(s)

Cascadia Biological Services



Plate #2. Typical view of the subject property(s)

Cascadia Biological Services



Plate #3. Typical view of the subject property(s)

Cascadia Biological Services



Plate #4. Typical view of the subject property(s)

Cascadia Biological Services

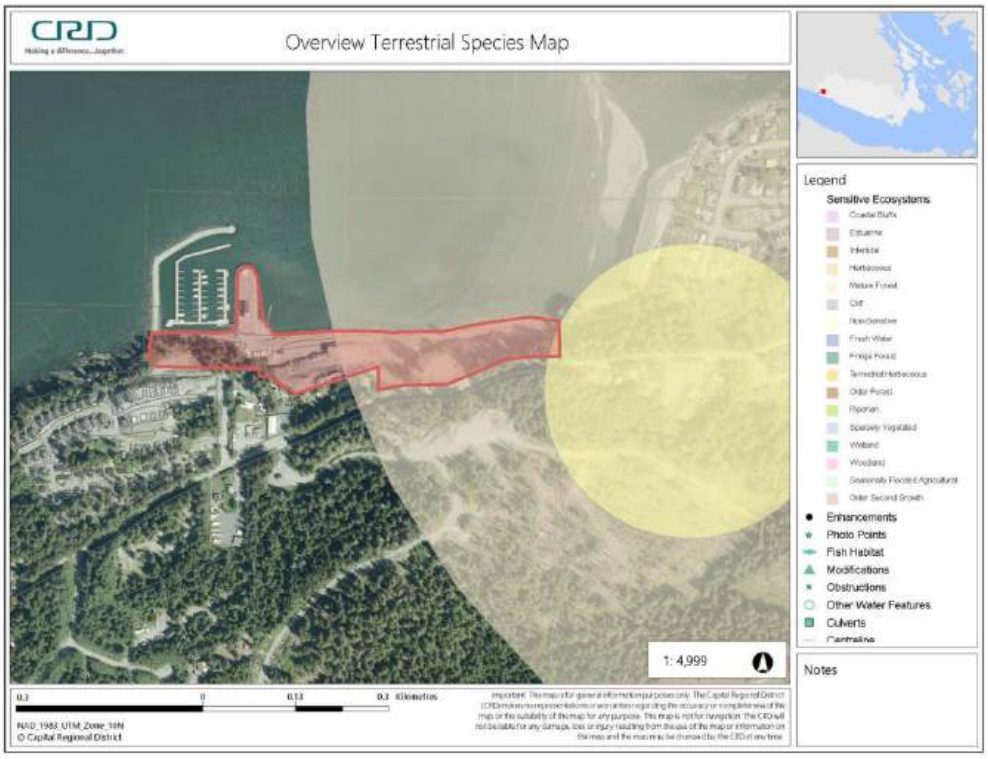
Attachment III – Proposed Disturbed Area(s)



Note: Maps are reduced scale

Cascadia Biological Services

Attachment IV – Rare Elements Occurrence Map



Note: Maps are reduced scale

Making a difference...together

AMENDED SUPPLEMENTARY REPORT TO
JUAN DE FUCA LAND USE COMMITTEE
MEETING OF TUESDAY, SEPTEMBER 15, 2020

SUBJECT **Comprehensive Community Development Plan Amendment Application for: That Part of Section 97, Renfrew District as Shown Coloured Red on Plan 344R (PID: 009-592-342); Lot 1, Section 97, Renfrew District, Plan EPP24972 (PID: 028-991-125); That Part of District Lot 17, Renfrew District Shown Outlined in Red on Plan 347R (PID: 009-575-006); and Those Parts of Block A and B, District Lot 751, Together with Unsurveyed Crown Foreshore or Land Covered by Water Being Part of the Bed of Port San Juan, All Within Renfrew District, Shown Outlined in Red on Licence V905027, Containing 3.86 Hectares, More or Less**

ISSUE SUMMARY

This report provides further supplementary information and a revised bylaw for the Report tabled by the Juan de Fuca Land Use Committee (LUC) on June 16, 2020, and the supplementary report provided as part of the September 15, 2020, Land Use Committee meeting agenda package in response to correspondence received from Pacheedaht First Nation on September 8, 2020.

BACKGROUND

Subsequent to concerns raised by Pacheedaht First Nation in their correspondence of June 16, 2020, receipt by JdF Planning of additional information from the applicant, and the writing of a supplementary report to the September 15, 2020, JdF Land Use Committee meeting, further correspondence dated September 8, 2020, (Appendix A) was received from Pacheedaht expressing remaining concerns related to areas of cultural and archaeological significance within the subject properties and providing three potential solutions.

In response to those remaining concerns, the applicant has agreed to remove the property, known colloquially as “Little Renfrew” (legally described as That Part of District Lot 17, Renfrew District Shown Outlined in Red on Plan 347R; PID: 009-575-006) from the application. JdF Planning staff have amended Bylaw No. 4096 accordingly by removing said property from the amendments to the Land Use Designation and Zoning maps of the Port Renfrew Comprehensive Community Development Plan, Bylaw No. 3109, and by removing Development Areas E and F from proposed Bylaw No. 4096 (Appendix B).

CONCLUSION

In response to the September 8, 2020, correspondence from Pacheedaht First Nation, and at the applicant’s request, JdF Planning staff have amended proposed Bylaw No. 4096. Staff recommend that original recommendation from the September 15, 2020, Land Use Committee report remain unchanged, but that the amended version of the bylaw be considered for first and second reading.

RECOMMENDATION

That the Land Use Committee recommends to the Capital Regional District (CRD) Board:

a) That the referral of proposed Bylaw No. 4096, “Comprehensive Community Development Plan for Port Renfrew, Bylaw No. 1, 2003, Amendment Bylaw No. 13, 2020” to a Public Information Meeting in Port Renfrew, the Juan de Fuca Electoral Area Parks and Recreation Advisory Commission; CRD departments; BC Hydro; Cowichan Valley Regional District; Department of Fisheries and Oceans; District of Sooke; Island Health; Ministry of Environment and Climate

Change Strategy; Ministry of Forests, Lands and Natural Resource Operations; Ministry of Transportation and Infrastructure; Pacheedaht First Nation; RCMP; Sooke School District #62 be approved and the comments received;

b) That proposed Bylaw No. 4096, "Comprehensive Community Development Plan for Port Renfrew, Bylaw No. 1, 2003, Amendment Bylaw No. 13, 2020" be introduced and read a first time and read a second time;

c) That in accordance with the provisions of Section 469 of the *Local Government Act*, the Director for the Juan de Fuca Electoral Area, or Alternate Director, be delegated authority to hold a public hearing with respect to Bylaw No. 4096; and

d) That prior to adoption of the bylaws, the applicant:
   i. Register a covenant on the title of the lands pursuant to Section 219 of the *Land Title Act* in favour of the CRD securing the Archaeological Impact Assessment prepared by Duncan McLaren, PhD, dated July 31, 2018, and the geotechnical report prepared by Bruce Dagg, P.Eng., dated November 19, 2015.

Submitted by:	Iain Lawrence, MCIP, RPP, Manager, Juan de Fuca Community Planning

ATTACHMENT:

Appendix A: Correspondence from Pacheedaht First Nation, September 8, 2020

Appendix B: Bylaw No. 4096

Appendix A: Correspondence from Pacheedaht First Nation

Pacheedaht First Nation
350 Kalaid Street
Port Renfrew, BC
V0S 1K0
Phone: (250) 647-5521
Fax: (250) 647-5561

September 8, 2020

VIA EMAIL

Capital Regional District
625 Fisgard Street
Victoria, BC V8W 1R7

Attention: **Iain Lawrence**
Manager, Juan de Fuca Community Planning
(ilawrence@crd.bc.ca)

Dear Sirs/Mesdames:

Re: **Proposed New Pacific Gateway Marine Comprehensive Development Zone**
Comprehensive Community Development Plan Amendment Application ("Application") for:
That Part of District Lot 17, Renfrew District Shown Outlined in Red on Plan 347R (PID: 009-575-006) (with reference to the Draft By-law, "Lot 1");
That Part of Section 97, Renfrew District as Shown Coloured Red on Plan 344R (PID: 009-592-342) ("Lot 2");
Lot 1, Section 97, Renfrew District, Plan EPP24972 (PID: 028-991-125) ("Lot 3", and together with Lots 1 and 2, the "Uplands"); and
Those Parts of Block A and B, District Lot 751, Together with Unsurveyed Crown Foreshore or Land Covered by Water Being Part of the Bed of Port San Juan, All Within Renfrew District, Shown Outlined in Red on Licence V905027, Containing 3.86 Hectares, More or Less ("Water Lot")

Thank you for your letter dated July 31, 2020, in which you reference the concerns we set out in our letter dated June 16, 2020 in relation to the above-noted Application.

As you referenced in your letter, the CRD's existing development application process does not allow for our meaningful participation for the consideration of proposed developments within our traditional territory. The process employed to date for this Application has not resulted in any meaningful opportunity for our input on the proposed rezoning, or for dialogue between the CRD and Pacheedaht about our concerns. As you noted, Pacheedaht was merely advised of the Application, and our earlier comments were attached to the staff report. This approach has not resulted in any real engagement on the Application.

In order to support a meaningful discussion about our concerns with the Application, we have set out some of our main concerns with the Application as currently proposed below.

Concerns with PGM's Application as Proposed

1. **Separation of Marina and Uplands Development Portions of Application**

As you noted in your letter, Pacific Gateway Marina Sport Fishing and Marina Inc. ("PGM") engaged in some consultation with Pacheedaht in connection with the application for the licence of occupation ("LOO") from the Province and the temporary use permit ("TUP") from the CRD. PGM's marina site was changed in late 2015. The marina layout has been fairly well established since that time. This stands in contrast to the Uplands development, a serious plan for which has only been disclosed in 2020.

It is our understanding that PGM was seeking to secure an LOO over the Water Lot, where the marina is located, from FLNRORD at the same time that it was seeking to obtain a TUP from the CRD. We recall that Juan de Fuca Electoral Area Director Mike Hicks was unable to participate in discussions with the Province in connection with the LOO application due to concerns that he may have been in a position of personal conflict as the owner of a fishing charter and lodge business, which would be a potential patron of the marina. However, the CRD was not excluded from the Province's process for the LOO.

The Province granted a two-year LOO to PGM on February 16, 2016. Also in 2016, we understand that the CRD granted PGM a three-year TUP (our copy is undated and unsigned). Both the TUP and the LOO set out similar permitted activities and cover only the Water Lot, not the Uplands. The marina is now built, and, no matter the status of the LOO or the TUP, will not be removed.

Although we had conversations with the Province with respect to the granting of the LOO and the development of the marina, in our view, not all matters were resolved. It is also important to note that this consultation did not touch on the Uplands development.

Now that the marina has been in operation for four years, we, together with the Port Renfrew community and the CRD, have had the opportunity to observe and experience the impacts from its operations. Our concerns echo those concerns we expressed back in 2015. We also have additional concerns, such as about the disposal of grey water and sewage. Our community is extremely close to the marina; any marine impacts have a direct impact on our community, land management, and important resource harvesting.

We believe that the zoning for the marina requires multi-agency input to ensure that the marina's operations are conducted in a way that minimizes their environmental effects and impacts to our Aboriginal rights. Although the foreshore is under Provincial jurisdiction, the Comprehensive Community Development Plan ("CCDP") sets land use policies around a marine-protection zone. This demonstrates that the CRD perceives a role in respect to zoning and land use in connection with the marine area, by, as noted in the CCDP, "non-government persons for non-government purposes."[1] The CRD should bring its own experience to ensure that the types of operations it permits fit in harmoniously with the region, keeping in mind sustainability, community development, and priorities for investment in the Port Renfrew community, such as water and sewer infrastructure, and housing for the community.

Given the different considerations at play and the different stages of engagement that have occurred with respect to planning and operations as between the marina and the Uplands development, we suggest that the PGM marina zoning be separated from the residential development application and proceed on a separate track. We also suggest that the CRD think carefully about the options at its disposal with respect to the zoning of the marina, and not take the position that FLNRORD completed this job back in 2016.

[1] CCDP, section 4.2.

It is important to remember that at the time the LOO was issued, it was just the marina being considered and none of the residential development of the Uplands. The level of Uplands development currently being proposed was not a focus at the time, let alone subject to assessment or consultation with Pacheedaht. From our perspective, the Uplands development poses a completely different and serious set of impacts, including to the network of sea caves adjacent to the PGM site. These impacts were not considered when the marina was approved. The proposed Uplands development is a distinct and complex project that needs to be subject to its own thorough assessment before being allowed to proceed. It cannot be allowed to piggy-back on the existing approvals for the marina.

Finally, with regards to the marina portion of the Application, we ask that you apprise us of the current status of the TUP, given that the three year term would have expired last year.

2. **CRD's Consideration of Proposed Uplands Development**

As noted above, the PGM marina plan, reflected in the LOO and the TUP, has been known since late 2015 / early 2016. The development plan for the Uplands seeks to piggyback on that work without engagement specific to the area, which contains important archaeological sites. In Pacheedaht's view, the area around the sea caves should include a no-build zone. The work that has been done to date has demonstrated the risk to carrying on residential development; we should learn from the developments that have been previously approved (in different zoning) rather than use those developments as a basis for approving a development that is even closer to the sea caves.

You mention the following reports relevant to the CRD's consideration of the Uplands. These reports need to be discussed with Pacheedaht.

a) Archaeological Report

The Archaeological Inventory and Impact Assessment of Sea Caves in the Vicinity of the Pacific Gateway Marina Project in Port Renfrew BC by Duncan McLaren, Cordillera Archaeology dated July 31, 2018 (the "AIA") that you reference in your letter was prepared with Pacheedaht input. We have concerns with your suggested approach of preparing summaries of the AIA and November 19, 2015 Ryzuk geotechnical report ("Ryzuk Report") that is attached for the September 15, 2020 Land Use Committee (the "Committee"), and also with the proposed measure of registering a covenant that would set vibration thresholds. This approach seems likely to distill a complex report touching on archaeology, history and environment down to a set of construction guidelines.

As noted in our June 16, 2020 letter, it is not sufficient or appropriate to limit the Committee's considerations of impacts to a report written about us. Further, your comments relating to the report suggest to us that you are taking points from the AIA selectively. We offer some comments on work that went into the AIA, the AIA itself and some limitations.

The AIA is the product of the latest effort to learn more about the network of sea caves adjacent to the PGM site. As noted in the AIA, the work resulted in the registration of a heritage site (DdSc-24, the "Registered Cave"), being the one burial cave that has been located and identified. This burial cave is the subject of much of the AIA. However, we draw your attention to the map at Figure 7 of the AIA, which labels nine known sea caves on or near PGM's lands and development plans.

Pacheedaht oral history indicates that there is an additional burial cave, which has not yet been found. The AIA notes that possible candidates are caves 1, 2, 5, or possibly 7 (marked on Figure 7 of the AIA).[2] The AIA notes that Cave 5 may be a significant and large cave feature with a high archaeological potential; Cave 7 includes an area

[2] AIA, page 17, 7.A5.

above the high tide line with a moderate archaeological potential.[3] Technology is advancing at a rapid pace, even since the work conducted in connection with the AIA. Pacheedaht has not yet lost hope of finding the second burial cave. We do not accept that the caves that have not yet been found or accessed are inaccessible.

Our oral history indicates that the network of sea caves was not limited to the area indicated on Figure 7, but was extensive, and led to Botanical Beach. More contemporary accounts from Port Renfrew residents describe the network of sea caves being used to walk to the general store. In our view, there is more to learn, protect and restore about the network of sea caves. In the highlighting of the registration of the Registered Cave, and in subsequent summaries and reference, there is a tendency to place emphasis on the Registered Cave to the exclusion of the cave network and the caves that have not yet been accessed.

The AIA focuses on the damage that has been done to the Registered Cave and also on mitigation measures that were recommended to preserve the Registered Cave from further damage during construction or due to more people accessing the Registered Cave site in connection with the marina construction and property development by Three Point Properties. We note that the AIA was not evaluating any PGM proposed residential development plan of the Uplands, as there was not one to evaluate.

Pacheedaht emphasizes the historical, spiritual and ecological importance of the cave network. In addition to this historical importance, Pacheedaht views the cave network as having an ongoing cultural importance, and we hope to be able to once again use the Registered Cave for ceremonial purposes. The mitigation measures proposed to date, such as a fence preventing access to the Registered Cave, are insufficient protection measures and would also block Pacheedaht ready access to this important site. Development of the area will irreparably harm the sea caves and accordingly we reiterate our view that building near the cave network should not be permitted, as it is likely to harm the cave network.

We continue to have serious concerns about the proposed development blocking off our access and permanently damaging this incredibly significant site, which will have serious adverse effects on our cultural connection to the sacred burial cave and our ability to conduct ceremonies there.

b) Geotechnical Report

The AIA references the blasting guidelines set out in the Ryzuk Report as among the management recommendations that PGM should follow around the Registered Site. However, Pacheedaht has concerns that neither the AIA nor the Ryzuk Report give sufficient weight to the uncertainty and irreparable harm that are likely to arise in connection with residential development.

The Ryzuk Report notes that the impact of vibrations on caves is not as well understood as on other structures.[4] In making their recommendations, the consultants reference one study from England about blasting from quarrying near limestone caves.[5] We are unsure if this study is applicable to the sea caves, which are not limestone, and if it should be relied on. For example, these caves are shale. Fallen fragments that have impeded cave access have been observed and reported on to the authorities. The consultants set out an important proviso to their conclusion that blasting may be safely carried out: "it is certainly possible that additional rockfall may be experienced from time to time, and such may have no discernible trigger mechanism."[6]

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[3] AIA, page 16, 3rd additional recommendation.
[4] Page 4.
[5] Page 4.
[6] Page 5.

The Ryzuk Report also references the blasting that previously occurred in connection with the development of the Wild Coast Cottages, behind Lot 1. The Report notes that the blasting was carried out with no monitoring. Although there were no reported impacts, the consultants noted "the possibility that blasting at the Wild Coast Cottages development may have contributed to the apparent relatively recent rockfall event that partially blocked the cave entrance cannot be discounted." It also notes that "anecdotal evidence suggests that the fractured phyllite or slate rock at the cave entrance has been unstable for some time, although it is possible that such has been exacerbated by recent construction activity in the area."

The AIA notes that "some of the West Coast Cottages may be built on relatively unstable sea cave roofs. Erosion in and around these features appears to be more rapid than away from them as indicated by the V-shaped indents in which the caves are situated." These observations demonstrate that past development behind Lot 1 may have occurred on ground less stable than it was understood to be, and may have impacted the ground and the sea caves below. In our view, this demonstrates that the further construction associated with the proposed development, of Lot 1 in particular, poses serious risk.

c) Environmental Report

The Environmental Impact Assessment conducted by Cascadia Biological Services dated March 10, 2019 ("Environmental Report") places emphasis on the fact that that the Uplands are not in a natural state. However, developing the Uplands would make permanent the disturbed condition. Once the Uplands are subdivided into small residential lots, there will be no going back.

The Environmental Report does not take into account Pacheedaht ecological knowledge in its consideration of the Application. Pacheedaht was unaware that this report was being done. Pacheedaht needs to be a part of the environmental work undertaken to fully evaluate the uplands portion of the Application.

Uplands Development Should Not Proceed at This Time

On the basis of these unaddressed concerns, and as there has yet to be a meaningful assessment of PGM's proposed development of the Uplands, Pacheedaht requests that the CRD not approve the development of the Uplands, in order to identify a no-build zone on the Uplands that will protect not only the Registered Cave, but the cave network, including the burial cave that has yet to be located.

Should the CRD be unwilling to designate a no-go zone, as set out in our comments above on the various reports, much more work is needed in terms of identifying and assessing potential impacts from any development of the Uplands, as well as any required mitigation. This work must be completed with Pacheedaht's involvement before any future applications are considered for the Uplands.

Working Together

It is critical to improve on these processes to allow for the CRD and Pacheedaht to work together on the review, consideration and approval stages of development processes. The task of evaluating a proposed rezoning application is made all the more difficult in the absence of an updated CCDP.

Thank you for letting us know that the CRD is committed to reviewing the Official Community Plan component of the CCDP in 2021. Pacheedaht is ready, willing and able to meaningfully participate in this important process. An updated CCDP to which the communities have had the opportunity to contribute, will:

- allow all community members to understand how rezoning applications fit in to the overall vision for the area;

- enable more effective application processes; and
- address the perception that there is a different set of rules applicable to certain proponents.

In the meantime, Pacheedaht and CRD should be engaging in a joint decision-making process for the Application given the size of the development and the importance of the area, especially the spiritually and culturally important sea caves, and would like to discuss with you how that might be done. In considering the Application, sufficient time must be allowed for working with Pacheedaht and for our concerns to be considered and addressed. With this in mind, in our view September 15th is not a realistic date for the Committee to consider the rezoning application. More time is needed to consider the full range of issues involved.

Closing

We ask that the CRD:

I. Proceed with the Application on two tracks, one for the marina and the other for the development for the Uplands;
II. Work with Pacheedaht to determine a no build zone for the Uplands, to reflect the unacceptable risk of developing in a way that is likely to irreparably harm the network of sea caves; and
III. Alternatively, work with Pacheedaht to determine the further work required to proceed with the proposed development of the Uplands.

We do not believe that consideration of the Application can proceed with the scheduled Committee meeting on September 15th, but suggest that we arrange a meeting the week of September 8th.

Yours truly,

PACHEEDAHT FIRST NATION

Chief Jeff Jones

cc: Capital Regional District, Attn. Mike Hicks, Regional Director, Juan de Fuca Electoral Area (**directorjdf@crd.bc.ca**)
Mandell Pinder LLP, Attn. Rosanne Kyle (**rosanne@mandellpinder.com**)

Appendix B: Bylaw No. 4096

CAPITAL REGIONAL DISTRICT
BYLAW NO. 4096

****

A BYLAW TO AMEND BYLAW NO. 3109,
THE "COMPREHENSIVE COMMUNITY PLAN FOR PORT RENFREW, BYLAW NO. 1, 2003"

****

The Capital Regional District Board, in open meeting assembled, enacts as follows:

1. Bylaw No. 3109 being the "Comprehensive Community Plan for Port Renfrew, Bylaw No. 1, 2003" is hereby amended:

A. SCHEDULE A, SECTION 4.0 DEVELOPMENT POLICIES

(a) By inserting a new Section 4.5 "Pacific Gateway Marina (PGM) Policies" after Section 4.4, to be read as follows:

4.5. Pacific Gateway Marina (PGM) Policies

Objective

The objective of the PGM designation is to provide a mix of community uses, year-round residential accommodation, vacation properties, and commercial tourism, recreation and marina services to the general public. Development within the PGM designation should support the economic, social and cultural well-being of the Port Renfrew community.

4.5.1. Development (PGM) Policies

1) In order to facilitate the increased level of use supported by the PGM designation the following services should be constructed and bylaws adopted prior to development:

a) Installation of a second water reservoir to expand the capacity of the Port Renfrew Water Supply System to the satisfaction of the Capital Regional District.

b) Adoption of an amendment to the Port Renfrew Water Supply Local Service Establishment Bylaw No. 1, 1989, Bylaw No. 1747, to include all those lands and the surface of the water within the PGM land use designation.

c) Adoption of an amendment to the Port Renfrew Fire Protection Local Service Establishment Bylaw, 1989, Bylaw No. 1743, to include all those lands and the surface of the water within the PGM land use designation.

2) The following amenity is of interest to the community and should be completed in accordance with the requirements specified by the Pacific Gateway Marina Comprehensive Development (PGM-CD) zone:

a) Construction of a public trail and staircase providing connectivity between the Juan de Fuca Electoral Area Community Parks and Recreation trail on Lot 64, Plan VIP24755, and Baird Road. The route provided by this trail and staircase should be protected by a statutory right-of-way in favour of the CRD.

3) Areas of known archaeological significance that are located within the area under the PGM designation are to be protected in accordance with Provincial legislation.

and renumbering Section 4 accordingly.

B. SCHEDULE B, PART IV ZONES

(a) By inserting a new "Pacific Gateway Marina Comprehensive Development (PGM-CD)" zone after Section 27, to be read as follows:

28.0 Pacific Gateway Marina Comprehensive Development (PGM-CD) Zone

Purpose

The purpose of this zone is to implement the Pacific Gateway Marina (PGM) land use designation in order to provide a mix of community uses, year-round residential accommodation, vacation properties, and commercial tourism, recreation and marina services to the general public.

The PGM-CD zone is divided into Development Areas A – D, which are shown in Section 28.05. Development within each Development Area is to occur in accordance with the regulations indicated below.

Except where otherwise provided for in this Bylaw, only the specified list of permitted uses may be carried out on the parcels within the PGM-CD zone.

28.01 PGM-CD Zone – General Regulations

(a) Permitted uses:
  (i) Single-family residential
  (ii) Accessory buildings and structures

(b) Maximum density:
  (i) One single-family dwelling

(c) Where the following services and amenities are provided, the permitted uses, densities and regulations of Development Areas A-D, as specified in Sections 28.02 to 28.05, shall apply:
  (i) Connection to the Port Renfrew Water Supply System to the satisfaction of the Capital Regional District.
  (ii) Connection to a community sewer system to the satisfaction of Island Health where total daily flows are less than 22,700 L/day, and to the satisfaction of the Ministry of Environment where total daily flows exceed 22,700 L/day.
  (iii) Provision of a public trail constructed in a location and to a standard approved by Juan de Fuca Electoral Area Community Parks and Recreation, connecting Development Area A with Development Areas B and C. The trail is to be protected for public use via statutory right-of-way and maintenance agreement in favour of the Capital Regional District.

(d) The Development Area boundaries, as shown in Section 28.05 shall be deemed to be lot boundaries for the purposes of determining applicable uses, densities and regulations.

(e) Where a survey plan approved by the Surveyor General indicates the adjustment of a parcel boundary due to accretion, the zoning and development area designation applicable to the parcel is deemed to extend to the new parcel boundary despite the zoning designation of the accreted area indicated in Section 28.05.

(f) As a requirement of subdivision, each proposed parcel within the PGM-CD zone must be connected to a community sewer system to the satisfaction of Island Health or the Ministry of Environment, and to a community water system to the satisfaction of the Capital Regional District.

28.02 Development Area A – Specific Regulations

(1) Permitted uses	(a) Single-family residential (b) Duplex residential (c) Accessory buildings or structures to the above permitted uses
(2) Minimum lot size for subdivision purposes	0.75 ha
(3) Minimum front yard setback	6.0 m
(4) Minimum interior side yard setback	3.0 m
(5) Minimum exterior side yard setback	4.5 m
(6) Minimum rear yard setback	4.5 m
(7) Maximum floor area ratio of residential units shall be:	0.30
(8) Maximum lot coverage	40% of the parcel area
(9) Maximum principal building height	11.75 m
(10) Maximum accessory building height	6.0 m

28.03 Development Areas B and D – Specific Regulations

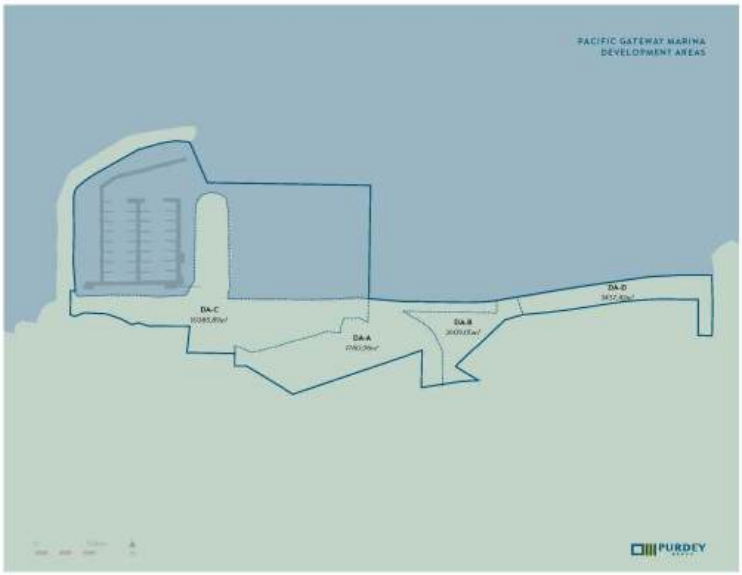
(1) Permitted uses	(a) Single-family residential (b) Duplex residential (c) Home based business (d) Staff accommodation (e) Accessory buildings or structures to the above permitted uses
(2) Minimum lot size for subdivision purposes:	
(a) Development Area B	0.26 ha
(b) Development Area D	0.34 ha
(3) Minimum front yard setback	6.0 m
(4) Minimum interior side yard setback	3.0 m
(5) Minimum exterior side yard setback	4.5 m
(6) Minimum rear yard setback	4.5 m
(7) Maximum combined floor area ratio of residential, tourist accommodation and staff accommodation units	
(a) Development Area B	0.35
(b) Development Area D	0.25
(8) Maximum lot coverage	40% of the parcel area

(9) Maximum principal building height	11.75 m
(10) Maximum accessory building height	6.0 m

28.04 Development Area C – Specific Regulations

(1) Permitted uses	(a) Commercial marina (b) Community uses (c) Conference centre (d) Fish processing (e) Food service establishments (f) Hotels and motels (g) Office uses (h) Retail establishments (i) Staff accommodation (j) Tourist facilities and related amenities (k) Accessory buildings or structures to the above permitted uses
(2) Minimum lot size for subdivision purposes	1.0 ha
(3) Minimum front yard setback	6.0 m
(4) Minimum interior side yard setback	3.0 m
(5) Minimum exterior side yard setback	4.5 m
(6) Minimum rear yard setback	4.5 m
(7) Maximum combined floor area ratio of tourist accommodation and staff accommodation units	0.60
(8) Maximum lot coverage	50% of the parcel area
(9) Maximum principal building height	12.0 m
(10) Maximum accessory building height	6.0 m

28.05 PGM-CD Zone Development Areas Map



C. SCHEDULE B, MAP NO. 2 – LAND USE DESIGNATIONS

(a) By deleting That Part of Section 97, Renfrew District as Shown Coloured Red on Plan 344R (PID: 009-592-342) and Lot 1, Section 97, Renfrew District, Plan EPP24972 (PID: 028-991-125) from the Residential (R) designation and adding said lots to the Pacific Gateway Marina (PGM) designation, as shown on Plan No. 1; and

(b) By deleting Those Parts of Block A and B, District Lot 751, Together with Unsurveyed Crown Foreshore or Land Covered by Water Being Part of the Bed of Port San Juan, All Within Renfrew District, Shown Outlined in Red on Licence V905027, Containing 3.86 Hectares, More or Less from the Marine Protection (M) designation and adding said licence area to the Pacfic Gateway Marina (PGM) designation, as shown on Plan No. 1.

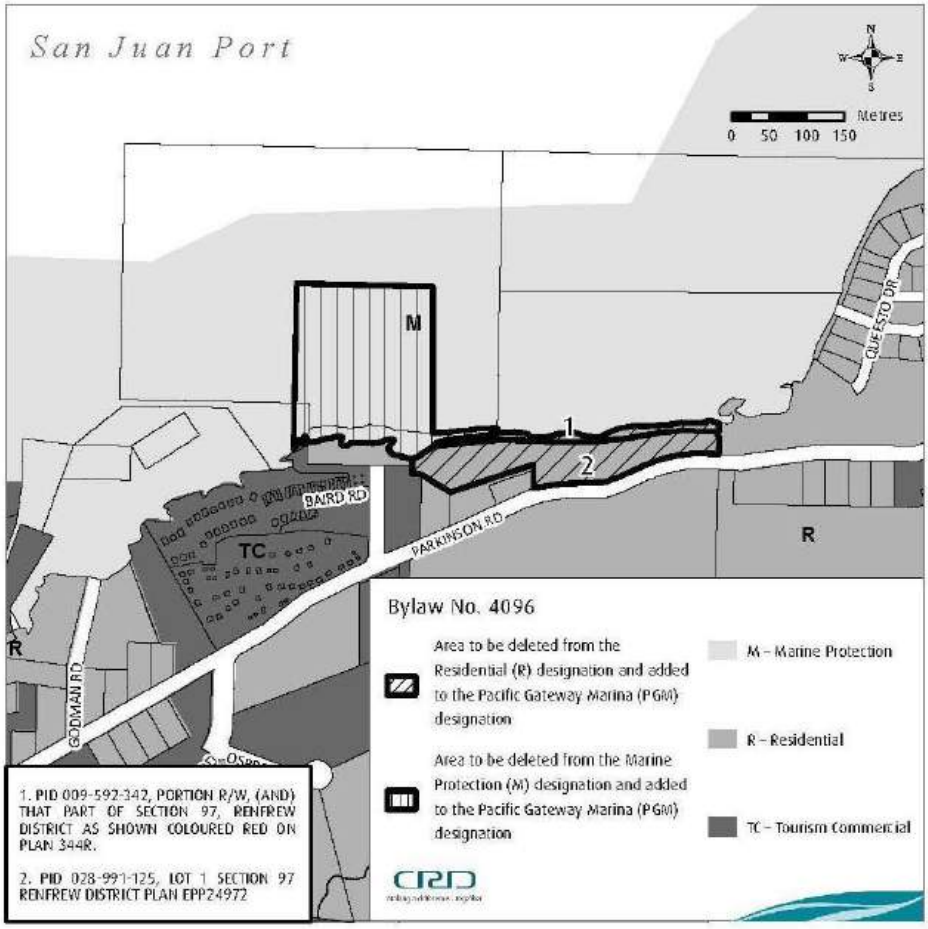
D. SCHEDULE B, MAP NO. 3 – ZONING

(a) By deleting That Part of Section 97, Renfrew District as Shown Coloured Red on Plan 344R (PID: 009-592-342) and Lot 1, Section 97, Renfrew District, Plan EPP24972 (PID: 028-991-125) from the Community Residential – One (CR-1) zone and adding said lots to the Pacific Gateway Marina Comprehensive Development (PGM-CD) zone, as shown on Plan No. 2; and

(b) By deleting Those Parts of Block A and B, District Lot 751, Together with Unsurveyed Crown Foreshore or Land Covered by Water Being Part of the Bed of Port San Juan, All Within Renfrew District, Shown Outlined in Red on Licence V905027, Containing 3.86 Hectares, More or Less from the Marine (M) zone and adding said licence area to the Pacfic Gateway Marina Comprehensive Development (PGM-CD) zone, as shown on Plan No. 2.

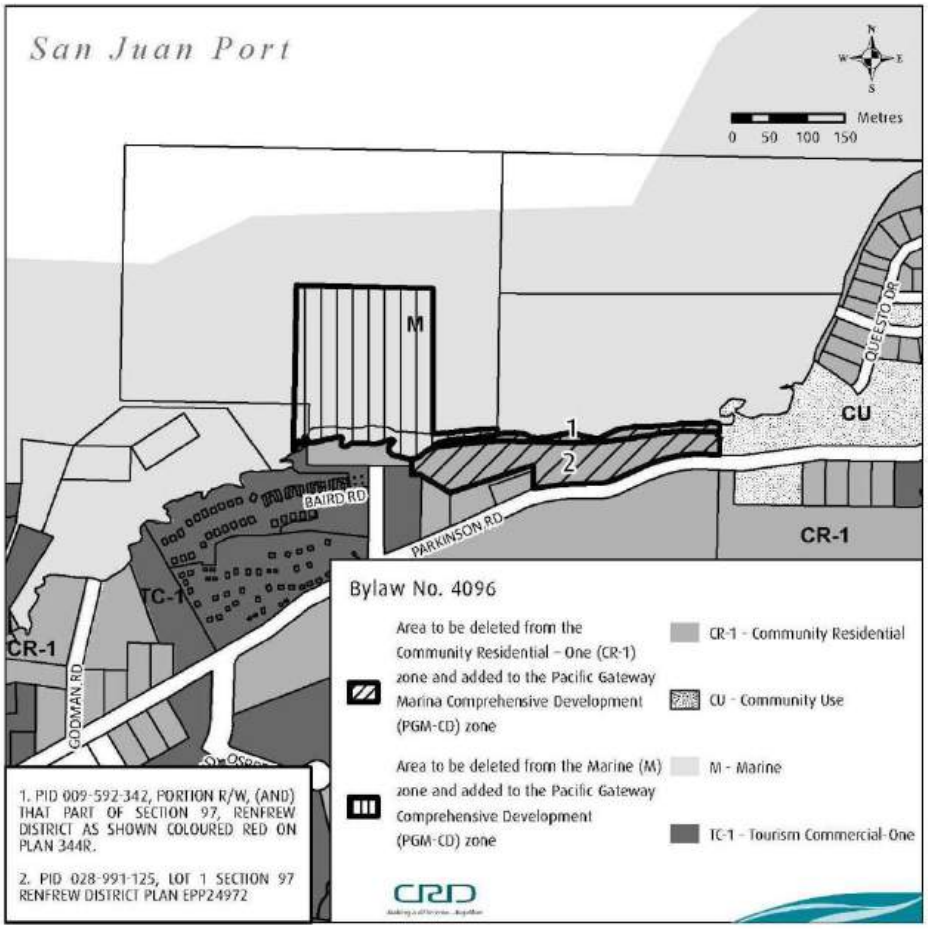
Plan No. 1 of Bylaw 4096, an amendment to Bylaw No. 3109

That Part of Section 97, Renfrew District as Shown Coloured Red on Plan 344R (PID: 009-592-342); Lot 1, Section 97, Renfrew District, Plan EPP24972 (PID: 028-991-125) and Those Parts of Block A and B, District Lot 751, Together with Unsurveyed Crown Foreshore or Land Covered by Water Being Part of the Bed of Port San Juan, All Within Renfrew District, Shown Outlined in Red on Licence V905027, Containing 3.86 Hectares, More or Less shown on this plan attached to and forming part of this bylaw.



Plan No. 2 of Bylaw 4096, an amendment to Bylaw No. 3109

That Part of Section 97, Renfrew District as Shown Coloured Red on Plan 344R (PID: 009-592-342); Lot 1, Section 97, Renfrew District, Plan EPP24972 (PID: 028-991-125) and Those Parts of Block A and B, District Lot 751, Together with Unsurveyed Crown Foreshore or Land Covered by Water Being Part of the Bed of Port San Juan, All Within Renfrew District, Shown Outlined in Red on Licence V905027, Containing 3.86 Hectares, More or Less shown on this plan attached to and forming part of this bylaw.



2. This bylaw may be cited as "Comprehensive Community Development Plan for Port Renfrew, Bylaw No. 1, 2003, Amendment Bylaw No. 10, 2020".

READ A FIRST TIME THIS	day of	, 2020.
READ A SECOND TIME THIS	day of	, 2020.
READ A THIRD TIME THIS	day of	, 2020.
ADOPTED THIS	day of	, 2020.

CHAIR CORPORATE OFFICER

Making a difference...together

REPORT TO PLANNING, TRANSPORTATION AND PROTECTIVE SERVICES COMMITTEE MEETING OF WEDNESDAY, SEPTEMBER 16, 2020

SUBJECT Regional Growth Strategy Consistency – Otter Point Official Community Plan

ISSUE SUMMARY

To consider whether the proposed Otter Point Official Community Plan (OCP) amendment –Bylaw No. 4317, "Otter Point Official Community Plan Bylaw, 2014, Amendment Bylaw No. 2, 2019" – is consistent with the 2018 Regional Growth Strategy (RGS).

BACKGROUND

Section 445 of the *Local Government Act* requires that all bylaws adopted by a regional district be consistent with its RGS. The Capital Regional District (CRD) Board adopted Bylaw No. 4017 "Capital Regional District Regional Growth Strategy Bylaw No.1, 2016" in 2018.

The CRD Board gave first and second reading to the OCP amending bylaw on August 12, 2020. Staff are bringing the amending bylaw to the Planning, Transportation and Protective Services Committee for consideration of RGS consistency in advance of the September 21, 2020 public hearing. Appendix A provides a summary of the evaluation for consistency.

The proposed amendment updates the Watercourses and Wetland Areas and Commercial Industrial development permit areas in the OCP to support a rezoning for six rural residential parcels and an industrial sawmill operation. Appendix B provides detailed information about the proposed OCP amendment and associated rezoning.

On July 17, 2019, the Juan de Fuca Land Use Committee (JdF LUC) referred the amendment application to appropriate CRD departments and other agencies for comment. Regional and Strategic Planning staff had no comments on the proposed amendment.

ALTERNATIVES

Alternative 1
The Planning, Transportation and Protective Services Committee recommends to the Capital Regional District Board:
That proposed Bylaw No. 4317, "Otter Point Official Community Plan Bylaw, 2014, Amendment Bylaw No. 2, 2019" be reviewed as it relates to Bylaw No. 4017 "Capital Regional District Regional Growth Strategy Bylaw No.1, 2016" and be deemed consistent with the 2018 RGS Bylaw No. 4017.

Alternative 2:
The Planning, Transportation and Protective Services Committee recommends to the Capital Regional District Board:
That proposed Bylaw No. 4317, "Otter Point Official Community Plan Bylaw, 2014, Amendment Bylaw No. 2, 2019" be reviewed as it relates to Bylaw No. 4017 "Capital Regional District Regional Growth Strategy Bylaw No.1, 2016" and be deemed not consistent with the 2018 RGS Bylaw No. 4017.

Alternative 3:
That the Regional Growth Strategy Consistency – Otter Point Official Community Plan report be referred back to staff for further review based on Committee direction.

IMPLICATIONS

Regional Growth Strategy Implications
Staff have evaluated the proposed amendment in relation to the 2018 RGS. By designating additional parts of the subject property for inclusion within development permit areas, the proposed amendment helps achieve RGS objectives. Specifically, the proposed amendment aligns to RGS policies to use tools that protect healthy ecosystems, maintain rural character, support the rural working landscape and support economic development.

CONCLUSION

All bylaws adopted by the CRD must be consistent with its RGS. The proposed OCP amendment to update development permit areas helps achieve RGS objectives. A determination of consistency allows for adoption of Bylaw No. 4317 following completion of the JdF LUC planning process.

RECOMMENDATION

The Planning, Transportation and Protective Services Committee recommends to the Capital Regional District Board:
That proposed Bylaw No. 4317, "Otter Point Official Community Plan Bylaw, 2014, Amendment Bylaw No. 2, 2019" be reviewed as it relates to Bylaw No. 4017 "Capital Regional District Regional Growth Strategy Bylaw No.1, 2016" and be deemed consistent with the 2018 RGS Bylaw No. 4017.

Submitted by:	Emily Sinclair MCIP, RPP, Senior Manager, Regional & Strategic Planning
Concurrence:	Emily Sinclair MCIP, RPP, Acting General Manager Planning & Protective Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT(S)

Appendix A: RGS Evaluation Table – Proposed Bylaw No. 4317
Appendix B: Local Area Planning Staff Report to JdF LUC

APPENDIX A

RGS EVALUATION TABLE – PROPOSED BYLAW NO. 4317

2018 RGS Objective		Considerations for RGS Consistency
1.1	Keep Urban Settlement Compact	N/A
1.2	Protect the Integrity of Rural Communities	The subject properties are located within the Rural/Rural Residential Policy Area, as shown on the 2018 RGS Map 3A. This policy area is intended for rural and rural residential uses, and lands are not intended to become future urban areas. Residential uses should be rural in form, density and character and support working landscapes. The proposed amendment meets the policy requirements of the RGS by updating a development permit area to establish objectives for the form and character of industrial development.
2.1	Protect, Conserve and Manage Ecosystem Health	The 2018 RGS Policy 2.1.4 states: identify, protect, enhance and restore ecosystems using tools that may consist of policies, regulations, development permit area guidelines, incentives, initiatives and education and outreach delivered at the local level. Policy 2.1.5 states: protect ecological integrity of watersheds and marine areas through collaborative initiatives consistent with the principles set out in the Protect, Conserve and Manage Ecosystem Health objective of the 2018 RGS. The proposed amendment meets the policy requirements set out in the RGS by updating a development permit area to protect ecosystem health.
2.2	Manage Regional Infrastructure Services Sustainably	The proposed parcels are within the Juan de Fuca Water Service Area, as shown on RGS Map 5. The subject parcel is currently serviced by on-site wells and septic. Should the rezoning be supported, the parcels will require proof of potable water as per the subdivision process. Water systems services to the proposed parcels have not been identified as part of the application. Should such services be sought in the future, RGS provisions in section 2.2 would apply and require consideration by the CRD Board.
3.1	Create Safe and Complete Communities	N/A
3.2	Improve Housing Affordability	N/A
4.1	Improve Multi Modal Connectivity and Mobility	N/A

APPENDIX A

2018 RGS Objective		Considerations for RGS Consistency
5.1	Realize the Region's Economic Potential	The expansion of the sawmill contributes to the area's economic development and has the potential to create employment in the area. This supports RGS consideration 5.1.V, RGS Policy 5.1.2 and 5.1.4 to increase economic activities in forestry and agriculture including high value and specialized agriculture and value added forestry.
6.1	Foster a Resilient Food and Agriculture System	N/A
7.1	Significantly Reduce Community-Based Greenhouse Gas Emissions	N/A

Making a difference...together

REPORT TO THE JUAN DE FUCA LAND USE COMMITTEE
MEETING OF TUESDAY, JULY 21, 2020

SUBJECT **Zoning and Official Community Plan Amendment Application for That Part of Section 17, Otter District, Lying East of Otter Point Road, Except Parcel C (DD43782I) And Except Parts in Plans 3054 And 17721 – 3542 & 1-3542 Otter Point Road**

ISSUE SUMMARY

The owner has applied to rezone the subject property to permit six rural residential parcels and an industrial sawmill operation.

BACKGROUND

The 15 hectare (ha) subject property is located at 3542 Otter Point Road and is zoned Rural A in the Juan de Fuca Land Use Bylaw No. 2040 (Appendix A). The property is designated as Settlement Area 2 and is partly designated as a Watercourses and Wetland Areas development permit area (DPA) by the Otter Point Official Community Plan (OCP), Bylaw No. 3819. The parcel is within the Otter Point Fire Protection Local Service Area and serviced by on-site wells and septic. There is currently a dwelling and a sawmill operation on the property.

The owner originally submitted a rezoning and subdivision (SU000711) application to create five 1 ha, Rural Residential 2 (RR-2) zoned parcels, a 6 ha parcel for a sawmill operation, and a 4 ha parcel for an aquaponics facility. Staff prepared Bylaw No. 4316 to rezone the parcel for the requested uses, and Bylaw No. 4317 to amend the Otter Point OCP by designating portions of the property as Watercourses & Wetland Areas and Commercial & Industrial DPAs.

At their meeting of July 16, 2019, the Juan de Fuca Land Use Committee recommended referral of the proposed bylaws to agencies. Comments are summarized in Appendix B and included as received in Appendix C. Since the time that referrals were circulated, the applicant has revised the application to remove the aquaponics facility and to include an additional RR-2 zoned parcel on Otter Point Road. The updated site plan is included in Appendix D. Staff have amended Bylaw Nos. 4316 and 4317 accordingly.

ALTERNATIVES

Alternative 1
That the Land Use Committee recommends to the Capital Regional District (CRD) Board:

a) That the referral of proposed Bylaw No. 4316, "Juan de Fuca Land Use Bylaw, 1992, Amendment Bylaw No. 147, 2019" and Bylaw No. 4317, "Otter Point Official Community Plan Bylaw, 2014, Amendment Bylaw No. 2, 2019" to the Otter Point Advisory Planning Commission; the Juan de Fuca Electoral Area Parks and Recreation Advisory Commission; CRD departments; BC Hydro; Department of Fisheries and Oceans; District of Sooke; Ministry of Agriculture; Ministry of Environment and Climate Change Strategy; Ministry of Forests, Lands and Natural Resource Operations; Ministry of Transportation and Infrastructure; RCMP; Sooke School District #62; and T'Sou-ke First Nation be approved and the comments received;
b) That proposed Bylaw No. 4316, "Juan de Fuca Land Use Bylaw, 1992, Amendment Bylaw No. 147, 2019" be introduced and read a first time and read a second time;
c) That proposed Bylaw No. 4317, "Otter Point Official Community Plan Bylaw, 2014, Amendment Bylaw No. 2, 2019" be introduced and read a first time and read a second time;
d) That in accordance with the provisions of Section 469 of the *Local Government Act*, the Director for the Juan de Fuca Electoral Area, or Alternate Director, be delegated authority to hold a public hearing with respect to Bylaw No. 4316 and Bylaw 4317; and
e) That prior to adoption of the bylaws, the applicant:
    i. Provide confirmation from a Qualified Environmental Professional that the vegetative screening requirements in the M-3 zone and the recommendations for restoration of the riparian area outlined in the Conditions and Impacts report prepared by Corvidae Environmental Consulting Inc., dated February 2020, have been implemented;

ii. Secure a covenant on title pursuant to Section 219 of the *Land Title Act* in favour of the CRD requiring that the fire protection works related to the sawmill operation, described in the letter from the Otter Point Volunteer Fire Department dated January 30, 2020, be installed and conveyed to CRD prior to subdivision or further building construction.

Alternative 2
That the CRD Board not proceed with proposed Bylaw No. 4316 and Bylaw No. 4317.

Alternative 3
That more information be provided.

IMPLICATIONS

Legislative and Public Consultation Implications
A site profile has been submitted to the Ministry of Environment & Climate Change Strategy (ENV) in accordance with the *Environmental Management Act* and *Contaminated Sites Regulation*. A regional district must not approve a development application with respect to a site where a site profile is required until such time a release is granted pursuant to Section 557 of the *Local Government Act (LGA)*. A release has been granted by the Ministry of Environment for rezoning, but further site investigation is required as part of subdivision approval.

The sawmill operation requires a Waste Discharge Authorization pursuant to the *Environmental Management Act* and a groundwater licence pursuant to the *Water Sustainability Act*. These approvals are issued by the Province and are not a precondition for rezoning.

Should the proposal proceed, public hearings pursuant to Part 14, Division 3 of the *LGA* will be required subsequent to the amendments passing second reading by the CRD Board. Property owners within 500 m of the subject property will be sent notice of the proposed bylaw amendments and public hearings will be advertised in the local paper and on the website.

Regional Growth Strategy Implications
Section 445 of the *LGA* requires that all bylaws adopted by a regional district board after the board has adopted a Regional Growth Strategy (RGS) be consistent with the RGS. Since the proposal includes an amendment to the Otter Point OCP, the bylaws will be considered by the Planning and Protective Services Committee and the CRD Board for a determination of consistency with the RGS prior to the bylaws being adopted.

The proposed amendments update development permit area maps to designate additional parts of the subject property for protection of the natural environment and to establish objectives for the form and character of industrial development.

Referral Process Implications
Referrals were sent to external agencies, the Otter Point Advisory Planning Commission (APC), the Juan de Fuca Electoral Area Parks and Recreation Advisory Commission (JdF EA PRAC), and CRD departments in July 2019. Comments are summarized in Appendix B and included as received in Appendix C. As changes to the bylaws after the referral was first circulated do not add new uses or increase overall parcel density, staff are of the opinion that a second referral to agencies is not necessary.

Land Use Implications
Since the Land Use Committee first considered this application, referral comments have been received from agencies and the development proposal has been amended to remove the aquaponics use. In response, proposed Bylaw No. 4316 has been revised to delete the proposed aquaponics zone, and to include approximately 7 ha under the Rural Residential 2 zone and 8 ha under the new Industrial Sawmill zone. The bylaw also deletes the light, heavy and marine industrial zone categories that no longer apply to any land within the JdF EA (Appendix E). Proposed Bylaw No. 4317 amends the Otter Point OCP by adding to the Watercourses and Wetland Areas DPA for protection of an unmapped watercourse, and adding to the Commercial and Industrial Areas DPA in order to establish objectives for the form and character of the proposed industrial development (Appendix F).

In consideration of an application for rezoning, Section 4.1.1(4) of the Otter Point OCP states that proposals should demonstrate that community values and features can be protected subject to an assessment of the suitability of the land for the proposed use, no depletion or contamination of groundwater, appropriate scale and rural character, demonstrated protection of sensitive features and land significant to the region or community, use of 'green' building techniques, and measures to mitigate impact of development. Further, Section 4.1.1(11) outlines considerations for mixed use development, including: form and character compatibility; adequate parking and traffic flow; protection and separation of residential areas.

Environmental constraints: As part of this application, an Environmental Assessment report was submitted by Corvidae Environmental Consulting (Appendix G). The report identifies the location of a watercourse on the property and recommends environmental protection measures. In response to recent unauthorized clearing within the riparian area, a Conditions and Impacts report was provided that proposed replanting native species in the riparian area (Appendix H). Staff recommend that a Qualified Environmental Professional (QEP) verify that this work is completed prior to adoption of the bylaws.

Water supply and sewage disposal*:* Section 5.6 of the Otter Point OCP states that the OCP designates 51% of the Plan area as Rural Lands to allow for low density development, that all subdivision applications must include proof of sufficient potable water from individual drilled wells as determined by a Qualified Professional, and that all development should protect groundwater sources and not deplete or contaminate existing wells. The proposed rezoning includes rural residential parcels that are located within the Settlement Area 2 land use designation. Should the rezoning be supported, the parcels will require proof of potable water as part of the subdivision process in the amount of 1,400 litres per day per lot in accordance with Part 6, Section 6.02 of Bylaw No. 2040. Members of the public expressed concern that groundwater supplies are scarce in the area and that many wells run dry. Measures to conserve groundwater include incorporating rainwater capture systems in new buildings or installing storage tanks at the time of construction. The applicant has indicated a willingness to install such a system; however, it is beyond the scope of the subdivision bylaw. It is noted that the proposed rezoning does not increase the density of residential development permitted by the existing Rural A zone.

The *Water Sustainability Act* requires non-domestic users of groundwater to obtain a licence; therefore, the sawmill operation will require a provincial water licence.

Island Health provided comment to state that subdivisions must comply with the *Drinking Water Protection Act*/*Regulation* and *Sewerage System Regulation*. These regulations pertain to domestic water supply systems and domestic sewage, and not to the industrial component of the proposed development. Discharge associated with the sawmill operation may require provincial authorization under the *Environmental Management Act*. The applicant has initiated the authorization process with the Province.

Scale of development: The subject property is designated as Settlement Area 2, which supports a desired average parcel area for residential development of one ha with a minimum parcel area of 0.8 ha. Proposed Bylaw No. 4316 rezones a portion of the property to the RR-2 zone, which allows an average lot size of one ha and permits residential, agricultural and home based business uses, with a density of one dwelling unit plus either a secondary suite or a detached accessory suite. This is in keeping with the OCP policies.

An economic development objective of the Otter Point OCP supports accommodating limited industrial and commercial development with a focus on the Sooke Business Park. The subject property is in the vicinity of the Sooke Business Park (Appendix I).

Protection of natural features: Proposed Bylaw No. 4317 will add the unmapped watercourse to the Riparian development permit area and require that any future encroachment within this area be authorized by permit. The reports prepared by Corvidae Environmental Consulting Inc. outline recommendations to protect or restore natural features on the site. Due to the historical industrial use, there is a contaminated sites review underway and subdivision approval will be withheld until a determination is made.

Access to the proposed sawmill operation is across the watercourse at the eastern edge of the property on the existing Tenbury Road allowance. Industrial access and road dedication will be determined by TRAN and secured at time of subdivision. Works in and about a stream require provincial notification under Section 11 of the *Water Sustainability Act*. A development permit will be required as part of subdivision.

Adequate setbacks and vegetated buffers: Proposed Bylaw No. 4316 includes requirements to implement natural vegetative buffers to screen the proposed industrial use from adjacent roads and properties. Staff recommend that a Qualified Professional confirm these buffers are implemented prior to adoption of the proposed bylaws.

Protection of land considered regionally or locally significant: Section 5.1(15) of the Otter Point OCP identifies high potential park and trail opportunities including a desire to establish an inter-connected network of trails through the Plan area. The JdF Community Parks division currently holds a Licence of Occupation over the Weiland Road right-of-way for future construction of a multi-use trail extending from William Simmons Memorial Park to Kemp Lake Road, but the right of way terminates at the subject property. The JdF EA PRAC recommended establishment of a trail for continuation of Wieland Road. TRAN has requested dedication of Weiland Road along the southern portion of the property, which would allow the network to be completed.

Subdivisions that create three or more lots, where the smallest lot is less than 2 ha in size, are required to provide park dedication pursuant to Section 510 of the *LGA*. Future consideration of statutory park dedication would occur as part of the subdivision process should the rezoning be supported.

Use of 'green' building techniques: Bylaw No. 4317 designates part of the property as a Commercial and Industrial DPA to regulate form and character in accordance with the DP guidelines. A development permit will be required for construction of any sawmill buildings or structures. The CRD Building Inspection Division advises that a Registered Professional will be required to be involved in certain aspects of the construction and that the applicant is advised to work with the CRD to resolve any outstanding building permits.

Works, services or community benefits to mitigate the impact of development: The need for fire protection measures was raised during the referral process. The Otter Point Volunteer Fire Department has proposed that the applicant install water supply in the form of tanks (60,000 ga) to aid fire protection for the industrial sawmill use and the community. Staff recommend a covenant be registered on the title of the property that requires the installation of the works by the applicant and access to the system by the fire department prior to subdivision or further building construction.

Concerns were raised at the APC meeting regarding noise and nuisances from the existing sawmill operation and increased intensity of the proposed uses. Concerns with increased traffic were also raised at the APC resulting from the number of employees and commercial trucks. CRD Bylaw Enforcement notes that nuisance-related complaints are likely to increase with an expansion of the sawmill operation in close proximity to residences. However, the applicant's planned upgrades include moving the sawmill indoors and switching from combustion engine saws to electric saws. These measures are anticipated to reduce the disturbance generated by noise.

Staff recommend receipt of the referral comments, first and second reading of Bylaw Nos. 4316 and 4317, proceeding to public hearing, and requiring that conditions be met prior to adoption of the bylaws.

CONCLUSION

The purpose of this OCP and zoning bylaw amendment application is to rezone the subject property to allow a six lot rural residential subdivision and an eight hectare industrial sawmill operation. Referral comments have been received and issues identified. Staff recommend proceeding with the bylaws subject to conditions being met prior to adoption.

RECOMMENDATION

That the Land Use Committee recommends to the Capital Regional District (CRD) Board:

a) That the referral of proposed Bylaw No. 4316, "Juan de Fuca Land Use Bylaw, 1992, Amendment Bylaw No. 147, 2019" and Bylaw No. 4317, "Otter Point Official Community Plan Bylaw, 2014, Amendment Bylaw No. 2, 2019" to the Otter Point Advisory Planning Commission; the Juan de Fuca Electoral Area Parks and Recreation Advisory Commission; CRD departments; BC Hydro; Department of Fisheries and Oceans; District of Sooke; Ministry of Agriculture; Ministry of Environment and Climate Change Strategy; Ministry of Forests, Lands and Natural Resource Operations; Ministry of Transportation and Infrastructure; RCMP; Sooke School District #62; and T'Sou-ke First Nation be approved and the comments received;

b) That proposed Bylaw No. 4316, "Juan de Fuca Land Use Bylaw, 1992, Amendment Bylaw No. 147, 2019" be introduced and read a first time and read a second time;

c) That proposed Bylaw No. 4317, "Otter Point Official Community Plan Bylaw, 2014, Amendment Bylaw No. 2, 2019" be introduced and read a first time and read a second time;

d) That in accordance with the provisions of Section 469 of the *Local Government Act*, the Director for the Juan de Fuca Electoral Area, or Alternate Director, be delegated authority to hold a public hearing with respect to Bylaw No. 4316 and Bylaw 4317; and

e) That prior to adoption of the bylaws, the applicant:

   i. Provide confirmation from a Qualified Environmental Professional that the vegetative screening requirements in the M-3 zone and the recommendations for restoration of the riparian area outlined in the Conditions and Impacts report prepared by Corvidae Environmental Consulting Inc., dated February 2020, have been implemented;

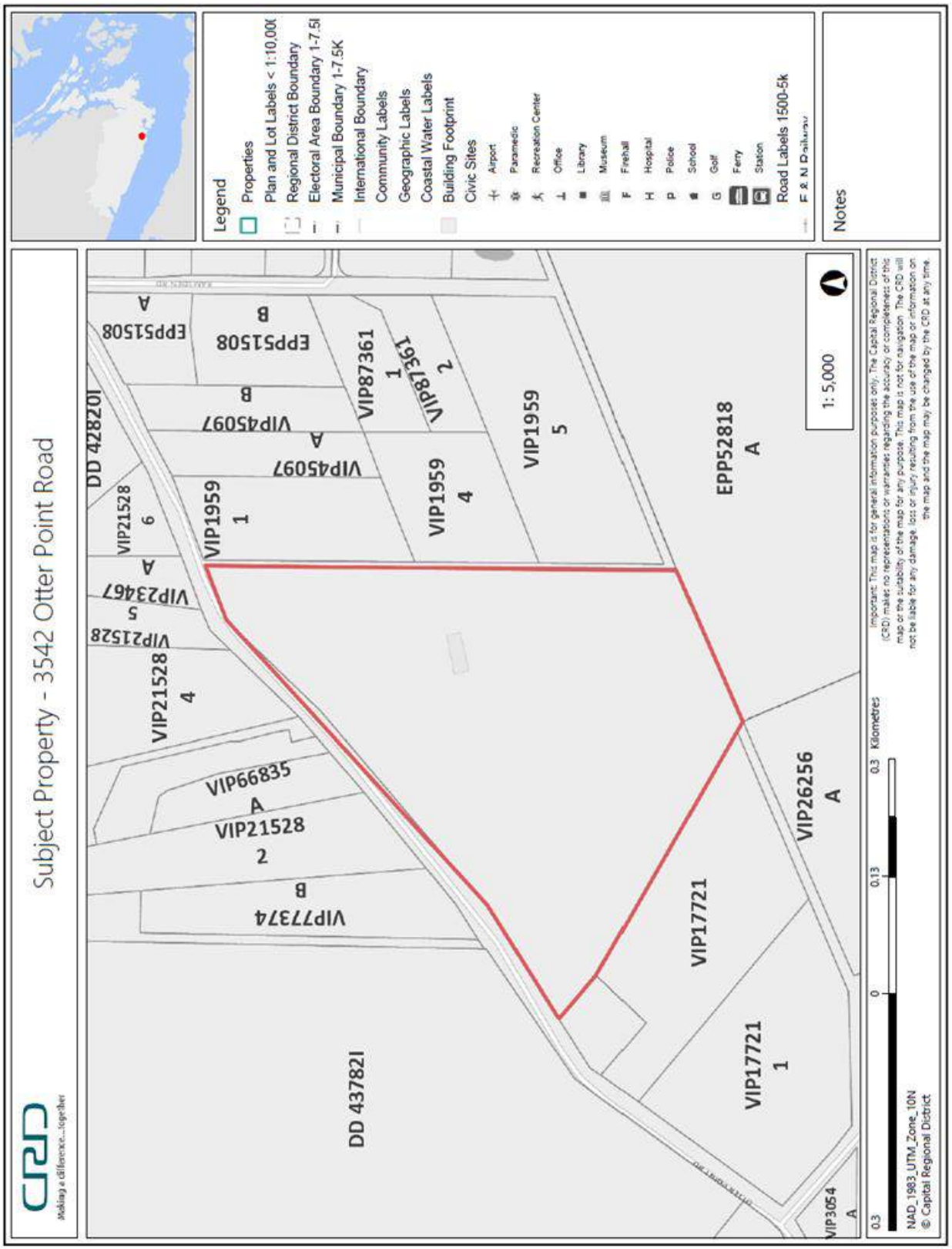
   ii. Secure a covenant on title pursuant to Section 219 of the *Land Title Act* in favour of the CRD requiring that the fire protection works related to the sawmill operation, described in the letter from the Otter Point Volunteer Fire Department dated January 30, 2020, be installed and conveyed to CRD prior to subdivision or further building construction.

Submitted by:	Iain Lawrence, RPP,MCIP, Manager, Juan de Fuca Community Planning
Concurrence:	Kevin Lorette, P.Eng., MBA, General Manager, Planning & Protective Services
Concurrence:	Robert Lapham, RPP, MCIP, Chief Administrative Officer

ATTACHMENTS

Appendix A: Subject Property Map
Appendix B: Summary of Referral Comments
Appendix C: Referral Comments
Appendix D: Development Proposal
Appendix E: Proposed Bylaw No. 4316
Appendix F: Proposed Bylaw No. 4317
Appendix G: Environmental Report
Appendix H: Conditions and Impacts Report
Appendix I: Industrial Zoning Map

Appendix A: Subject Property Map



Appendix B: Summary of Referral Comments

AGRI confirmed there are no impacts related to the Ministry's interests with respect to the aquaponics facility; however, depending on the design and type of operation, several federal and provincial licences/permits will be required. Their comments do not apply to the current application as the proposed aquaponics development has been removed.

BC Hydro suggested that a servicing review be conducted for the proposed load requirements.

CRD Building Inspection stated that there are outstanding building permit requirements on the property and that certain aspects of the construction will involve oversight of a Registered Professional.

CRD Bylaw Services commented on the potential for increased reporting of nuisance-related complaints as a result of increased residential density in closer proximity to industrial uses.

CRD Protective Services commented that the applicant must ensure that proposed developments can be served by the local fire department and comply with the Building Regulation Bylaw regarding access to property and adequate water supply for firefighting.

CRD Solid Waste provided comment to indicate that the composting component of the proposed aquaponics operation may be subject to CRD Bylaw No. 2736, the CRD Composting Facilities Bylaw, as well as the BC Organic Matter Recycling Regulation.

DFO stated that the Regional Aquaculture Management Office oversees federal aquaculture regulations. The Aquaculture Management Division stated that the proposed facility would require a commercial aquaculture licence. Their comments do not apply to the current application as the proposed aquaponics development has been removed.

District of Sooke stated support for the screening requirements for the proposed aquaculture use. Their comments do not apply to the current application as the proposed aquaponics development has been removed.

ENV provided comment indicating that, under the *Environmental Management Act*, a waste discharge authorization is required for sawmilling and secondary wood processing operations; the discharge of finfish waste may require a permit under the Land-Based Finfish Waste Control Regulation; the composting portion of the operation will be required to register under the Organic Matter Recycling Regulation; and agricultural discharge may be governed by the Agricultural Environmental Management Code of Practice. Their comments related to the aquaponics facility are no longer relevant to this application as that component has been removed.

FLNR – Archaeology Branch stated there are no known archaeological sites recorded on the subject property; however, if archaeological material is encountered during development, all activity must stop and the Archaeology Branch be contacted for direction.

FLNR – Ecosystems Biologist provided comment with respect to ensuring the development complies with the *Water Sustainability Act*, the *Riparian Areas Protection Regulation* and the environmental protection measures recommended in the Qualified Professional's (QP) report.

Island Health requires that subdivisions comply with the *Drinking Water Protection Act* and regulations.

Otter Point Volunteer Fire Department recommended an adequate water supply for firefighting purposes be provided for the sawmill operation in order to reduce the risk of wildfire within the community.

RCMP stated no comment on the application.

Sooke School District #62 stated no concerns.

TRAN requires the applicant to apply for an industrial access permit.

JdF EA PRAC met on July 30, 2019. There was one member of the public in attendance and no written submissions were received. The Commission considered the application and passed the following motion:

> **MOVED** by Director Hicks, **SECONDED** by Commissioner Sloan that the Commission supports the rezoning application with establishment of a trail for continuation of Wieland Road at the time of subdivision.
>
> **CARRIED**

A meeting of the Otter Point APC was held on September 10, 2019. There were 26 members of the public in attendance and no written submissions received. The Commission considered the application and passed the following motion:

> **MOVED** by Anne Miller, **SECONDED** by Al Wickheim that the Otter Point Advisory Planning Commission recommend that the Juan de Fuca Land Use Committee allow for further review of primary community concerns including water supply, firefighting servicing, noise, hours of work, traffic, rodents, future land use considerations, pollution including lighting, fencing/buffering and protection of the riparian area.
>
> Opposed: Bud Gibbons
> **CARRIED**

Appendix C: Referral Comments

AGRI – Ministry of Agriculture

File: Lawrence-190911
Ref: RZ000267

Emma Taylor
Planner
Juan de Fuca Community Planning
Capital Regional District
3-7450 Butler Road, Sooke BC V9Z 1N1
Email: etaylor@crd.bc.ca

Re: Rezoning and OCP Amendment Application RZ000267 (3542 & 1-3542 Otter Point Road)/Proposal for an indoor aquaponics facility.

Dear Ms. Taylor,

Based on the information received from you email dated September 4, 2019, I can confirm that there are no impacts related to the Ministry's interests with respect to the development of the proposed aquaponics facility. I would note; however, that depending on the design and type of operation of the facility, source and disposition of the fish, several federal and provincial licences/permits will be required, which are detailed as follows:

- Aquaculture Licence (Fisheries & Oceans Canada)
- Water Licence (BC Ministry of Environment and Climate Change Strategy)
- Waste Water Discharge Permit (BC Ministry of Environment and Climate Change Strategy)
- Import Permit (for aquatic animals if imported) (Canadian Fish Inspection Agency)
- Introduction and Transfer Permit (Fisheries & Oceans Canada/BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development)
- Fish Processing Licence (Ministry of Agriculture or Canadian Food Inspection Agency)
- Seafood Vendor Licence (Ministry of Agriculture)

Note that the above list is not exhaustive as other permits/authorizations/licences may be required depending on the specific activities undertaken.

I would also note that some storage, processing and greenhouse crops are regulated in BC by the BC Vegetable Marketing Commission (BCVMC) under the authority of the *Natural Products Marketing (BC) Act* and its *Regulations*. Greenhouse crops include tomatoes, cucumbers, peppers and lettuce, which require a production allocation from the BCVMC. The Commission

.../2

may exempt small operations from this requirement and only require a licence fee. More information about the BCVMC can be found here:
http://www.bcveg.com/

Generally, the regulations exempt the direct sale of small volumes of produce sold direct to consumers but regulate the sale of product to retail outlets. Specifically, a license is required to sell regulated vegetables in any of the following situations:

1. A farmer sells more than one tonne (2,200 lb) of a regulated vegetable per year;
2. A farmer has more than 5,000 m^2 greenhouse space devoted to growing regulated vegetables;
3. A farmer has an established relationship with a customer who is purchasing more than 300 lb of regulated vegetables per transaction;
4. A farmer sells more than $1,000 of regulated produce to an agency per year.

Further, where growers market regulated vegetables through agencies, the agencies will require that the growers are licensed through the BCVMC

The above notes are taken directly from "*Growing Connections, a handbook for purchasers + farmers in the Cowichan Region*" (Page 91) which is a good reference/resource that can help connect producers with buyers: http://cowichangreencommunity.org/wp-content/uploads/2014/05/Growing-Connection-Handbook.pdf.

Lastly, regarding composting fish wastes/offal on site, I would refer you to the Organic Matter Recycling Regulation of B.C. (OMRR), which is currently under review. More information can be found here:
https://www2.gov.bc.ca/gov/content/environment/waste-management/food-and-organic-waste/regulations-guidelines

Please do not hesitate to contact me should you require further details or wish to discuss further.

Sincerely,



Myron Roth, Ph.D., P.Ag.
Team Lead, Aquaculture & Marine Fisheries
Sector Development Branch

cc. Georgina Hodson, SDB, Ministry of Agriculture
Reed Bailey, IASB, Ministry of Agriculture
Jake Turek, ISAB, Ministry of Agriculture

BC Hydro

From:	McFarlane, Penny <Penny.Mcfarlane@bchydro.com>
Sent:	Wednesday, August 07, 2019 4:36 PM
To:	Wendy Miller
Cc:	Design, SVI; Mann, Elaine
Subject:	FW: Rezoning and OCP Amendment Application RZ000267 (3542 & 1-3542 Otter Point Road) - CRD Referral
Attachments:	STAFFRPT-LUC-REFERRAL-RZ000267.pdf; REFFERAL-FORM-AGENCIES-RZ000267.pdf

Hello Wendy,

BC Hydro has no objections to the rezoning, however; the proponent must contact the ESCC/Victoria Design to see what servicing is available at this location as it appears from the information below that the load requirements will be quite heavy. Thank you

Penny

CRD Building Inspection

Wendy Miller

From:	Mike Taylor
Sent:	Tuesday, June 09, 2020 3:59 PM
To:	Iain Lawrence; Wendy Miller
Cc:	Kevin Lorette
Subject:	Rezoning and OCP Amendment Application RZ000267, 3542 and 1-3542 Otter Point Rd

Hello, Iain. With respect to the rezoning application RZ000267 I attended the property at 3542 Otter Point Rd. with you and the owner and reviewed the two existing buildings currently in use as a saw mill. I have also reviewed a report assessing these buildings prepared by BICC Professional Inc., dated March 30, 2020.

In accordance with the BC Building Code the use or occupancy of each of the buildings would be classified as Medium Hazard Industrial, F2. According to the BICC report the larger of the buildings is approximately 6880 sq ft. Due to its size it must be considered to be a Part 3 building with respect to the Code. Part 3 buildings are required to be designed and constructed with the oversight of Registered Professionals (registered Architects and Engineers) for all aspects of the project. Although there is some limited permit information in the property file for this site the sawmill buildings do not appear to be complete, nor in compliance with all aspects of the BC Building Code.

With the goal of completing these buildings in a manner that is in reasonable compliance with the BC Building Code I recommend that the applicant submit a Building Permit application for completion of the building and Code compliance review. This permit application should be accompanied with sealed drawings and Letters of Assurance from Registered Professionals for all aspects of the building demonstrating and detailing work needed to verify Building Code compliance. The areas of approval would include, but may not be limited to, Architectural, Structural, Mechanical/Plumbing, and Electrical. Through the site inspection I attended I have become aware of many aspects of the Building that I would assume to be non-compliant with respect to the Code including access to exit, fire separations and fire protection, stair design, lack of finishing both interior and exterior, etc.

The second smaller building, also being used as a sawmill, may be considered to be a Part 9 building as opposed to a Part 3 building, however, I believe it would also require Registered Professionals to be involved with a building permit application to demonstrate compliance with the BC Building Code.

Also evident on file is a small number of outstanding and expired building permits. The applicant is advised to work with the Building Inspection Dept. to review and resolve any outstanding matters so the approvals may be submitted.

I would be happy to review this matter with you further, or to discuss with the property owner our building permit application process and Building Code requirements. Thank you.
Mike

Michael Taylor
Manager and Chief Building Inspector
Capital Regional District | 625 Fisgard Street, PO Box 1000, Victoria, BC V8W 2S6
T: 250.360.3230 | F: 250.360.3232 | Email: mtaylor@crd.bc.ca
Office Hours: Monday - Friday 8:30 am - 4:30 pm

CRD Bylaw Services

From:	Wilf Marquis
Sent:	Tuesday, August 13, 2019 3:33 PM
To:	Wendy Miller
Subject:	RE: Rezoning and OCP Amendment Application RZ000267 (3542 & 1-3542 Otter Point Road)

CRD Bylaw Services has reviewed the rezoning and subdivision (SU000711) application and the purpose of this zoning bylaw amendment application is to rezone a 5 ha portion of the subject property from Rural A to Rural Residential 2 (RR-2) to allow a five lot rural residential subdivision, to rezone a 6 ha area to a new Industrial Sawmill (M-3) zone, and to rezone a 4 ha portion to a new Industrial Aquaculture (M-4) zone.

This proposal is multi-faceted with increased density (RR-2), recognition of an Industrial sawmill (M-3) zone and inclusion of an Industrial Aquaculture (M-4) zone. The sawmill already exists and this step would bring the use that is already occurring into compliance. CRD Bylaw Services has not had a complaint regarding this sawmill activity at the property in the past which may be partially as a result of the current lack of density and proximity to residential uses. CRD Bylaw Services has concerns with this proposal in so far as potential increased reporting of nuisance type complaints (noise, odour, etc.) as a result of the increased residential density and proximity to the proposed adjacent Industrial uses.

Wilf MARQUIS
Senior Bylaw Officer

Bylaw and Animal Care Services
212-2780 Veterans Memorial Parkway, Victoria, BC, Canada V9B 3S6
Ph. 250.474.3351 ext. 22 \ Fax: 250.391.9727 \ TF: 800.665.7899
email: wmarquis@crd.bc.ca

CRD Protective Services

From:	Jonathan Reimer
Sent:	Tuesday, September 17, 2019 4:21 PM
To:	Wendy Miller
Cc:	Iain Lawrence
Subject:	RE: Rezoning and OCP Amendment Application RZ000267 and Rezoning Application RZ000268

Hi Wendy,
Apologies for the late response. I've conferred with the local Fire Chiefs and Building Inspection staff and would like to add this comment to both applications:

The applicant must ensure that proposed developments can be served by the local fire department and comply with the Building Regulation Bylaw regarding access to property and adequate water supply for fire fighting (Bylaw No. 3741 section 2.1.7).

Yours,

Jonathan Reimer MSc
Manager, Electoral Area Fire and Emergency Programs
Protective Services | Capital Regional District
625 Fisgard St, Victoria BC V8W 2S6
T: 250-360-3137 | C: 250-415-1695

For emergencies, contact the CRD Duty Officer at 250-360-3223 or eocreports@crd.bc.ca

CRD Solid Waste

From:	Tom Watkins
Sent:	Wednesday, July 31, 2019 4:06 PM
To:	Wendy Miller
Cc:	Emma Taylor; Russ Smith
Subject:	RE: Rezoning and OCP Amendment Application RZ000267 (3542 & 1-3542 Otter Point Road)

Hi Wendy,

Thanks for the email, from what I can see, the proposed aquaculture operation may be subject to the CRD composting facilities bylaw which is explained at:

https://www.crd.bc.ca/service/waste-recycling/kitchen-scraps/composting-facilities-bylaw

The actual bylaw may be found at:

https://www.crd.bc.ca/docs/default-source/crd-document-library/bylaws/solidwastehartlandlandfillssitransferstationscompostingfacilities/2736---capital-regional-district-composting-facilities-regulation-bylaw-no-1-2004B.pdf?sfvrsn=457e4250_0

The bylaw contains a number of requirements to which the proponent would need to comply including leachate and odour management plans.

It may also be subject to the BC Organic Matter Recycling Regulation:

http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/18_2002

Hope this helps.

Regards, Tom

DFO

From: Gravelle, Kristin <Kristin.Gravelle@dfo-mpo.gc.ca>
Sent: Wednesday, July 17, 2019 4:29 PM
To: Wendy Miller
Subject: RE: Rezoning and OCP Amendment Application RZ000267 (3542 & 1-3542 Otter Point Road) - CRD Referral

Hello,

The role of the DFO's Fish and Fish Habitat Protection Program (FFHPP) is to protect and conserve fish and fish habitat in support of Canada's coastal and inland fisheries resources, and to make regulatory decisions under the fisheries protection provisions of the Fisheries Act. The FFHPP is specifically responsible for reviewing projects for which a s.35(2) Fisheries Act Authorization is required.

DFO does not have a regulatory role related to the CRD Referral - Rezoning and OCP Amendment Application RZ000267 (3542 & 1-3542 Otter Point Road) because it does not directly propose works, undertakings or activities that may result in serious harm to fish.

DFO's Projects Near Water website (http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html) includes information for proponents on how to comply with the *Fisheries Act*, request a DFO review of a project, and request a *Fisheries Act* authorization.

If you would like to report a habitat violation, please call the Observe Record Report (ORR) hotline. Anonymous reports of suspicious activity and concerns about impacts to fish or fish habitat may be made directly to the toll-free 24-hour hotline at 1-800-465-4336 or 604-607-4186 in Greater Vancouver. Further information can be found online: http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/ORR-ONS-eng.html.

If you have any further questions about DFO's regulatory process or need general information, contact DFO's Fish and Fish Habitat Protection Program toll free: 1-866-845-6776 or email: EnquiriesPacific@dfo-mpo.gc.ca.

Thank you,

Kristin Gravelle
Biologist, Fish and Fish Habitat Protection Program
Ecosystem Management Branch
Fisheries and Oceans Canada/Government of Canada
Pacific Biological Station
3190 Hammond Bay Road, Nanaimo, B.C. V9T 6N2
Kristin.Gravelle@dfo-mpo.gc.ca/Tel: 250-756-7292 Cell: 250-739-0673

Biologiste, Programme de protection du poisson et de son habitat
Direction des écosystèmes
Pêches et Océans Canada | Gouvernement du Canada
Station biologique du Pacifique
3190, chemin Hammond Bay Nanaimo (Colombie-Britannique) B.C. V9T 6N2
Kristin.Gravelle@dfo-mpo.gc.ca/Tel: 250-756-7292 Cell: 250-739-0673

National Website: "Projects Near Water": http://wwwdev.ncr.dfo-mpo.ca/pnw-ppe/index-eng.html
FFHPP Enquiries: EnquiresPacific@dfo-mpo.gc.ca; Referral submission: ReferralsPacific@dfo-mpo.gc.ca
Fisheries violations - Observe Record Report Line:1-800- 465-4336 or http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/points/ORR-ONS-eng.htm

Wendy Miller

From: Emma Taylor
Sent: Thursday, December 12, 2019 3:07 PM
To: Wendy Miller
Subject: FW: Rezoning and OCP Amendment Application RZ000267 (3542 & 1-3542 Otter Point Road) - CRD referral

Please save referral comment and contact info for future.
Thanks

From: AQFW / AQFW (DFO/MPO) [mailto:FreshwaterAquaculture.XPAC@dfo-mpo.gc.ca]
Sent: Thursday, December 12, 2019 2:48 PM
To: PAC.AAR / RAA.PAC (DFO/MPO) <DFO.PACAAR-RAAPAC.MPO@dfo-mpo.gc.ca>; Emma Taylor <etaylor@crd.bc.ca>
Subject: RE: Rezoning and OCP Amendment Application RZ000267 (3542 & 1-3542 Otter Point Road) - CRD referral

Thank you Krista,

I had not received the referral.

Emma, I work on land-based aquaculture applications, for facilities licensed under PAR. This proposed facility would require a commercial aquaculture licence. Please contact me for more details.

Thank you,

Vanessa Metcalf

Aquaculture Management Coordinator | Coordonnatrice de la gestion de l'aquaculture
Aquaculture Management Division | Division de la gestion de l'aquaculture
Fisheries and Oceans Canada | Peche et Oceans Canada
250-754-0405

District of Sooke

Wendy Miller

From: Tara Johnson <tjohnson@sooke.ca>
Sent: Monday, September 09, 2019 4:36 PM
To: Wendy Miller
Subject: RE: Rezoning and OCP Amendment Application RZ000267 (3542 & 1-3542 Otter Point Road) - CRD Referral

I apologize for the delay Wendy,

The District of Sooke has no objections to Bylaw No. 4316 to rezone the parcel for the requested uses and Bylaw 4317 to amend the Otter Point OCP to designate portions of the property as Watercourses & Wetland Areas and Commercial & Industrial development permit areas
Being a neighboring property, thank you for providing a section on specific Screening requirements within the draft Industrial Aquaculture Zone.

Kind Regards,

Tara Johnson, MCIP, RPP
Planner II- District of Sooke
2205 Otter Point Road, Sooke BC V9Z 1J2
Email: tjohnson@sooke.ca
Phone (250) 642-1634
Direct (250) 642-1627
Fax (250) 642-0541 web: http://www.sooke.ca

Rethink Reduce Reuse Repair Recycle
Please consider the environment before printing this e-mail

ENV

From: "Tam, Jordan ENV:EX" <Jordan.Tam@gov.bc.ca>
Date: August 6, 2019 at 3:22:06 PM PDT
To: Emma Taylor <etaylor@crd.bc.ca>
Cc: "Barlas, Sajid A ENV:EX" <Sajid.Barlas@gov.bc.ca>
Subject: RE: composting facility inquiry

Hi Emma,

Thanks for your inquiry, if you could forward me a copy of the referral package I can hopefully better answer your questions. From the information provided I have put down some of my initial thoughts regarding the Ministry's regulatory requirements. These may be subject to change based on the facility's operations and how it will be oriented.

1. The composting portion of the operation will be required to register under the Organic Matter Recycling Regulation. Should the facility be producing greater than 5,000 dry tonnes of compost annually a permit may also be required for the facility.

2. The discharge associated with the land based finfish portion of the facility may require registration under the Land-Based Finfish Waste Control Regulation, however depending on the type of fish, discharge location and fish being reared, a permit may be required.

3. Discharge from the agricultural operations (such as greenhouses) will likely be covered by the Agricultural Environmental Management Code of Practice.

Please let me know if you have any questions,

Cheers,

Jordan Tam, *P.Ag.*
Environmental Protection Officer – South Authorizations
Regional Operations Branch | Environmental Protection Division

BRITISH COLUMBIA
Ministry of Environment and Climate Change Strategy
#200-10470 152nd St.
Surrey, BC, V3R 0Y3
Direct: 604.930.7106 | Jordan.Tam@gov.bc.ca

Emma Taylor

From: Wheating, Graham ENV:EX <Graham.Wheating@gov.bc.ca>
Sent: Thursday, September 12, 2019 12:01 PM
To: Emma Taylor
Subject: RE: wood processing facility inquiry

Hello Emma,

Thank you for you inquiry regarding a logging and sawmill operation on Otter Point Road. I am with the Hazardous Waste and Forestry Section of South Authorizations and Jordan Tam forwarded your questions regarding logging and sawmill operation on to my. Please see my responses to your questions below in blue.

- What regulations apply to timber harvesting, log sales and sawmill operations?
- The Environmental Management Act (EMA) does not pertain to timber harvesting or log sales, these operations are managed by the Ministry of Forest Lands Natural Resource Operations and Rural Development (FLRNRORD). However, I'm not sure if FLNRORD manages these operations on private land. I recommend they getting in touch with Front Counter BC who should be able to get you in touch with folks in FLNRORD that can help answer this.
- However, Section 6(2) of EMA would apply to the sawmilling and production of secondary value-added products and a waste discharge authorization is required for sawmilling and secondary wood processing operations. There is no regulation or Code of Practice that applies to these operations, so they would need to apply for a site specific waste discharge permit.
- As such, this application would be processed thorough the Routine Application Stream of the our Structured Application Process. More information on the routine application process can be found at: https://www2.gov.bc.ca/gov/content/environment/waste-management/waste-discharge-authorization/routine-application-process

- Does the Waste Discharge Regulation and Code of Practice for industrial non-hazardous waste landfills incidental to the waste processing industry apply? Are there permit or licencing requirements associated?
- If they operate or propose to operate a landfill solely for the purpose of disposing of this type of waste then they are required to register under and comply with the requirements of the COP. Please see the Ministry's Guidance, Forms & Fees for Waste Authorizations website (under the tab for this COP) for more information. The Ministry has also produced a Wood Waste Landfill Guideline that is available here: https://www2.gov.bc.ca/assets/gov/environment/waste-management/industrial-waste/industrial-waste/pulp-paper-wood/woodwastelandfillguideline.pdf
- Registrations under this COP are processed through the Express Transaction Steam of our Structured Application Process. More information on the express transaction process can be found at: https://www2.gov.bc.ca/gov/content/environment/waste-management/waste-discharge-authorization/express-transaction-process

- A site profile has been submitted for review under the Contaminated Sites Regulation.
- Thank you for this update, however my section is not involved with the administration of the Contaminated Sites Regulation so I can't speak to the status of this review.

I hope answered most of your questions, please don't hesitate to contact me if you have any additional questions.

Cheers,

Graham Wheating

Environmental Protection Technician
Hazardous Waste and Forestry – Authorizations South
Ministry of Environment and Climate Change Strategy
2080 Labieux Rd. Nanaimo BC, V9T 6J9
250 751-7245

FLNR – Archaeology Branch

From: Cooper, Diana FLNR:EX <Diana.Cooper@gov.bc.ca>
Sent: Tuesday, August 06, 2019 9:43 AM
To: Wendy Miller
Subject: RE: Rezoning and OCP Amendment Application RZ000267 (3542 & 1-3542 Otter Point Road) - CRD Referral

Hello Wendy,

Thank you for your referral regarding rezoning and an OCP amendment for proposed development at 3542 and 1-3542 Otter Point Road, Sooke, PID 009499369, THAT PART OF SECTION 17, OTTER DISTRICT, LYING EAST OF OTTER POINT ROAD, EXCEPT PARCEL C (DD 43782I) AND EXCEPT PARTS IN PLANS 3054 AND 17721. Please review the screenshot of the property below (outlined in yellow) and notify me immediately if it does not represent the property listed in your referral.

Results of Provincial Archaeological Inventory Search

According to Provincial records, there are no known archaeological sites recorded on the subject property.

Archaeological potential modelling for the area does not indicate a high potential for previously unidentified archaeological sites to be found on the subject property.

Archaeology Branch Advice

The Archaeology Branch does not identify a need for archaeological study or Provincial heritage permit(s) at the time of this information request.

Please notify all individuals (e.g., owners, developers, equipment operators) involved in land-altering activities (e.g., home renovations, property redevelopment, landscaping, service installation) that if archaeological material is encountered during development, they **must stop all activities immediately** and contact the Archaeology Branch for direction at 250-953-3334.

Rationale and Supplemental Information

- Archaeological study and Provincial heritage permit(s) are not required in the absence of an archaeological site.
- There is always a possibility for previously unidentified archaeological sites to exist on the property.
- Archaeological sites are protected under the *Heritage Conservation Act* and must not be damaged or altered without a Provincial heritage permit issued by the Archaeology Branch. This protection applies even when archaeological sites are previously unidentified or disturbed.

Questions?

For questions about the archaeological permitting and assessment process, please contact the Archaeology Branch at 250-953-3334 or archaeology@gov.bc.ca.

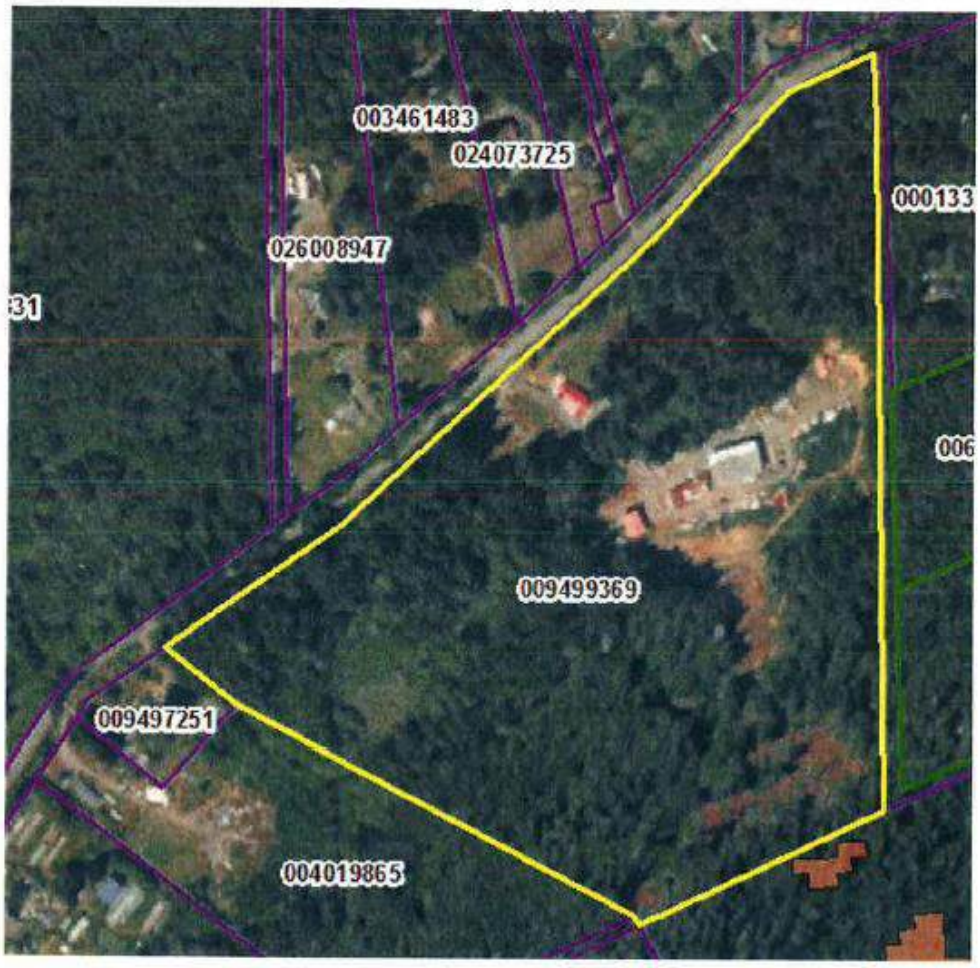
For more general information, visit the Archaeology Branch website at www.gov.bc.ca/archaeology.

Please let me know if you have any questions regarding this information.

1

Kind regards,

Diana



Please note that subject lot boundaries (yellow) and areas of archaeological potential (brown) indicated on the enclosed screenshot are based on information obtained by the Archaeology Branch on the date of this communication and may be subject to error or change. Archaeological site boundaries may not be identical to actual site extent.

Diana Cooper | Archaeologist/Archaeological Site Inventory Information and Data Administrator

Archaeology Branch | Ministry of Forests, Lands, Natural Resource Operations and Rural Development
Unit 3 – 1250 Quadra Street, Victoria, BC V8W2K7| PO Box 9816 Stn Prov Govt, Victoria BC V8W9W3
Phone: 250-953-3343 | Fax: 250-953-3340 |
Website: www.gov.bc.ca/archaeology

FLNR – Ecosystem Biologist

RESPONSE SUMMARY – REZONING AND OFFICIAL COMMUNITY PLAN AMENDMENT APPLICATION RZ000267

___ Interest Affected by Proposal for Reasons Outlined Below

X Interest Unaffected by Proposal PROVIDING THE CONDITIONS BELOW ARE FOLLOWED DURING SUBSEQUENT DEVELOPMENT.

Comments:

- ALL CONDITIONS OF THE WATER SUSTAINABILITY ACT ARE MET.
- ALL CONDITIONS OF THE RIPARIAN AREAS REGULATION ARE MET
- THE ENVIRONMENTAL PROTECTION MEASURES RECOMMENDED ON PAGES 10 TO 18 OF "ENVIRONMENTAL ASSESSMENT FOR 3542 OTTER POINT ROAD" (CORVIDAE ENV. CONSULTING APRIL 209) ARE FOLLOWED.

Dr. [signature] P.Ag. — Signed
ECOSYSTEMS BIOLOGIST — Title

JULY 19, 2019 — Date
BC MIN. OF FLNRORD — Agency

Island Health

RESPONSE SUMMARY – REZONING AND OFFICIAL COMMUNITY PLAN AMENDMENT APPLICATION RZ000267

✓ Interest Affected by Proposal for Reasons Outlined Below

___ Interest Unaffected by Proposal

Comments:

1. For the creation of any new lots, we are a referred to entity from Ministry of Transportation and Infrastructure, and aim to ensure the developer meets with the minimum requirements outlined in our Subdivision Standards.

2. Ensure compliance with the Drinking Water Protection Act/Regulation and Sewerage System Regulation.

Kazuhiro Takeuchi	Environmental Health Officer
Signed	Title
July 19, 2019	Island Health
Date	Agency

Otter Point Volunteer Fire Department

OTTER POINT VOLUNTEER FIRE DEPARTMENT

Thursday, 7-9 p.m.
Office Phone 642-6211
Office Fax 642-2673

3727 Otter Point Road
Sooke, B. C. V9Z OK1
www.otterpointfire.bc.ca

January 30, 2020

RECEIVED
JAN 3 1 2020
JdF Electoral Area Planning

CRD: JDF Community Planning
Attn. Iain Lawrence
#3 – 7450 Butler Road.
Sooke, BC V9Z 1N1

Re: Referral for Warburton Subdivision Proposal
Property at 3542 Otter Point Road.
Known as; Warburton's Mill
PID 009499369, Section 17
Folio: 762.16114.000

I have carefully considered the requirements for a water supply for fire protection at Warburton's Mill. There is much more to consider than just the protection of the mill and stored lumber. There is very significant risk to the community, both in the risk of wildfire and interface fires should a fire break out and not be immediately controlled at the Warburton Mill. The fuel load that is on site in the form of buildings, stored lumber, sawdust, milling debris and raw logs is very significant. Should a fire at this location grow uncontrolled for any length of time the fire would quickly become beyond the capacity of the local and mutual aid fire departments to control. On a warm summer day with a breeze, or a stronger wind, embers would be carried great distances potentially igniting spot fires, structure fires and forest fires which could result in a disastrous wildfire event causing great harm to our whole community.

I understand that Mr. Warburton has a portable pump set up in the stream for his own use should a fire break out. I commend Mr. Warburton for being proactive and having some form of initial firefighting capability on hand.
The reality is that a portable pump in the creek is not enough to supply water for firefighting at this mill. The creek itself has limited potential and a portable pump is probably capable of flowing 100-200gpm. (not enough water for fire flow at a small residential structure fire.) While this may be effective for a small incipient fire, it certainly is not even close to the requirements should a fire at this location grow to any size.

The very minimum that I would recommend is a system capable of supplying 1000gpm or more for up to one hour. Big water is the only hope of putting out a fire at this location before it grows to a size which is beyond the capacity of our combined fire departments to control.

The system that I would recommend would consist of 6- 10,000 gallon water tanks (for a total of 60,000 gallons of water) linked together with 6" plumbing and connected to a fire hydrant for quick and easy connection as well as providing freeze protection in the winter. The location of the system must be determined to allow for quick and safe access and connection in all fire scenarios.

This system would allow for quick access to a water supply that would allow the fire department to flow 1000gpm for up to an hour. A similar system is being installed in the Sooke Business Park for a commercial development.

I believe that this system provides a fair solution to Mr. Warburton while at the same time providing a reasonable measure of fire protection to the community.

If you have any further questions please contact me at the above number or by email at jmccrea@otterpointfire.bc.ca

Yours truly,

John McCrea, Fire Chief
Otter Point Fire Department

CC:

RCMP

From: Clayton WIEBE <clayton.wiebe@rcmp-grc.gc.ca>
Sent: Wednesday, August 14, 2019 1:45 PM
To: Wendy Miller
Subject: RE: Rezoning and OCP Amendment Application RZ000267 (3542 & 1-3542 Otter Point Road) - CRD Referral

The Sooke RCMP has no comment relating to this Application

Sooke School District #62

From: Pete Godau <pgodau@sd62.bc.ca>
Sent: Tuesday, July 23, 2019 1:54 PM
To: Wendy Miller
Cc: Scott Stinson; Harold Cull; Farzaan Nusserwanji
Subject: FW: Rezoning and OCP Amendment Application RZ000267 (3542 & 1-3542 Otter Point Road) - CRD Referral
Attachments: STAFFRPT-LUC-REFERRAL-RZ000267.pdf; REFFERAL-FORM-AGENCIES-RZ000267.pdf

Good Afternoon Wendy,

At this time the school district does not have any concerns with this referral.

Thank you,

Pete

Peter Godau
Director of Facilities| School District # 62
P (250)474-9840 Ext 203 | C (250)361-7330 | pgodau@sd62.bc.ca
Shaping Tomorrow Today

TRAN

From:	Breysen, Tara TRAN:EX <Tara.Breysen@gov.bc.ca>
Sent:	Wednesday, August 07, 2019 11:52 AM
To:	jdf info
Subject:	Rezoning Referral - File RZ000267 - Amendment to Bylaw 2040 - Ministry File 2019-04362
Attachments:	H0020 Permit application - fillable.pdf

Good morning

Please accept this as official response from the Ministry of Transportation and Infrastructure in regards to the proposed rezoning of 3542 Otter Point Road for the purpose of a 5 lot rural residential subdivision, a new Industrial Sawmill and a new industrial aquaculture zone.

As a condition of this approval, the Ministry requires the applicant to apply for an Industrial access permit for access to the non-conforming sawmill that is existing on the property. I have attached an application form that would be required to apply for the access.

Please have the applicant contact Owen Page, Development Office (owen.page@gov.bc.ca, 236-478-1552) if they have any questions or concerns.

Tara Breysen
District Clerk
Saanich Area Office
Ph: 778-974-2630
Fx: 250-952-4508

JdF EA Parks and Recreation Advisory Commission

Making a difference...together

Minutes of a Meeting of the
Juan de Fuca Electoral Area Parks and Recreation Advisory Commission
Held Tuesday, July 30, 2019 at the Juan de Fuca Local Area Services Building,
3 – 7450 Butler Road, Otter Point, BC

PRESENT: S. Jorna (Chair), V. Braunschweig, B. Croteau, J. Gaston, Director M. Hicks, A. Marchand, A. Sielopp, P. Sloan
Staff: D. Closson, Manager, Juan de Fuca Parks and Recreation; E. Taylor, Planner; W. Miller, Recorder
PUBLIC: 1

The meeting was called to order at 3:00 pm

1. **Approval of the Agenda**

   MOVED by Commissioner Croteau, **SECONDED** by Commissioner Sielopp that the agenda be approved, as amended, to add a presentation from the Friends of Coppermine Park Society under New Business.

   CARRIED

2. **Adoption of the Minutes of May 28, 2019**

   MOVED by Commissioner Croteau, **SECONDED** by Commissioner Sielopp that the minutes from the meeting of May 28, 2019, be adopted.

   CARRIED

3. **Chair's Report**
   None.

4. **Director's Report**
   Director Hicks reported that Wally Vowles has stepped down as Alternate Director and that Dan Quigley now fills the position. Director Hicks relayed that he anticipates attending future meetings of the Commission.

5. **Delegation – Juan de Fuca Community Planning**
   a) **Zoning and Official Community Plan Amendment Application RZ000267 - That Part of Section 17, Otter District, Lying East of Otter Point Road, Except Parcel C (DD43782I) And Except Parts in Plans 3054 And 17721 (3542 & 1-3542 Otter Point Road)**
   Emma Taylor spoke to the staff report to the Juan de Fuca Land Use Committee and the request to rezone a 5 ha portion of the subject property from Rural A to Rural Residential 2 (RR-2) to allow a five lot rural residential subdivision, to rezone a 6 ha area to a new Industrial Sawmill (M-3) zone, and to rezone a 4 ha portion to a new Industrial Aquaculture (M-4) zone. An amendment to the Otter Point Official Community Plan (OCP) is also proposed to designate portions of the property as Watercourses & Wetland Areas and Commercial & Industrial development permit areas.

   Emma Taylor confirmed that the agent for the application was present and directed attention to the policies in the Otter Point OCP for parks and natural areas for the Commission's consideration.

The Chair reported that staff and members of the Commission attended the two subject properties being considered for rezoning on July 29.

Commission comments included:
- the Commission holds a licence of occupation over Wieland Road for trail use
- the subject property interrupts the trail
- extension of the gazetted road or establishment of a statutory right-of-way over the subject property would provide an alternative transportation route from William Simmons Memorial Park to Kemp Lake Road to Crown lands to the west

Emma Taylor responded to questions from the Commission advising that
- the obligation for formal park land dedication in accordance with Section 510 of the *Local Government Act (LGA)* would be at the time of subdivision, should the rezoning application proceed
- the applicant has submitted a subdivision application
- the applicant is aware of the licence of occupation
- the rezoning application has been referred to agencies for comment
- agency comments will be shared with the applicant and considered by the Land Use Committee

Director Hicks stated that, should a route be secured over the subject property, gas tax funds could be utilized to support construction of a trail.

Staff presented photos from the July 29 site visit.

Commission comments included:
- it is understood that the property owner wants to be able to access the adjacent private property to the south as part of the sawmill operation
- measures would need to be in place in ensure the safety of all users
- proposed route would be screened by trees
- the proposed route would benefit the community of Otter Point

Emma Taylor responded to a question from the Commission advising that a combination of land and cash can be considered at the time of subdivision to meet the requirements of Section 510 of the *LGA*.

MOVED by Director Hicks, **SECONDED** by Commissioner Sloan that the Commission supports the rezoning application with establishment of a trail for continuation of Wieland Road at the time of subdivision.

Staff responded to a question from the Commission advising that the application will also be considered by the Otter Point Advisory Planning Commission.

The Chair called the question.

CARRIED

Otter Point APC

Making a difference...together

Minutes of a Meeting of the Otter Point Advisory Planning Commission
Held September 10, 2019 at Juan de Fuca Local Area Services Building, 3-7450 Butler Road, Otter Point, BC

PRESENT: Al Wickheim (Chair), Bud Gibbons, Sid Jorna, Anne Miller, Stephen Smith
Staff: Emma Taylor, Planner; Wendy Miller, Recorder
PUBLIC: 26

The meeting was called to order at 7:00 pm.

1. **Approval of the Agenda**

   MOVED by Anne Miller, **SECONDED** by Sid Jorna that the agenda be approved.
   CARRIED

2. **Approval of the Supplementary Agenda**
   No supplementary items.

3. **Adoption of the Minutes of April 9, 2019**

   MOVED by Bud Gibbons, **SECONDED** by Anne Miller that the minutes of the meeting of April 9, 2019, be adopted. **CARRIED**

4. **Planner's Report**
   a) At its meeting of August 14, 2019, the CRD Board adopted Bylaw No. 4290, rezoning the remaining lots in the Sooke Business Park to the Sooke Business Park Industrial (M-SBP) zone and specifying that the maximum floor area for a caretaker suite in the M-SBP zone is 90 m^2.

   b) CRD Corporate Services is hosting a committee/commission orientation on Monday, September 16, 2019 at 3 pm at the Juan de Fuca Local Area Services Building.

   c) It was confirmed that at its meeting of April 10, 2019, the CRD Board approved the temporary use permit for 7861 Tugwell Road (TP000009) allowing the proposed expansion of a home based microbrewery.

5. **Zoning and Official Community Plan Amendment Application**
   a) **RZ000267 - That Part of Section 17, Otter District, Lying East of Otter Point Road, Except Parcel C (DD43782I) And Except Parts in Plans 3054 And 17721 (3542 & 1-3542 Otter Point Road)**
   The Chair directed attention to the staff report considered by the Juan de Fuca Land Use Committee at its meeting of July 16, 2019.

   Emma Taylor advised the property owner is requesting to rezone the property to permit a seven-lot subdivision, as well as an industrial sawmill operation and an aquaponics facility (Bylaw No. 4316). An Official Community Plan (OCP) amendment is also proposed to update the Watercourses and Wetland Areas and Commercial Industrial development areas (Bylaw No. 4317). It was advised that the Land Use Committee has directed referral of the proposal to external agencies, CRD departments, the Juan de Fuca Electoral Area

PPSS-35010459-2130

Parks and Recreation Advisory Commission and to the Otter Point Advisory Planning Commission (APC).

Emma Taylor spoke to the proposed subdivision plan identifying the areas proposed for residential, aquaponics and sawmill use. It was confirmed that the proposed OCP amendment would designate the areas identified for aquaponics and sawmill use as a development permit area to address the form and character of commercial and industrial buildings. Attention was directed to the OCP policies as included in the staff report for community consideration of rezoning applications.

Emma Taylor reported that the owner has submitted an environmental assessment report prepared by Corvidae Environmental Consulting Inc. which identifies a watercourse on the property and outlines considerations for future development. It was advised that the Biologist who prepared the report is acting as the application agent.

Emma Taylor identified the subject property on the web map, identifying industrial zoned properties in the vicinity of the subject property and the undeveloped roads adjacent to the subject property. It was advised that the Juan de Fuca Community Parks division currently holds a Licence of Occupation over Weiland Road right-of-way for future construction of a multi-use trail extending from William Simmons Memorial Park to Kemp Lake Road, but that the right of way terminates at the subject property.

Emma Taylor directed attention to Bylaw No. 4316 as included in the meeting agenda package to reflect changes related to building size and lot coverage for the proposed aquaponics use as requested by the applicant.

The Chair confirmed that the application representatives were present.

The Chair requested that the representatives speak to the proposed residential area.

Residential Area

The representatives stated that:
- the five proposed residential lots are for the owner's children and will be developed as required
- individual wells have been drilled on the five proposed residential lots
- although not required, cisterns will be installed on each lot
- percolation test holes have been dug
- surface water will be protected through the update to the Watercourse and Wetland Areas development permit area (DPA)
- the watercourse identified on the subject property flows west to east, draining into King Creek

Emma Taylor identified lands on the web map that are in the vicinity of the subject property that are designated a Watercourse and Wetland Areas DPA. It was confirmed that the Watercourse and Wetland Areas DPA includes land within 30 metres (100 feet) of the natural boundary of a watercourse.

The agent responded to a question from the APC regarding viability of a trail in the vicinity of Weiland Road advising that there is methodology available for creek crossings.

The representatives confirmed that well reports can be made available.

The Chair requested that the representatives speak to the proposed aquaponics area.

Aquaponics Area

The representatives stated that:
- the facility requires 0.4 gallons per minute (GPM) of water
- a well has been drilled and a percolation test hole dug
- a cistern will be installed
- the aquaponics building is sited at the back of the property to limit views of the facility from Otter Point Road
- views of the facility will be buffered by the proposed residential use
- the proposed height of the building (12.6 m) would reduce the footprint of the facility
- a separate access to the facility is required
- access to be determined by the Ministry of Transportation and Infrastructure (MoTI)
- access will not be by easement over the other proposed lots
- the facility is anticipated to operate 35 hours a week and employ 20 workers
- operation will produce salad greens, micro greens, herbs and trout
- fish species may change depending on market demand
- reinforced, lined cement tanks will be above ground
- no water will be discharged to the surface
- the facility will be built to meet a life expectancy of 25 years
- building materials will be food grade to meet organic status
- the facility will produce vermicompost (worm compost)
- HVAC will scrub any odour but vermicompost is generally odourless
- a HACCP (Hazard Analysis and Critical Control Points) plan is being designed for the facility
- monitors will be installed to detect any water breaks
- in the event of a break, the system would shut down and overflow directed to a filtration system
- sawdust from the sawmill operation may be utilized as the aquaponics facility requires a grain chaff

Emma Taylor responded to a question from the APC confirming that, should the applicant's proposed changes to the M-4 zone not be supported, the applicant could submit a variance application to vary the building's building size and height,

The Chair requested that the representatives speak to the proposed sawmill area.

Sawmill Area

The representatives stated that:
- sawdust is currently stored outdoors
- a new structure for sawdust storage is proposed
- sawdust will be bagged for sale
- current sawmill operation employs 8-10 full-time workers

Doug Brubaker, Otter Point, stated that:
- he owns a lumber manufacturing company
- his establishment offers sawdust free of charge
- sawdust is not easy to get rid of
- water supply is a concern in the community and on his property even with rainwater capture and greywater reuse
- he has concern regarding property development, in general, as all watercourses have not been mapped

The Chair opened the floor to questions.

A member of the public stated that she lives on an adjacent property and has concern regarding hours of operation and air quality as the property owner currently burns wood debris outdoors. It was questioned if Tenbury Road, the undeveloped road to the east, will be utilized.

A representative stated that the owner will be moving to an electric sawmill and that the new mill will be enclosed.

Emma Taylor advised that the MoTI is the authority for roads and that the MoTI has relayed that an industrial access permit is required for the sawmill operation.

Ron Watson, Otter Point, stated that he:
- has concern regarding water supply as water is limited 3-5 months of the year
- has concern regarding spontaneous combustion of sawdust
- lives downhill from the subject property and can hear the sawmill operation at its present size
- has concern that noise impact will increase, should the operation expand
- had hoped to see more written material regarding the proposal

A representative stated that current noise levels are high as the site is being readied for development.

A member of the public questioned if the aquaponics facility will have backup generators.

The aquaponics representative stated that, in addition to having a diesel generator, the facility will have solar panels on the roof with storage and grid connection.

Doug Dunnett, Otter Point, stated that:
- he lives on an adjacent property
- he has concern regarding water supply
- he has concern regarding the access to the aquaponics area and provisions for buffering

Emma Taylor confirmed that the proposed Industrial Aquaculture (M-4) zone provides regulations for screening and that the Juan de Fuca Land Use Bylaw, Bylaw No. 2040, provides regulations for fencing.

A member of the public stated that:
- he lives across from the subject property
- the subject property sits in a valley
- noise from the sawmill operation echoes across the valley
- the property has been cleared with the exception of the lands within the riparian assessment area
- no buffer has been left
- he has concern regarding hydrocarbon storage
- King Creek is salmon bearing

A representative stated that there is a replanting plan.

Arnie Campbell, Otter Point, stated that:
- he has no issue with the background noise associated with the operation's current outside work
- he has issue with noise produced by the ventilation system for the current enclosed structure
- the ventilation system noise is a high pitched whine
- he has concern that noise impact will increase, should enclosed operations increase

A member of the public stated that:
- she lives across from the subject property
- noise levels over the past year have been too much
- she has concern regarding the compost facility increasing the rodent population
- she has concern for the existing wildlife/bear corridor the subject property provides
- she has concern regarding water supply
- she has concern regarding increased traffic on Otter Point Road
- Otter Point Road was not built for large volumes
- there is already an issue with speeding on Otter Point Road

A member of the public stated that:
- he has concern regarding noise
- he has concern regarding the aquaponics facility, should the business plan fail
- it is not known what kind of operation could happen in future
- the community should question what it is getting back by supporting the rezoning proposal

Emma Taylor responded to questions from the APC confirming that the OCP is the guiding document for community consideration of rezoning applications and directed attention to policy 4.1.1 (4) which outlines that support for rezoning is more likely where it can be demonstrated that community values and features can be protected subject to the listed criteria. Clarification was provided regarding the potential requirement for 5% park dedication at the time of subdivision pursuant to Section 510 of the *Local Government Act.*

A member of the public stated that:
- she has concern regarding water supply
- noise levels over the past year have been awful
- work has started at 6:00 am and stopped at dark
- work has been lifestyle changing
- she no longer enjoys being outdoors on her property

- the community should question if the proposal is wanted by the community
- the community should question if it wants to support a rural operation developing into an industrial operation
- to date, it has not been clear as to what the property owner is proposing
- she is having a hard time believing that what is proposed will happen

Emma Taylor responded to the question from the public advising that the applicant can request that additional uses be added to the proposed M-4 zone and that, in future, a property owner could submit an application to rezone the property or submit an application for a temporary use permit.

Dane Bugoy, Otter Point, stated that:
- he has concern regarding water supply
- he has concern regarding fire protection as the volunteer fire department has limited resources
- residents regularly need to resort to trucked water
- hauling water increases traffic, impacting carbon levels
- he supports extension of CRD water and hydrant installation

A member of the public stated support for noise mitigation measures as there will also be noise associated with the property's long term buildout.

The agent for the application responded to questions from the public confirming that:
- some trees have been removed from the Streamside Protection and Enhancement Area
- replanting recommendations have been made
- no buildings are currently sited or planned to be sited in the SPEA
- the aquaponics facility will require a stream crossing
- the stream crossing would be in accordance with provincial regulations

Arnie Campbell requested that the proposed subdivision plan be updated to reflect that the property is in Otter Point.

Emma Taylor confirmed that the plan notes the property mailing address and that the property borders the District of Sooke.

The representatives responded to a question from the APC advising that there is no lot large enough in the Sooke Business Park to accommodate the aquaponics proposal which requires at least 1.5 acres of lot coverage.

John McCrae, Fire Chief, Otter Point Volunteer Fire Department, stated that:
- the proposal was referred to the Otter Point Volunteer Fire Department
- the Otter Point Volunteer Fire Department has concern regarding water supply for firefighting services
- the Otter Point Volunteer Fire Department will work with the applicant and the CRD to address concerns

The APC stated:
- concern regarding dust levels
- support for a noise abatement agreement
- concern regarding increased traffic and property access/egress
- support for setting limitations to the aquaponics use proposed by the M-4 zone
- that the OCP supports green initiatives
- trucking water is not a green initiative

The APC acknowledged the concerns identified by the members of the public and advised that residents can forward their concerns directly to staff and to the Land Use Committee.

MOVED by Anne Miller, **SECONDED** by Al Wickheim that the Otter Point Advisory Planning Commission recommend that the Juan de Fuca Land Use Committee allow for further review of primary community concerns including water supply, firefighting servicing, noise, hours of work, traffic, rodents, future land use considerations, pollution including lighting, fencing/buffering and protection of the riparian area.

Opposed: Bud Gibbons
CARRIED

An APC member stated that the proposal should not be given further consideration until the owner addresses current noise issues.

The APC asked the representatives to relay the community's concerns to the owner. The APC stated that it would have appreciated hearing directly from the property owner.

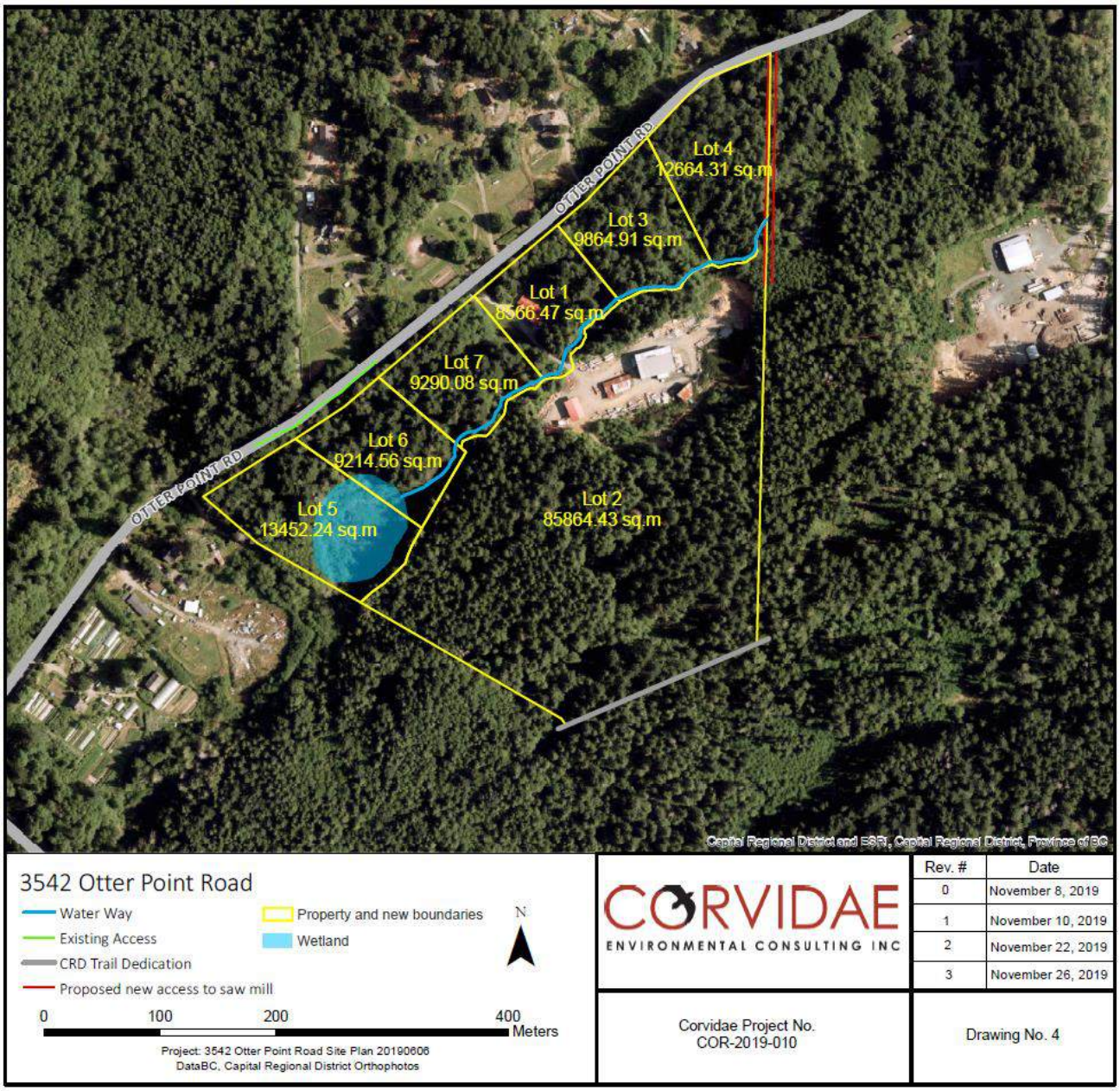
6. Adjournment

The meeting adjourned at 9:10 pm.

Chair

PPSS-35010459-2130

Appendix D: Development Proposal



3542 Otter Point Road

Water Way
Existing Access
CRD Trail Dedication
Proposed new access to saw mill
Property and new boundaries
Wetland

N

0 100 200 400 Meters

Project: 3542 Otter Point Road Site Plan 20190606
DataBC, Capital Regional District Orthophotos

CORVIDAE ENVIRONMENTAL CONSULTING INC

Rev. #	Date
0	November 8, 2019
1	November 10, 2019
2	November 22, 2019
3	November 26, 2019

Corvidae Project No.
COR-2019-010

Drawing No. 4

Appendix E: Proposed Bylaw No. 4316

CAPITAL REGIONAL DISTRICT
BYLAW NO. 4316

A BYLAW TO AMEND BYLAW NO. 2040, THE "JUAN DE FUCA LAND USE BYLAW, 1992"

The Capital Regional District Board, in open meeting assembled, enacts as follows:

1. Bylaw No. 2040 being the "Juan de Fuca Land Use Bylaw, 1992" is hereby amended:

A. SCHEDULE A, PART 1 DEFINITIONS

(a) By adding a new definition of "INDUSTRIAL SAWMILL" after the definition of "INDUSTRIAL USE, LIGHT", to be read as follows:

"INDUSTRIAL SAWMILL means a building, structure, or area where timber is cut, sawn, or planed, either to finished lumber or as an intermediary step, and may include facilities for the kiln drying of lumber, and may include the distribution of such products on a wholesale or retail basis, subject to the *Environmental Management Act*;"

(b) By deleting the definition of INDUSTRIAL ZONE and replacing it with a new definition, to be read as follows:

"INDUSTRIAL ZONE means the M-SBP, M-2 and M-3 zoning districts;"

B. SCHEDULE A, PART 1, GENERAL REGULATIONS

(a) By amending section 3.07 ZONES by adding the words "M-3 Industrial Sawmill" and deleting the words "M-1 Light Industrial" "M-2-MM General Industrial – Medical Marihuana", "M-3 Heavy Industrial" and "M-4 Marine Industrial"

C. SCHEDULE A, PART 2, ZONING DISTRICTS

(a) By deleting section 26.0 Light Industrial Zone – M-1, section 28.0 Heavy Industrial Zone – M-3, and section 29.0 Marine Industrial Zone – M-4 in their entirety;

(b) By renumbering section 27B.0 Sooke Business Park Industrial Zone – M-SBP as section 26.0.

(c) By creating a new zone, "Industrial Sawmill Zone – M-3", to be inserted after section 27.0, and to be read as follows:

"**28.0 Industrial Sawmill Zone – M-3**

28.01 Permitted Uses

In addition to the uses permitted by Section 4.15 of Part 1 of this Bylaw, the following uses and buildings are permitted in the Industrial Sawmill M-3 zone:

(a) Sawmills on a permanent foundation and enclosed in a building;

(b) Lumber milling, processing and storage;

(c) Processing and manufacturing of wood products, including the making of cabinets, furniture, plywood, lath and particle board, and the manufacturing of modular or pre-fabricated homes and structures, excluding pulp and paper mills;

(d) Log storage and sorting;

Accessory Uses:

(a) Accessory retail and wholesale sale of lumber processed on site;

(b) Accessory retail and wholesale sale of wood products manufactured on site;

(c) Offices accessory to a principal use;

(d) Accessory buildings and structures pursuant to Part 1, Section 4.01.

28.02 Minimum Lot Size for Subdivision Purposes

The minimum lot size for subdivision purposes shall be 8 ha.

28.03 Maximum Floor Area

The maximum total floor area of all buildings shall be 5000 m².

28.04 Height

The maximum height shall be 11 m for all principal buildings and structures.

28.05 Required Yards

(a) Buildings shall be set back at least 30 m from parcel boundaries.

(b) Storage of any material shall not be permitted within 30 m from the parcel boundaries.

28.06 Storage

Storage shall not be permitted in required yards.

28.07 Lot Coverage

(a) The maximum lot coverage (buildings and structures) shall be 10%.

(b) The maximum area to be used for an industrial sawmill operation including storage of materials) is 15% of the parcel.

28.08 Screening

(a) A vegetative screen shall be located and maintained along the entire length of parcel boundaries.

(b) This vegetative screen shall consist of coniferous vegetation native to the region that is not less than 2 m high, not less than 15 m deep, and spaced not more than 2 m apart."

D. SCHEDULE A, PART 3, PARKING AND LOADING REQUIREMENTS

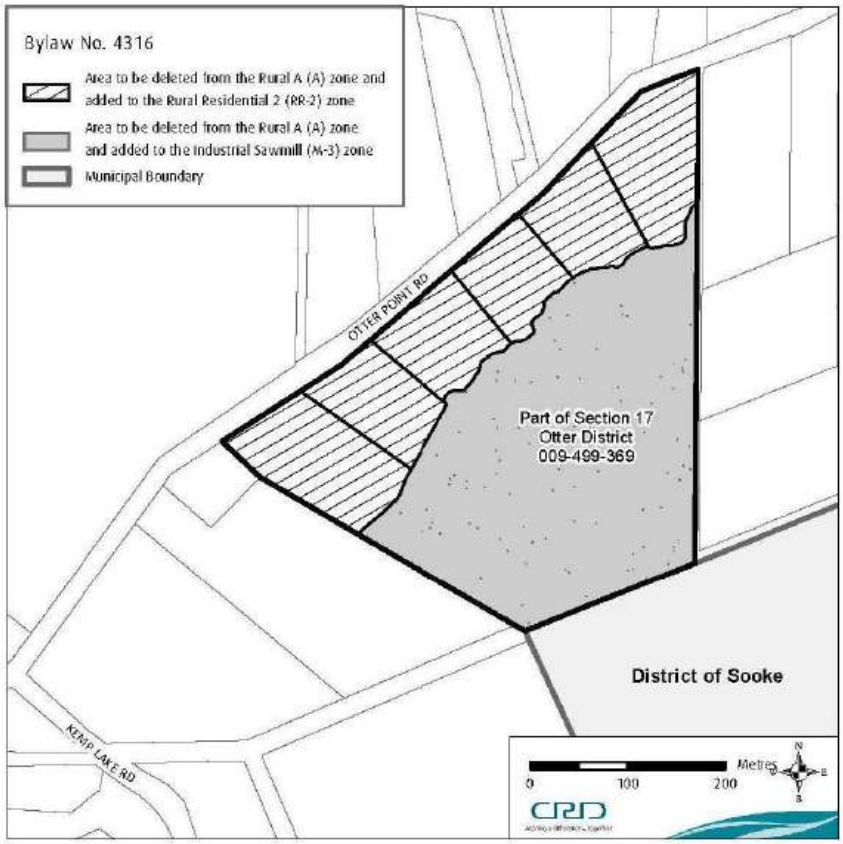
(a) By amending section 5.0 by adding the words "Industrial Sawmill 1 per 2 employees but not less than 5 per tenant or establishment;"

E. SCHEDULE B, MAP NO. 2 – OTTER POINT ZONING MAP

(a) By deleting That Part of Section 17, Otter District, Lying East of Otter Point Road, Except Parcel C (DD43782I) And Except Parts in Plans 3054 And 17721 from the Rural A (A) Zone, and adding to the Rural Residential 2 (RR-2) Zone, as shown on Plan No.1.

(b) By deleting That Part of Section 17, Otter District, Lying East of Otter Point Road, Except Parcel C (DD43782I) And Except Parts in Plans 3054 And 17721 from the Rural A (A) Zone, and adding to the Industrial Sawmill (M-3) Zone, as shown on Plan No.1.

Plan No. 1 of Bylaw 4316, an amendment to Bylaw No. 2040



2. This bylaw may be cited as "Juan de Fuca Land Use Bylaw, 1992, Amendment Bylaw No. 147, 2019".

READ A FIRST TIME THIS	day of	, 2020.
READ A SECOND TIME THIS	day of	, 2020.
READ A THIRD TIME THIS	day of	, 2020.
ADOPTED THIS	day of	, 2020.

CHAIR CORPORATE OFFICER

Appendix F: Proposed Bylaw No. 4317

CAPITAL REGIONAL DISTRICT
BYLAW NO. 4317

A BYLAW TO AMEND BYLAW NO. 3819, THE "OTTER POINT OFFICIAL COMMUNITY PLAN, 2014"

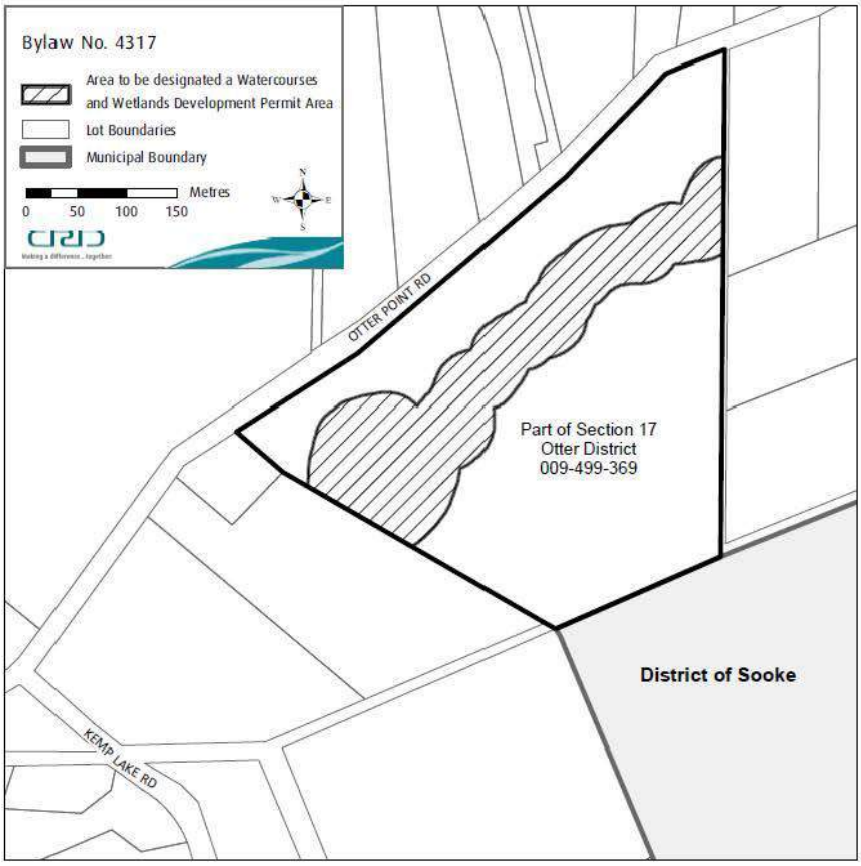
The Capital Regional District Board, in open meeting assembled, enacts as follows:

1. Bylaw No. 3819 being the "Otter Point Official Community Plan, 2014" is hereby amended:

A. SCHEDULE A, MAP NO. 5c – WATERCOURSES & WETLANDS DEVELOPMENT PERMIT AREA

(a) By adding that part of That Part of Section 17, Otter District, Lying East of Otter Point Road, Except Parcel C (DD43782I) And Except Parts in Plan 3054 And 17721 to the Watercourses and Wetlands Development Permit Area, as shown on Plan No. 1.

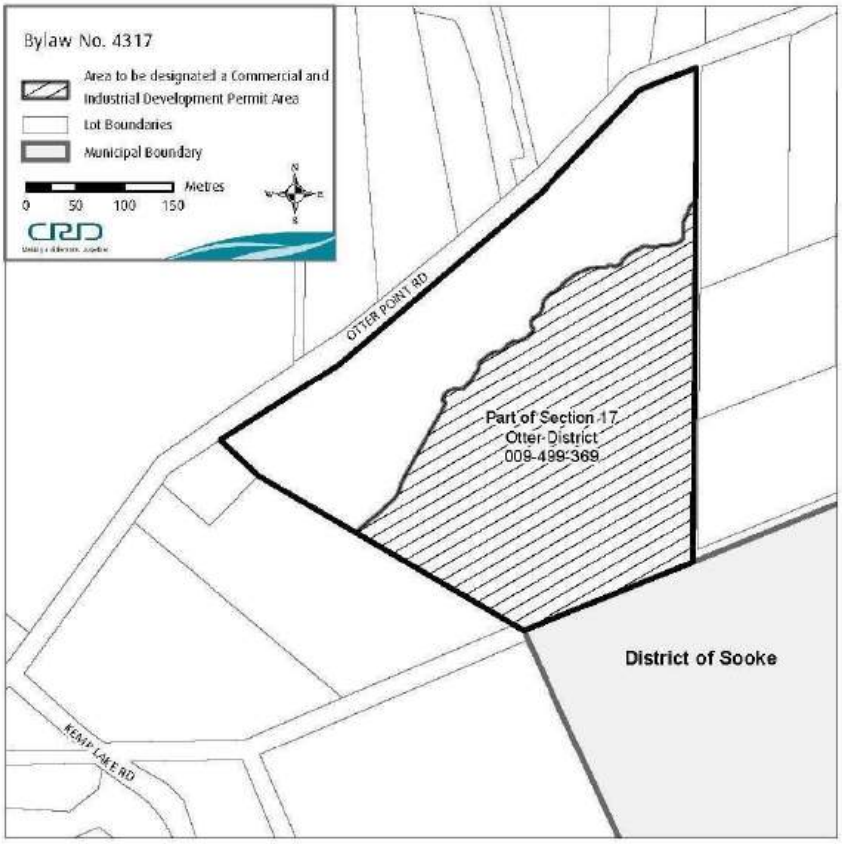
Plan No. 1 of Bylaw 4317, an amendment to Bylaw No. 3819



B. SCHEDULE A, MAP NO. 5e – COMMERCIAL & INDUSTRIAL DEVELOPMENT PERMIT AREA

(a) By adding that part of That Part of Section 17, Otter District, Lying East of Otter Point Road, Except Parcel C (DD43782I) And Except Parts in Plan 3054 And 17721 to the Commercial & Industrial Development Permit Area, as shown on Plan No.2.

Plan No. 2 of Bylaw 4317, an amendment to Bylaw No. 3819



2. This bylaw may be cited as "Otter Point Official Community Plan, 2014, Amendment Bylaw No. 2, 2019".

READ A FIRST TIME THIS day of , 2020.

READ A SECOND TIME THIS day of , 2020.

READ A THIRD TIME THIS day of , 2020.

ADOPTED THIS day of , 2020.

CHAIR CORPORATE OFFICER

Appendix G: Environmental Report



ENVIRONMENTAL ASSESSMENT
FOR 3542 OTTER POINT ROAD

PREPARED FOR:

EMMA TAYLOR, PLANNER
PLANNING AND PROTECTIVE SERVICES DEPARTMENT,
JDF ELECTORAL AREA, CAPITAL REGIONAL DISTRICT
3-7450 BUTLER ROAD, SOOKE BC V9Z 1N1

CORVIDAE PROJECT #2019-010
APRIL 2019

CORVIDAE
ENVIRONMENTAL CONSULTING INC
6526 WATER STREET, SOOKE, BC

SOLUTION ORIENTED. PROTECTION OF THE ENVIRONMENT. ABSOLUTE INTEGRITY. OPEN COMMUNICATION. RESPECT.

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1 INTRODUCTION

Corvidae Environmental Consulting Inc. (Corvidae) has been contracted to provide this Environmental Assessment (EA) for the proposed subdivision and development to 3542 Otter Point Road (the property), property ID 009499369, zoning Rural A.

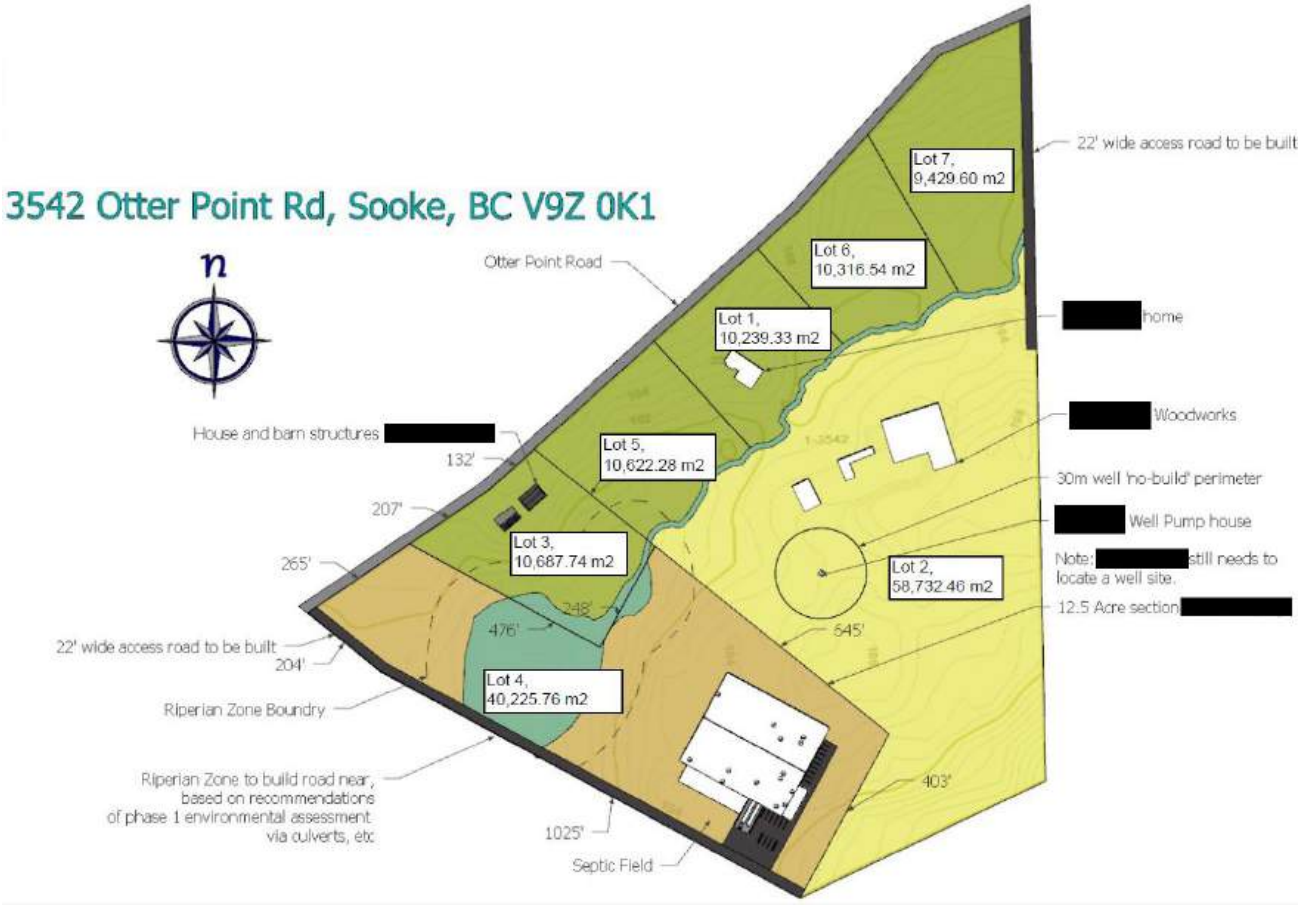
This document addresses the requirements in Section 5.3.1 of Capital Regional District (CRD) Bylaw No. 3819 and provides an assessment on the environmental conditions on the property, potential impacts of the proposed development of access and clearing for building construction, and recommendations on protection of environmentally sensitive features and methods to minimize impacts of the proposed development.

1.1 PROJECT BACKGROUND

The landowner [redacted] are subdividing the property at 3542 Otter Point Road, which is approximately 37 acres (15 ha). Currently, an access road and a residence are located near the mid-point of the northwestern property line (see Figure 1). Further along the access road, the property owner operates a sawmill and logging operation (Photo 1). With the exception of the trees immediately adjacent to the watercourse and wetland, the southern two thirds of the property have been logged recently (Photo 2). Due to the recent timing for logging, the removal of trees in this area is not reflected on the available aerial imagery.

The property owner intends to subdivide the property into five residential lots and two 4 hectare lots for a sawmill and aquaponics facility. The current owner will retain ownership of the eastern portion of the property where the existing residence and sawmill are located (Lots 1a-d and 2). The western portion will be divided into to two lots, approximately 1 hectare (2.47 acres) for the road side (northern) Lot 3 and 3.5 hectare (8.64 acres) for the southern Lot 4 (Figure 1). The plan for the property is subdivision, and re-zoning of Lots 1a-d and 3 to residential and Lots 2 and 4 to light industrial (or zoning designated by CRD with review of planned land use.

Figure 1 – 3542 Otter Point Road – Proposed Subdivision



1.2 REGULATORY FRAMEWORK

This environmental assessment is designed to comply with the provisions set out in the Otter Point Official Community Plan (OCP) for development permit areas and for compliance with the provisions for environmental protection contained in the following relevant legislation:

Municipal

- Capital Regional District Otter Point OCP, Bylaw No. 3819

  Development Permit Area No. 3: Watercourses and Wetland Areas. Defined as the area within 30 metres (100 feet) of the natural boundary of watercourses, wetlands and lakes as outlined on Map 5c. Designated as a Development Permit Area, the "Watercourses DPA", under Section 919.1(1)(a) of the Local Government Act, for protection of the natural environment, its ecosystems and biological diversity.

- The property is zoned as Rural A. Bylaw No. 3819 states:

  Building strata development on Rural A zoned lands is not supported. However, for Rural A parcels created prior to adoption of this Plan, a rezoning could be considered to permit a subdivision which would permit a density of 1 parcel per ha up to 4 ha and 1 parcel per 2 ha for each additional 2 ha portion of the property; (page 21, Section 3.1.1.d.).

  The plan for the property is subdivision, and re-zoning of the 1 hectare and 4 hectare lots only, Lots 1a-d are planned to remain the same: no change in land-use, averaging 1 ha each, R2 zoning.

Provincial

British Columbia Wildlife Act (1996)

Invasive Species Council of British Columbia

BC Weed Control Act (1996, current as of October 2016)

Federal

Migratory Birds Act (1994)

2 ENVIRONMENTAL SITE ASSESSMENT

Corvidae completed a site visit on February 19, 2019 as part of the subdivision application and subsequent re-zoning application for Lots 2 and 3. A qualified professional biologist (QEP) walked the the property subject to the proposed subdivision and examined any Environmentally Sensitive Areas, specifically the wetland and watercourses on the property. Appendix A shows photos of the property taken during the field visit.

2.1 LANDSCAPE AND SOILS

Soils in the Biogeoclimatic zone are typically moderately deep Orthic Humo-Ferric Podzols with Hemimor humus forms (Pojar et al. 1991). The soils on the site were a sandy clay loam.

The topography of the property is varied. The property generally slopes from the back (southern side) north towards the watercourse and wetland area, and from Otter Point Road south to the wet areas. Throughout the upland areas on the property there are small undulations, both natural and those created by logging access and equipment.

2.2 VEGETATION

The project is located within the Coastal Western Hemlock (CWH) biogeoclimatic zone, and specifically in the western variant of the Very Dry Maritime subzone (classified as CWHxm2). Drier subzones of the CWH are typically dominated by components of western hemlock (*Tsuga heterophylla*), Douglas-fir (*Pseudotsuga menziesii*) and western red cedar (*Thuja plicata*) (Pojar et al. 1991). Salal (*Gaultheria shallon*), dull Oregon- grape (*Mahonia nervosa*), and red huckleberry (*Vaccinium parvifolium*) typify the poorly to moderately developed shrub layer. Oregon beaked moss (*Kindbergia oregana*), step moss (*Hylocomium splenden*), lanky moss (*Rhytidiadelphus loreus*), and flat moss (*Plagiothecium undulatum*) dominate the well-developed moss layer (Pojar et al. 1991).

The property was once entirely forested, but currently only the portion closest to the road and surrounding the wetland contain mature coniferous forest. In addition to the clear cut on the rear two-thirds of the property, a small area in the western portion of the property near the road has been cleared (Photo 3). The wetland is dominated with shrubs and sedges (Photos 4 and 5), and mature alder trees (Photo 6) along the western property line. During the site assessment the species in Table 1 were found on the site.

Table 1. Plant Species observed on site during field visit on February 19, 2019.

Common Name	Scientific Name	BC Provincial Status[1]	*SARA* Schedule 1 Status[2]
Western redcedar	*Thuja plicata*	Yellow	--
Western hemlock	*Tsuga heterophylla*	Yellow	--
Douglas-fir	*Pseudotsuga menziesii*	Yellow	--
Big leaf maple	*Acer macrophyllum*	Yellow	--
Red alder	*Alnus rubra*	Yellow	--
Salal	*Gaultheria shallon*	Yellow	--
Sword fern	*Polystichum munitum*	Yellow	--
Deer fern	*Blechnum spicant*	Yellow	--
Evergreen huckleberry	*Vaccinium ovatum*	Yellow	--
Common rush	*Juncus laccatus*	Yellow	--

Common Name	Scientific Name	BC Provincial Status[1]	*SARA* Schedule 1 Status[2]
Grass sp.	--	--	--
Sedge sp.	--	--	--
Salmonberry	*Rubus spectabilis*	Yellow	--
Hardhack	*Spiraea douglasii*	Yellow	--
Himalayan blackberry	*Rubus armeniacus*	Invasive	--
English holly	*Ilex aquifolium*	Invasive	--

[1] BC Conservation Data Centre (CDC) 2019
[2] Government of Canada 2019

2.3 WILDLIFE

The forested habitat is found in the Coastal Western Hemlock biogeoclimatic zone is home to many wildlife species. Black-tailed deer, black bear, marten and gray wolf are the most common large mammals in this zone on Vancouver Island. For bird species in this zone, the following typically occur: great horned owl, barred owl, ruffed grouse, band-tailed pigeon, northern flicker, hairy woodpecker, common raven, Steller's jay, chestnut-backed chickadee, red-breasted nuthatch, varied thrush, red-tailed hawk, Townsend's warbler. For amphibians, the following can occur: western toad, Pacific treefrog, western redbacked salamander. (Pojar et al. 1991)

Wildlife habitat present on the property includes mature forest, riparian habitat and wetland habitat. No wildlife species of concern were observed in the project area during the site visit. No dens, nests or burrows were found. No bird nests or amphibians were observed during the assessment, however, the timing of the field visit, and the weather conditions were not suitable for breeding bird or amphibian surveys.

During the site assessment the species in Table 2 were found on the site.

Table 2. Wildlife Species observed on site during field visit on February 19, 2019.

Common Name	Scientific Name	BC Provincial Status[1]	*SARA* Schedule 1 Status[2]
Pacific wren	*Troglodytes pacificus*	Yellow	--
Oregon junco	*Junco hyemalis*	Yellow	--
Chestnut-backed chickadee	*Poecile rufescens*	Yellow	--
American robin	*Turdus migratorius*	Yellow	--
Douglas's squirrel (tracks)	*Tamiasciurus douglasii*	Yellow	--
Black-tailed deer (tracks and scat)	*Odocoileus hemionus columbianus*	Yellow	--

[1] BC CDC 2019
[2] Government of Canada 2019

2.4 SPECIES AT RISK

A query of the BC CDC iMap tool yielded occurrences of the following 2 species at risk within a two-kilometer radius of the property (BC CDC 2019). Species are listed in Table 3 and the location of occurrences in relation to the property is provided in Figure 2.

Table 3. Species at Risk that may occur in the vicinity of 3542 Otter Point Road

Common Name	Scientific Name	BC Provincial Status[1]	*SARA* Schedule 1 Status[2]
Ermine, anguinae subspecies	*Mustela erminea anguinae*	Blue-listed	--
Painted Turtle - Pacific Coast Population	*Chrysemys picta pop. 1*	Red-listed	Endangered

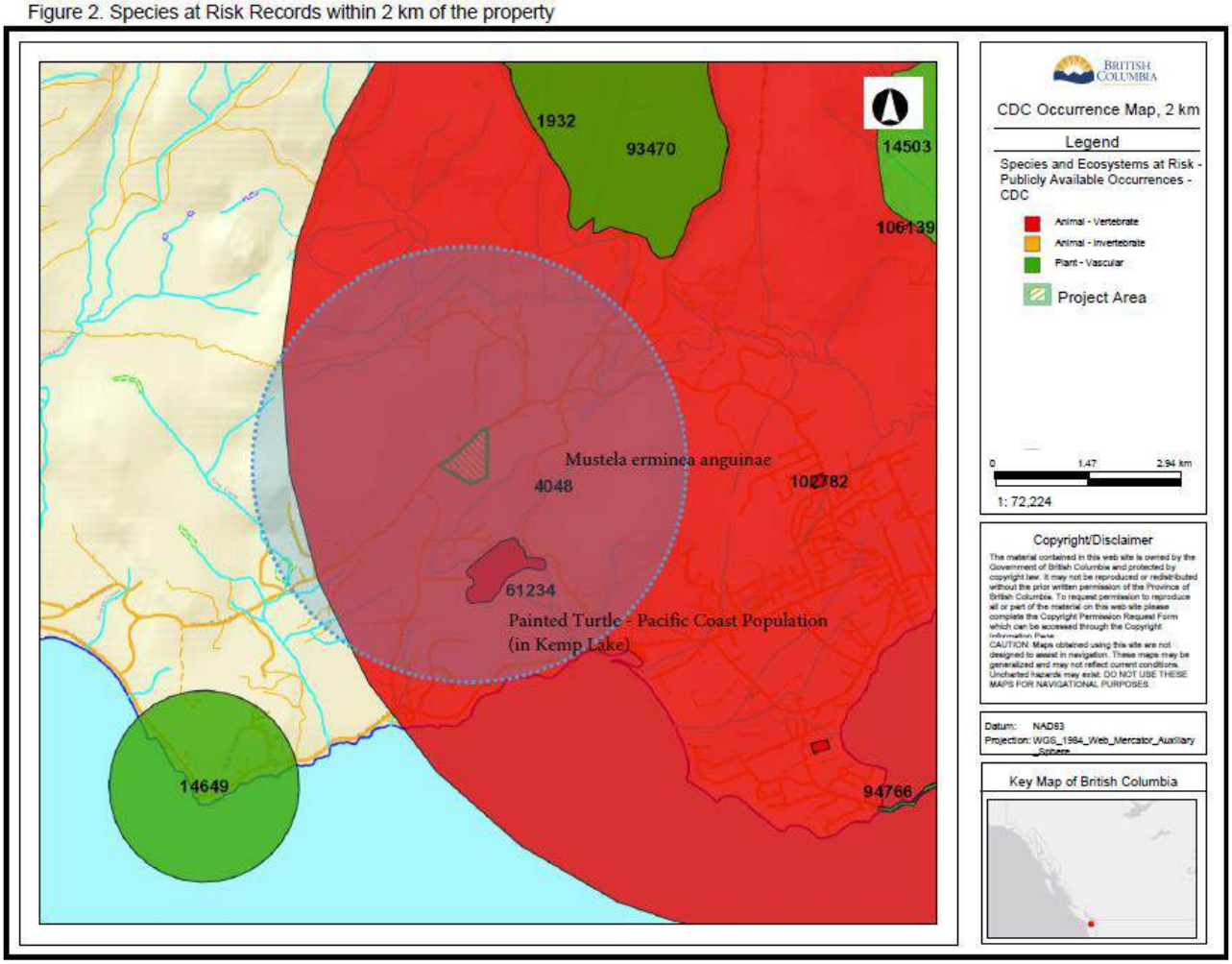
[1] BC CDC 2019
[2] Government of Canada 2019

The ermine (Mustela erminea anguinae) is widespread throughout BC in a variety of habitats (e.g. forests, meadows, wetlands, agricultural and cultivated fields) and over a wide elevation range. Foraging habitat for this species is present on the forested portions of the property.

The Keen's Myotis (*Myotis keenii*), a cave-roosting bat species, occurs at elevations of 0 to 1100 m above sea level. Foraging occurs over a wide variety of habitat including intertidal areas, estuaries, upland forests, wetlands, and riparian areas. Suitable rock crevices or caves do not occur on the property, however, suitable foraging habitat is present.



Figure 2. Species at Risk Records within 2 km of the property



2.5 RIPARIAN AREAS AND AQUATIC ECOSYSTEMS

A large wetland is present on the property in the southwest portion, included in the area mapped as a Riparian/Wetland Sensitive Ecosystem by CRD. During the site visit on February 19, 2019, the boundaries of the wetland were mapped (Figure 1).

The wetland is fed by an unmapped watercourse (drainage/creek) running from the northeastern most corner of the property, between the existing residential and sawmill areas. The watercourse passes under the sawmill access road through a culvert. On the downstream side of the culvert, the watercourse opens into a marshy wetland area. This continues through the riparian forest (Photo 7) to the large wetland in the property's southwest. A small portion of the watercourse is channelized (Photo 8), however, the majority is wide and marshy (Photo 5).

The site visit was done in late winter, during the wettest season, and therefore likely measured the wetland at its most saturated. In the summer, the wetland area will be much drier than during the field visit, as evident by the type of vegetation.

Along the property's southwestern boundary, the wetland and riparian areas are constrained by historical addition of fill to the neighbouring property (Photo 9). Approximately 500 m downstream, the drainage is dammed and used as a water supply for agriculture (ALM Farm).

There are no fish occurrence records on the property, and the watercourse and wetland do not provide suitable fish habitat due to the shallow, seasonal nature of the wetland and creek flow, and because the dam downstream would serve as a barrier to fish passage.

Adjacent to the watercourse and wetland is riparian habitat. The wet areas are in a depression on the property, and the terrain slopes upwards on both sides. Therefore, the vegetation transitions from riparian vegetation to upland forest within 5 to 20 m of the watercourse and wetland periphery. A preliminary 30 m SPEA has been applied to the mapped wetland boundary in Figure 1. This 30 m setback is in accordance with the CRD Bylaw No. 3819, as stated in Section 1.2 of this report.

3 POTENTIAL ENVIRONMENTAL EFFECTS

The potential impacts from the project on the environment will be:

- loss of existing vegetation and disturbance of soils,
- introduction and spread of invasive plant species,
- change in wildlife habitat availability and wildlife mortality risk,
- sediment movement in the project area, and
- modification of the wetland and riparian habitat.

These impacts have already occurred on the eastern and southeastern areas of the property where logging activities and lumber operations are ongoing. Historically there has been disturbance to the northwest area (Lot 2) as evident by clearing, an old access road and stumps. This appears to have happened several years, perhaps decades, ago.

If a dwelling is constructed on Lots 3 and 4 there will be similar disturbances – clearing for construction, building foundations and construction of the home, access creation, and surrounding landscaping.

The proposed aquaponic facility on Lot 4 is proposed in the previously cleared area. The facility construction will involve noise and ground disturbance during grading and facility construction. Clearing of vegetation and wetland modification will occur during the creation of the access road to the rear portion of the property.



VEGETATION

Where cleared areas are constructed for facilities, residences and access roads, there will be a permanent loss of vegetation. The potential effects of these changes include loss of biodiversity of plant species and increased susceptibility to invasive plants not only in the cleared area but also in adjacent plant communities. Cleared areas have increased wind strength and increased light and moisture penetration. This may result in changes to the canopy structure and understory plant species in the adjacent forest.

Invasive plants are particularly adept at colonizing degraded plant communities and disturbed soils in high traffic areas, such as the margins of roads and parking areas. Invasive plants establish readily in disturbed areas as they have a wide ecological tolerance and grow and propagate quickly. The effects of invasive plant establishment may be the reduction or displacement native species by capturing resources and occupying habitats.

WILDLIFE AND WILDLIFE HABITAT

Clearing and construction of the project will alter habitat structure and result in direct habitat loss or alteration. This will directly impact the forested, riparian and wetland habitats. Habitat loss and alteration can cause displacement of wildlife, use of less suitable habitat, reduced foraging ability (Bird et al. 2004), increased energy expenditure (Jalkotzy et al. 1997) and lower reproductive success (Habib et al. 2007).

Reduced habitat effectiveness can occur as a result from the creation of habitat edges, habitat fragmentation, or sensory disturbance (e.g., noise, artificial light, proximity to facilities and infrastructure, human activity and traffic). The effectiveness of wildlife habitat may be affected by sensory disturbance such as noise associated with construction and long-term activities at the aquaponics facility. Noise effects on wildlife can potentially include habitat loss through avoidance, increased energy expenditure, changes in normal behaviours (e.g., feeding) and impaired communication between individuals, such as songbirds. In addition, reduction in habitat connectivity may create barriers to wildlife movement. Many wildlife species avoid crossing openings or move more slowly in open areas (Jalkotzy et al. 1997), effectively resulting in habitat fragmentation.

During clearing and construction of the Project, there will be an increase wildlife mortality risk. Wildlife mortality may occur due to wildlife collisions with vehicles or equipment, loss or disruption of habitat (e.g., clearing and soil handling has potential to destroy nests, dens, overwintering sites), sensory disturbance (i.e., nest abandonment) and human conflict.

WETLAND MODIFICATION AND SEDIMENT CONTROL

Installation of the access road through the wetland and riparian habitat will alter the hydrological patterns of the drainage. The unmapped watercourse has been modified historically for the installation of the sawmill access road and culvert. Existing extensive modification and addition of fill has also occurred on the adjacent property to the west. Implementation of mitigation measures will serve to restore and maintain the drainage of water to the southwest.

Removal of vegetation and ground disturbance may expose soils to erosion and can result in the movement of sediment on the property. Damage or degradation of soil surfaces during construction can include loss of soil structure, increased erosion, and soil compaction, which can negatively affect post-construction reclamation efforts.

RESIDUAL ENVIRONMENTAL EFFECTS

The rezoning and subdivision of the property will not have any environmental impacts.



The residual environmental impacts of the activities on the property will be reduced by the implementation of the mitigation measures recommended in Section 4 of this report. The environmental disturbance in this rural community will be long-term due to the permanence of the road and buildings; and is considered a moderate impact because of the removal of the vegetation (invasive and otherwise). The moderate impact is due to the logging having already occurred on most of the property prior to the site assessment.

4 RECOMMENDED ENVIRONMENTAL PROTECTION MEASURES

The mitigation measures provided in this report are to meet regulatory requirements and protect habitat. The regulatory requirements include the Section 11 with the provincial government and CRD Bylaw No. 3819. Section 11 is the Apply for a Change Approval or Submit Notification of Instream Work, where a change approval is requested for written authorization to cross a waterbody.

Vegetation clearing should be outside of the migratory bird window (prior to March 15th or after August 15th). Whenever possible, all grading and construction work for the access road and buildings should be done during dry conditions. Construction of the access road should occur when the water levels in the wetland are at their lowest (summer).

PROTECTION OF THE RIPARIAN AREA AND WETLAND

No clearing should occur within the SPEA, with the exception of the access road installation. The SPEA should be clearly marked prior to any clearing or construction, to ensure no disturbance occurs within this sensitive riparian and wetland ecosystem.

ACCESS ROAD INSTALLATION

All construction for the access road to the rear of the property and proposed aquaponic facility site should occur in the dry season, when the water levels in the watercourse and wetland are lowest (or completely dry). Only the area required for the access road (4 m) should be cleared: the boundaries for vegetation clearing should be clearly marked before construction commences.

As part of the Section 11 application, Corvidae will provide the culvert size, length and quantity for the drainage to reach under the access road. The culverts will be directed to the same area where the water is diverted to now, the diversion caused by the fill put in the neighbouring property. The specifications for the culverts, road base, timing and area will all be provided as part of the Section 11 and a Construction Environmental Management Plan to the CRD and the proponent.

POLLUTION CONTROL, FUELING AND SPILL RESPONSE

All equipment accessing the property should be in good working order. Any leaks should be repaired prior to commencing work. Any fueling of equipment will be done with drip-trays underneath on site, on the road or set staging area. There will be no fueling of equipment within 30 m of the watercourse and wetland.

All fuel containers and other potentially deleterious substance containers will be secured so that they may not be emptied or upset by vandals when left overnight in the area.

A large, labeled mobile spill kit capable of mitigating spills of 100 litres of fuel is recommended to be kept on site adjacent. The kit should contain the following materials or equivalent:

- absorbent pads (hydrocarbons and antifreeze)

- absorbent socks (oil, gas & diesel)
- a jar of plug n dike (leak stop compound)
- 1 spill instruction sheet

REVEGETATION

Measures taken to minimize soil degradation and compaction include:

- Maintaining soil structure by excavating the soil layers separately and storing covered with tarps.
- Re-applying the separated topsoil as the surface layer prior to commencing with reclamation and landscaping efforts.
- Revegetating exposed soil as soon as possible following construction.
- Implementing weed management measures as required under the Weed Control Act. This includes:
    - Assessing the source for the gravel and ensuring it is weed free and clean (not full of silt).
    - Cleaning all equipment prior to entering the site to avoid spreading of invasive species.

Corvidae recommends landscaping all disturbed areas with native vegetation to compete with invasive species, reduce irrigation requirements and provide wildlife habitat.

INVASIVE SPECIES

Two invasive species were observed on site: Himalayan blackberry and English holly.

Invasive weed control is difficult for established populations. Immediate eradication of new and small infestations should be a high priority. Hand-pulling and cutting are effective on young plants. All plant material must be disposed of by burning or landfill. Invasive species removal should occur in spring, before the plants flower and seed.

WILDLIFE AND WILDLIFE HABITAT

Measures taken to minimize impacts on wildlife and wildlife habitat include:

- Follow the best management guidelines outlined in:
    - "Guidelines for Amphibian and Reptile Conservation during Urban and Rural Development in British Columbia – 2014" (Ministry of Environment 2014a).
    - "Develop with Care 2014: Environmental Guidelines for Urban and Rural Land Development in British Columbia" (Ministry of Environment 2014b).
- Where suitable, retain habitat that provides shelter for wildlife, such downed logs and standing dead trees.
- Avoid removal of established trees or shrubs, where possible.
- Undertake all vegetation clearing and access road construction outside the amphibian breeding season (March 15 to August 15; Environment Canada 2017). If this is not possible, a QEP must conduct pre-construction surveys to identify any breeding activity within the footprint and recommend appropriate mitigation.



- Undertake all vegetation clearing outside the bird migratory season and breeding bird window (March 15 to August 15; Environment Canada 2017). This will include the breeding window for raptors particularly for eagles and osprey which extends from January to August (Ministry of Environment 2014). If this is not possible, a QEP must conduct pre-construction surveys to identify any nesting activity within the footprint and recommend appropriate mitigation.

EROSION AND SEDIMENT CONTROL MEASURES

The primary focus of erosion and sediment control planning is erosion control; if there is no erosion then there is no sediment. Erosion control is far more cost effective to implement and manage than sediment control.

Site specific controls have been developed based on a site visit and experience from past projects. Erosion controls, listed in Table 4, are recommended to be maintained for the duration of building any dwellings and removed completely following landscaping.

Table 4. Erosion and Sediment Control Mitigation Measures

Activity	Potential Impacts	Mitigation Measures
Clearing of existing vegetation	Exposure of underlying soils to erosion	Install silt fencing to prevent sediment laden runoff from entering the watercourse or wetland. Minimize amount of time soils are exposed, plant native vegetation and landscaping materials within the growing season following removal of non-native vegetation and landscaping.
General construction	Sediment laden runoff	Store soils in dry, flat areas, outside of the SPEA.
Restoration and native vegetation	--	Planting of native species of grasses, shrubs and trees in the green space areas, which naturally have deep roots to aid in soil stabilization, compete against weeds and do not require irrigation.

Report Prepared By:





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Environmental Planner

Corvidae Environmental Consulting Inc.

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APPENDIX A – SITE PHOTOGRAPHS

Photo 1. Clearcut area and existing sawmill. February 19, 2019.



Photo 2. Recently clearcut area (proposed Lot 3 and proposed location of aquaponics facility). February 19, 2019.



Photo 3. Cleared area in western portion of the property (proposed Lot 2) near Otter Point Road. February 19, 2019.



Photo 4. Open wetland area at 3542 Otter Point Road. February 19, 2019.



Photo 5. Sedge dominated wetland area with mature forest adjacent. February 19, 2019.



Photo 6. Mature alder with shrubby understory at the westernmost margin of the wetland. February 19, 2019.



Photo 7. Mature forest habitat adjacent to the watercourse and wetland. February 19, 2019.



Photo 8. Channelized portion of the unmapped watercourse on the property. February 19, 2019.



Photo 9. Filled area on adjacent property to the west of 3542 Otter Point Road (view north). February 19, 2019.





CONDITIONS AND IMPACT REPORT
FOR 3542 OTTER POINT ROAD

PREPARED FOR:

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PLANNING AND PROTECTIVE SERVICES DEPARTMENT,
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CORVIDAE PROJECT #2019-010
FEBRUARY 2020

CORVIDAE
ENVIRONMENTAL CONSULTING INC
6526 WATER STREET, SOOKE, BC

SOLUTION ORIENTED. PROTECTION OF THE ENVIRONMENT. ABSOLUTE INTEGRITY. OPEN COMMUNICATION. RESPECT.

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CAVEAT

This Conditions and Impacts (C&I) Report has been prepared with the best information available at the time of writing, including the Otter Point Official Community Plan, communications with the client and regulators, site visits, review of historical imagery, site plans and design drawings and other documentation relevant to the project. This C&I has been developed to assist the project in remaining in compliance with relevant environmental regulations, acts and laws pertaining to the project and to identify and mitigate the expected impacts of the project and reclamation activities directly related to the project.



1 INTRODUCTION

Corvidae Environmental Consulting Inc. (Corvidae) is pleased to provide this Conditions and Impacts (C&I) Report for the proposed rezoning and subdivision of 3542 Otter Point Road (the property), property ID 009499369, zoning Rural A.

This document addresses the requirements in Section 5.3.1 of Capital Regional District (CRD) Bylaw No. 3819 and provides an assessment on the current environmental conditions on the property, recent environmental impacts, potential impacts of the rezoning and subdivision, and replanting plans for areas that have been disturbed within the 30 m riparian area.

1.1 PROJECT BACKGROUND

The landowner ([redacted]) are subdividing the property at 3542 Otter Point Road, which is approximately 37 acres (15 ha). Currently, an access road and a residence are located near the mid-point of the northwestern property line (see Figure 1). Further along the access road, the property owner operates a sawmill and logging operation (Photo 1). With the exception of the trees immediately adjacent to the watercourse and wetland, the property has been logged (Photo 2).

The property owner intends to subdivide the property into seven lots – 6 residential and one Light Industrial – Sawmill (see Figure 1). The size and dimensions of the property are provided in Figure 1.

1.2 CURRENT CONDITIONS AND EXISTING DISTURBANCE

The property was purchased in 2007 by the current owners. A detailed Stage I Preliminary Site Investigation has been completed, with a historical review of the property. A sawmill is located on the eastern side of the property and has been there since the 1970's. Operations continue under the current owners as a custom woodworking sawmill.

In 2019 the entire property was logged, with the exception of the area around the wetland and along the water drainage.

1.3 CURRENT AND FUTURE DISTURBANCE

The owner is currently operating the sawmill and continuing business a previously done. For all residential planning and future development, if any disturbance is proposed within the 30 m Riparian Area a Riparian Area Report and provincial application will be required.

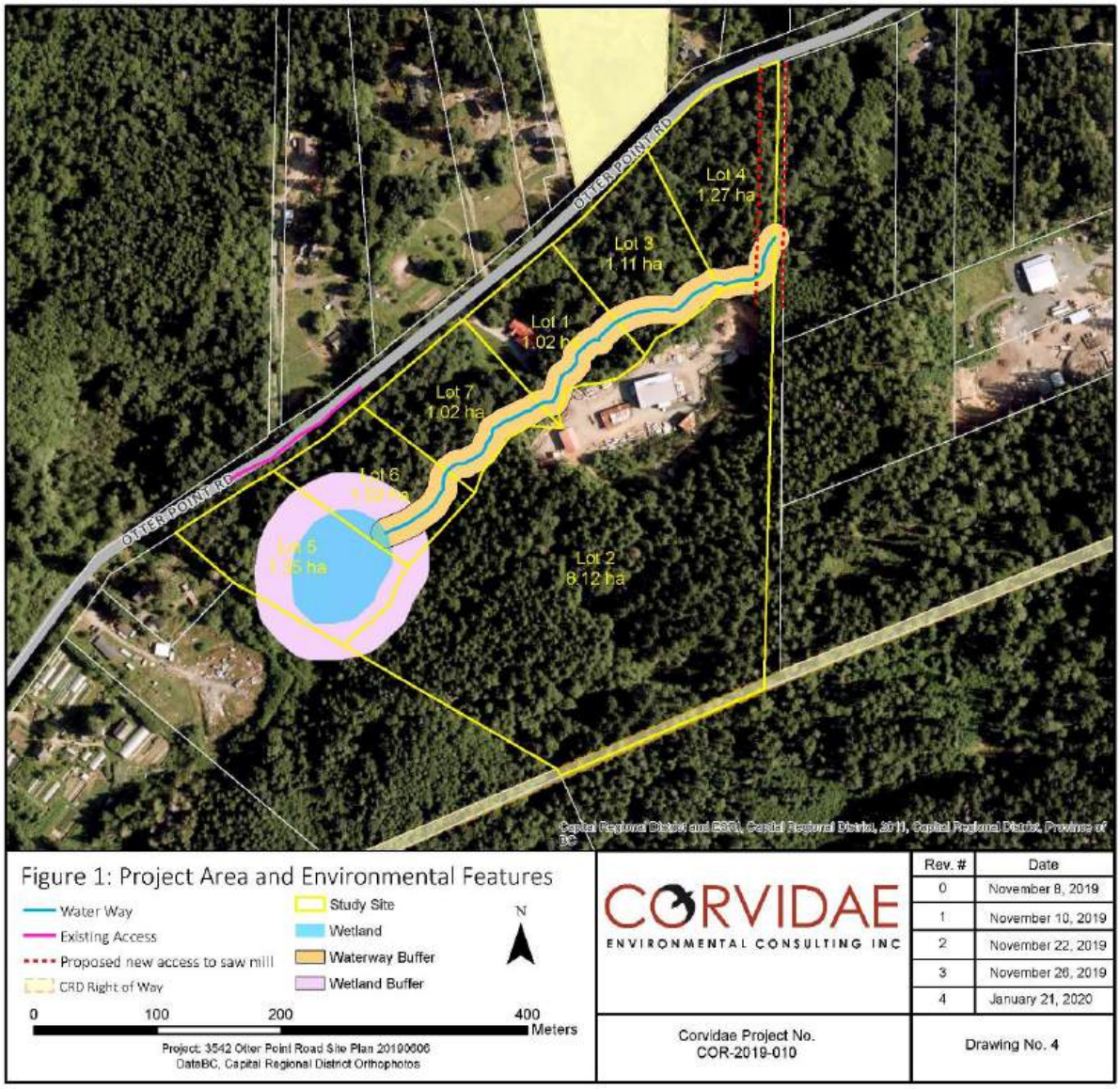


Figure 1: Project Area and Environmental Features

Water Way
Existing Access
Proposed new access to saw mill
CRD Right of Way
Study Site
Wetland
Waterway Buffer
Wetland Buffer
N
0 100 200 400 Meters

Project: 3542 Otter Point Road Site Plan 20190606
DataBC, Capital Regional District Orthophotos

CORVIDAE ENVIRONMENTAL CONSULTING INC

Rev. #	Date
0	November 8, 2019
1	November 10, 2019
2	November 22, 2019
3	November 26, 2019
4	January 21, 2020

Corvidae Project No.
COR-2019-010

Drawing No. 4

1.4 REGULATORY FRAMEWORK

This environmental assessment is designed to comply with the provisions set out in the Otter Point Official Community Plan (OCP) for development permit areas and for compliance with the provisions for environmental protection contained in the following relevant legislation:

Municipal

- Capital Regional District Otter Point OCP, Bylaw No. 3819

  Development Permit Area No. 3: Watercourses and Wetland Areas. Defined as the area within 30 metres (100 feet) of the natural boundary of watercourses, wetlands and lakes as outlined on Map 5c. Designated as a Development Permit Area, the "Watercourses DPA", under Section 919.1(1)(a) of the Local Government Act, for protection of the natural environment, its ecosystems and biological diversity.

  The "Watercourses DPA" applies to all streams subject to the provincial Riparian Areas Regulation as well as mapped lakes, wetlands, ponds and other watercourses which are not subject to the Riparian Areas Regulation. For a stream subject to the Riparian Areas Regulation the assessment area is defined by the Regulation.

The guiding principle for the use of Development Permits is found within the Local Government Act. Development Permit Areas can be designated for purposes such as, but not limited to the following:

  - Protects, enhances and restores the biodiversity and ecological values and functions of environmentally sensitive areas.
  - Fosters compatibility between development, existing land uses and environmentally sensitive areas.
  - Maintains connectivity between sensitive ecosystems; and
  - Protects water quality and quantity.

- The property is zoned as Rural A. Bylaw No. 3819 states:

  Building strata development on Rural A zoned lands is not supported. However, for Rural A parcels created prior to adoption of this Plan, a rezoning could be considered to permit a subdivision which would permit a density of 1 parcel per ha up to 4 ha and 1 parcel per 2 ha for each additional 2 ha portion of the property; (page 21, Section 3.1.1.d.).

  The plan for the property is subdivision, and re-zoning of the 1 hectare and 3.5 hectare lots only, Lot 1 is planned to remain the same (no change in land-use, >4 ha) with no re-zoning.

Provincial

British Columbia Wildlife Act (1996)

Invasive Species Council of British Columbia

BC Weed Control Act (1996, current as of October 2016)

Federal

Migratory Birds Act (1994)

2 CONDITIONS AND IMPACT ASSESSMENT

Corvidae completed a site visit in February, March, June and July of 2019, and again in January 2020, as part of the subdivision application and subsequent re-zoning application for the property. A qualified professional biologist (QEP) assessed the property subject and examined any Environmentally Sensitive Areas, specifically the wetland and watercourses on the property, and recent logging. Appendix A shows photos of the property taken during the field visit.

2.1 LANDSCAPE AND SOILS

Soils in the Biogeoclimatic zone are typically moderately deep Orthic Humo-Ferric Podzols with Hemimor humus forms (Pojar et al. 1991). The soils on the site were a sandy clay loam.

The topography of the property is varied. The property generally slopes from the back (southern side) north towards the watercourse and wetland area, and from Otter Point Road south to the wet areas. Throughout the upland areas on the property there are small undulations, both natural and those created by logging access and equipment.

2.2 VEGETATION

The project is located within the Coastal Western Hemlock (CWH) biogeoclimatic zone, and specifically in the western variant of the Very Dry Maritime subzone (classified as CWHxm2). Drier subzones of the CWH are typically dominated by components of western hemlock (*Tsuga heterophylla*), Douglas-fir (*Pseudotsuga menziesii*) and western red cedar (*Thuja plicata*) (Pojar et al. 1991). Salal (*Gaultheria shallon*), dull Oregon- grape (*Mahonia nervosa*), and red huckleberry (*Vaccinium parvifolium*) typify the poorly to moderately developed shrub layer. Oregon beaked moss (*Kindbergia oregana*), step moss (*Hylocomium splenden*), lanky moss (*Rhytidiadelphus loreus*), and flat moss (*Plagiothecium undulatum*) dominate the well-developed moss layer (Pojar et al. 1991).

The property was once entirely forested, but currently only the portion closest to the road and surrounding the wetland contain mature coniferous forest. In addition to the clear cut on the rear two-thirds of the property, a small area in the western portion of the property near the road has been cleared (Photo 3). The wetland is dominated with shrubs and sedges (Photos 4 and 5), and mature alder trees (Photo 6) along the western property line. During the site assessment the species in Table 1 were found on the site.

Table 1. Plant Species observed on site during field visit.

Common Name	Scientific Name	BC Provincial Status[1]	*SARA* Schedule 1 Status[2]
Western redcedar	*Thuja plicata*	Yellow	--
Western hemlock	*Tsuga heterophylla*	Yellow	--
Douglas-fir	*Pseudotsuga menziesii*	Yellow	--
Big leaf maple	*Acer macrophyllum*	Yellow	--
Red alder	*Alnus rubra*	Yellow	--
Salal	*Gaultheria shallon*	Yellow	--
Sword fern	*Polystichum munitum*	Yellow	--
Deer fern	*Blechnum spicant*	Yellow	--
Evergreen huckleberry	*Vaccinium ovatum*	Yellow	--
Common rush	*Juncus laccatus*	Yellow	--

Common Name	Scientific Name	BC Provincial Status[1]	*SARA* Schedule 1 Status[2]
Grass sp.	--	--	--
Sedge sp.	--	--	--
Salmonberry	*Rubus spectabilis*	Yellow	--
Hardhack	*Spiraea douglasii*	Yellow	--
Himalayan blackberry	*Rubus armeniacus*	Invasive	--
English holly	*Ilex aquifolium*	Invasive	--

[1] BC Conservation Data Centre (CDC) 2019
[2] Government of Canada 2019

2.3 WILDLIFE

The forested habitat is found in the Coastal Western Hemlock biogeoclimatic zone is home to many wildlife species. Black-tailed deer, black bear, marten and gray wolf are the most common large mammals in this zone on Vancouver Island. For bird species in this zone, the following typically occur: great horned owl, barred owl, ruffed grouse, band-tailed pigeon, northern flicker, hairy woodpecker, common raven, Steller's jay, chestnut-backed chickadee, red-breasted nuthatch, varied thrush, red-tailed hawk, Townsend's warbler. For amphibians, the following can occur: western toad, Pacific treefrog, western redbacked salamander. (Pojar et al. 1991)

Wildlife habitat present on the property includes mature forest, riparian habitat and wetland habitat. No wildlife species of concern were observed in the project area during the site visit. No dens, nests or burrows were found. No bird nests or amphibians were observed during the assessment, however, the timing of the field visit, and the weather conditions were not suitable for breeding bird or amphibian surveys.

During the site assessments the species in Table 2 were found on the site.

Table 2. Wildlife Species observed on site during field visit on February 19 and March 19, 2019.

Common Name	Scientific Name	BC Provincial Status[1]	*SARA* Schedule 1 Status[2]
Pacific wren	*Troglodytes pacificus*	Yellow	--
Oregon junco	*Junco hyemalis*	Yellow	--
Chestnut-backed chickadee	*Poecile rufescens*	Yellow	--
American robin	*Turdus migratorius*	Yellow	--
Douglas's squirrel (tracks)	*Tamiasciurus douglasii*	Yellow	--
Black-tailed deer (tracks and scat)	*Odocoileus hemionus columbianus*	Yellow	--

[1] BC CDC 2019
[2] Government of Canada 2019

2.4 SPECIES AT RISK

A query of the BC CDC iMap tool yielded occurrences of the following 2 species at risk within a two-kilometer radius of the property (BC CDC 2019). Species are listed in Table 3 and the location of occurrences in relation to the property is provided in Figure 2.



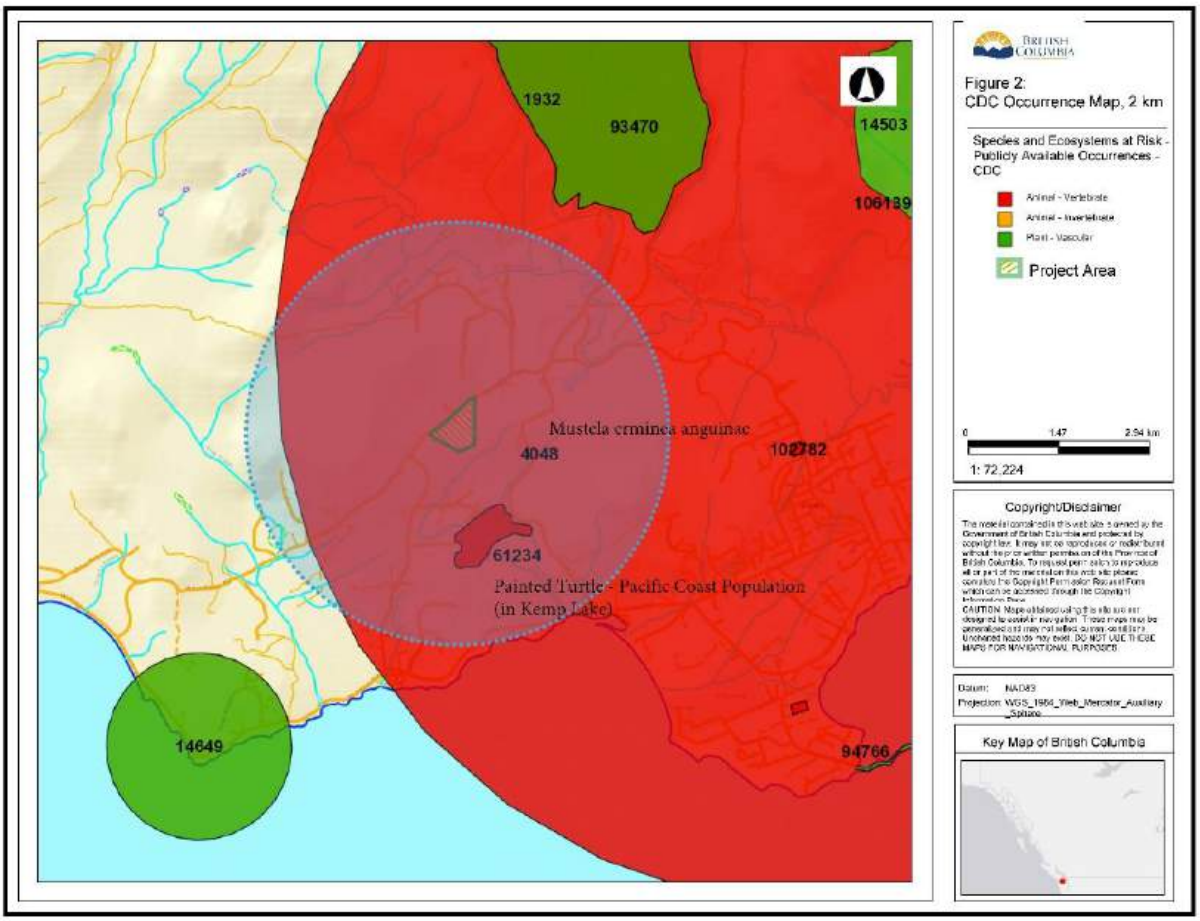
Table 3. Species at Risk that may occur in the vicinity of 3542 Otter Point Road

Common Name	Scientific Name	BC Provincial Status[1]	*SARA* Schedule 1 Status[2]
Ermine, anguinae subspecies	*Mustela erminea anguinae*	Blue-listed	--
Painted Turtle - Pacific Coast Population	*Chrysemys picta pop. 1*	Red-listed	Endangered

[1] BC CDC 2019
[2] Government of Canada 2019

The ermine (Mustela erminea anguinae) is widespread throughout BC in a variety of habitats (e.g. forests, meadows, wetlands, agricultural and cultivated fields) and over a wide elevation range. Foraging habitat for this species is present on the forested portions of the property.

The Keen's Myotis (*Myotis keenii*), a cave-roosting bat species, occurs at elevations of 0 to 1100 m above sea level. Foraging occurs over a wide variety of habitat including intertidal areas, estuaries, upland forests, wetlands, and riparian areas. Suitable rock crevices or caves do not occur on the property, however, suitable foraging habitat is present.


1932
93470
14503
106139
Mustela erminea anguinae
4048
102782
61234
Painted Turtle - Pacific Coast Population
(in Kemp Lake)
14649
94766
Figure 2:
CDC Occurrence Map, 2 km
Species and Ecosystems at Risk - Publicly Available Occurrences - CDC
Animal - Vertebrate
Animal - Invertebrate
Plant - Vascular
Project Area
0
1.47
2.94 km
1: 72,224
Copyright/Disclaimer
Datum: NAD83
Key Map of British Columbia

2.5 RIPARIAN AREAS AND AQUATIC ECOSYSTEMS

A watercourse running east to west and a wetland is present on the property in the southwest portion, included in the area mapped as a Riparian/Wetland Sensitive Ecosystem by CRD. During the site visit on February 19, 2019, the boundaries of the wetland were mapped (Figure 1).

The wetland is fed by an unmapped watercourse (drainage/creek) running from the northeastern most corner of the property, between the existing residential and sawmill areas. The watercourse passes under the sawmill access road through a culvert. On the downstream side of the culvert, the watercourse opens into a marshy wetland area. This continues through the riparian forest (Photo 7) to the large wetland in the property's southwest. A small portion of the watercourse is channelized (Photo 8), however, the majority is wide and marshy (Photo 5).

The site visit was done in late winter, during the wettest season, and therefore likely measured the wetland at its most saturated. In the summer, the wetland area will be much drier than during the field visit, as evident by the type of vegetation.

Along the property's southwestern boundary, the wetland and riparian areas are constrained by historical addition of fill to the neighbouring property (Photo 9). Approximately 500 m downstream, the drainage is dammed and used as a water supply for agriculture (ALM Farm).

There are no fish occurrence records on the property, and the watercourse and wetland do not provide suitable fish habitat due to the shallow, seasonal nature of the wetland and creek flow, and because the dam downstream would serve as a barrier to fish passage.

Adjacent to the watercourse and wetland is riparian habitat. The wet areas are in a depression on the property, and the terrain slopes upwards on both sides. Therefore, the vegetation transitions from riparian vegetation to upland forest within 5 to 20 m of the watercourse and wetland periphery. A preliminary 30 m SPEA has been applied to the mapped wetland boundary in Figure 1. This 30 m setback is in accordance with the CRD Bylaw No. 3819, as stated in Section 1.2 of this report.

For the watercourse that drains into the wetland, the SPEA calculation is 12 m on both sides. This is following the Riparian Area Regulations and calculating from the high-water mark, the depth and the vegetation characteristics every 5 m for the waterway. Prior to any future development, a detailed Riparian Area Report will be completed, showing methodology, and submitted to the provincial and local government. This report is for the current conditions only, and prescriptions for revegetating disturbed areas within the SPEA.

3 CURRENT ENVIRONMENTAL EFFECTS

The current impacts on the environment from recent activities on the property are:

- Infringement on sensitive ecosystem areas, such as riparian habitat,
- Loss of existing vegetation,
- Potential spread of invasive plant species,
- Change in wildlife habitat availability and wildlife mortality risk.

RIPARIAN HABITAT

The removal of trees in the riparian area results in the loss of features, functions and conditions that are vital for maintaining watercourse health and productivity, including sources of large organic debris, such as fallen trees and tree roots; vegetative cover and shade to help moderate water temperature; provision of food, nutrients and organic matter to the stream; stream bank stabilization; and buffers for streams from excessive silt and surface run-off pollution.

VEGETATION

The effects of tree removal may include loss of biodiversity of plant species and increased susceptibility to invasive plants not only in the cleared area but also in adjacent plant communities. Vegetation in the riparian area immediately adjacent to cleared areas may experience in changes to the canopy structure and understory plant species due windthrow and increased light and moisture penetration.

Invasive plants are particularly adept at colonizing degraded plant communities and disturbed soils in high traffic areas, such as the margins of roads and parking areas. Invasive plants establish readily in disturbed areas as they have a wide ecological tolerance and grow and propagate quickly. The effects of invasive plant establishment may be the reduction or displacement native species by capturing resources and occupying habitats.

WILDLIFE AND WILDLIFE HABITAT

Habitat loss and alteration from tree clearing can cause displacement of wildlife, use of less suitable habitat, reduced foraging ability, increased energy expenditure and lower reproductive success. Reduced habitat effectiveness can occur as a result from the creation of habitat edges, habitat fragmentation, or reduction in habitat connectivity that may create barriers to wildlife movement. Many wildlife species avoid crossing openings or move more slowly in open areas. Removal of riparian habitat will result in the direct loss of habitat for wildlife species that specifically require riparian vegetation and proximity to water.

EROSION AND SEDIMENT MOBILIZATION

Removal of trees has exposed slopes and soils to erosion and can result in the movement of sediment on the property. Damage or degradation of soil surfaces during tree removal can include loss of soil structure, increased erosion, and soil compaction, which can negatively affect post-construction reclamation efforts.

WETLAND MODIFICATION AND SEDIMENT CONTROL

The unmapped watercourse has been modified historically for the installation of the sawmill access road and culvert. Existing extensive modification and addition of fill has also occurred on the adjacent property to the west. Implementation of mitigation measures will serve to restore and maintain the drainage of water to the southwest.

RESIDUAL ENVIRONMENTAL EFFECTS

The rezoning and subdivision of the property will not have any environmental impacts.

The residual environmental impacts of the activities on the property will be reduced by the implementation of the mitigation measures recommended in Section 4 of this report. The environmental disturbance in this rural community will be long-term due to the permanence of the road and buildings; and is considered a moderate impact because of the removal of the vegetation (invasive and otherwise). The moderate impact is due to the logging having already occurred on most of the property prior to the site assessment.

4 RECOMMENDED ENVIRONMENTAL PROTECTION MEASURES

The mitigation measures provided in this report are designed to protect sensitive ecosystems and were developed in accordance with:

- CRD Bylaw No. 3819,
- Procedures for Mitigating Impacts on Environmental Values (Environmental Mitigation Procedures) (BC Ministry of Environment [MOE] 2014a),
- Develop with Care 2014: Environmental Guidelines for Urban and Rural Land Development in British Columbia (BC MOE 2014), and
- Environmental Best Management Practices for Urban and Rural Land Development in British Columbia (BC Ministry of Water, Land and Air Protection 2004).

PROTECTION OF THE RIPARIAN AREA

No further clearing or modification should occur within the SPEA (Figure 1). The SPEA should be clearly marked to ensure no disturbance occurs within this sensitive riparian and wetland ecosystem.

REVEGETATION

Revegetation of disturbed area within the SPEA (12 m on both sides of the waterway and 30 m around the wetland) should be undertaken in the spring. As any trees planted will take a long time to mature, Corvidae suggests planting a mixture of shrubs and tree species in order to prevent invasive species, increase erosion control and slope stability, and provide wildlife habitat. Table 4 provides the species that Corvidae recommends be planted.

In addition to the planting of the SPEA, a treed buffer is required around the perimeter of the sawmill lot. Planting this with cedar and fur trees is recommended, at the same time as the planting of the riparian areas (spring 2020). Spacing should be 5 m apart in a buffer around the entire lot, following tree planting standards with local tree species.

There has also been a lot of natural revegetation in the area, which off-sets the need for planting. This includes sword ferns, alder, salmon berry, Nootka Rose, willow and cedar saplings. During tree planting, the trees will be spaced off existing native vegetation and spaced to allow sunlight through as they grow; i.e. approximately 5 m spacing between trees, and 2 m spacing off of shrubs, 1 m spacing off of small plants such as ferns. A total of 200 trees are recommended for the riparian areas and approximately 300 for the buffer of the sawmill lot.

Table 4. Recommended native vegetation to plant in disturbed riparian area that is currently not vegetated

Common Name	Species
Western redcedar	*Thuja plicata*
Douglas-fir	*Pseudotsuga menziesii*

WILDLIFE AND WILDLIFE HABITAT

The following measures should be taken to minimize impacts on wildlife and wildlife habitat:

- Further disturbance should be completed outside of the migratory bird window (prior to March 15th or after August 15th; Government of Canada 2019).
- Where suitable, retain habitat that provides shelter for wildlife, such downed logs and standing dead trees.
- Avoid additional removal of established trees or shrubs, where possible.

ACCESS ROAD INSTALLATION

All construction for the access road to the sawmill along the eastern boundary of the site should occur in the dry season, when the water levels in the watercourse and wetland are lowest (or completely dry). Only the area required for the access road (20 m) should be cleared: the boundaries for vegetation clearing should be clearly marked before construction commences.

POLLUTION CONTROL, FUELING AND SPILL RESPONSE

All equipment accessing the property should be in good working order. Any leaks should be repaired prior to commencing work. Any fueling of equipment will be done with drip-trays underneath on site, on the road or set staging area. There will be no fueling of equipment within 30 m of the watercourse and wetland.

All fuel containers and other potentially deleterious substance containers will be secured so that they may not be emptied or upset by vandals when left overnight in the area.

A large, labeled mobile spill kit capable of mitigating spills of 100 litres of fuel is recommended to be kept on site adjacent. The kit should contain the following materials or equivalent:

- absorbent pads (hydrocarbons and antifreeze)
- absorbent socks (oil, gas & diesel)
- a jar of plug n dike (leak stop compound)
- 1 spill instruction sheet

INVASIVE SPECIES

Two invasive species were observed on site: Himalayan blackberry and English holly.

Invasive weed control is difficult for established populations. Immediate eradication of new and small infestations should be a high priority. Hand-pulling and cutting are effective on young plants. All plant material must be disposed of by burning or landfill. Invasive species removal should occur in spring, before the plants flower and seed.

EROSION AND SEDIMENT CONTROL MEASURES

The primary focus of erosion and sediment control planning is erosion control; if there is no erosion then there is no sediment. Erosion control is far more cost effective to implement and manage than sediment control.

Natural regeneration and planting of native species, which naturally have deep roots, will aid in soil stabilization and erosion prevention.

Site specific controls have been developed based on a site visit and experience from past projects. Erosion controls, listed in Table 4, are recommended to be maintained for the duration of building any dwellings and removed completely following landscaping.

Table 5. Erosion and Sediment Control Mitigation Measures

Activity	Potential Impacts	Mitigation Measures
Clearing of existing vegetation	Exposure of underlying soils to erosion	Install silt fencing to prevent sediment laden runoff from entering the watercourse or wetland. Minimize amount of time soils are exposed, plant native vegetation and landscaping materials within the growing season following removal of non-native vegetation and landscaping.
General construction	Sediment laden runoff	Store soils in dry, flat areas, outside of the SPEA.
Restoration and native vegetation	--	Planting of native species of grasses, shrubs and trees in the green space areas, which naturally have deep roots to aid in soil stabilization, compete against weeds and do not require irrigation.

Report Prepared By:





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Environmental Biologist

Julie Budgen, R.P.Bio., B.Sc.,
Environmental Planner

Corvidae Environmental Consulting Inc.

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APPENDIX A – SITE PHOTOGRAPHS

Photo 1. Clearcut area and existing sawmill.



Photo 2. Lot 2 area



Photo 3. Cleared area in western portion of the property near Otter Point Road.



Photo 4. Open wetland area at 3542 Otter Point Road. Uncleared, with treed buffer area.



Photo 5. Sedge dominated wetland area with mature forest adjacent. Uncleared.



Photo 6. Mature alder with shrubby understory at the westernmost margin of the wetland. Uncleared.



Photo 7. Mature forest habitat adjacent to the watercourse and wetland. Protected riparian area.



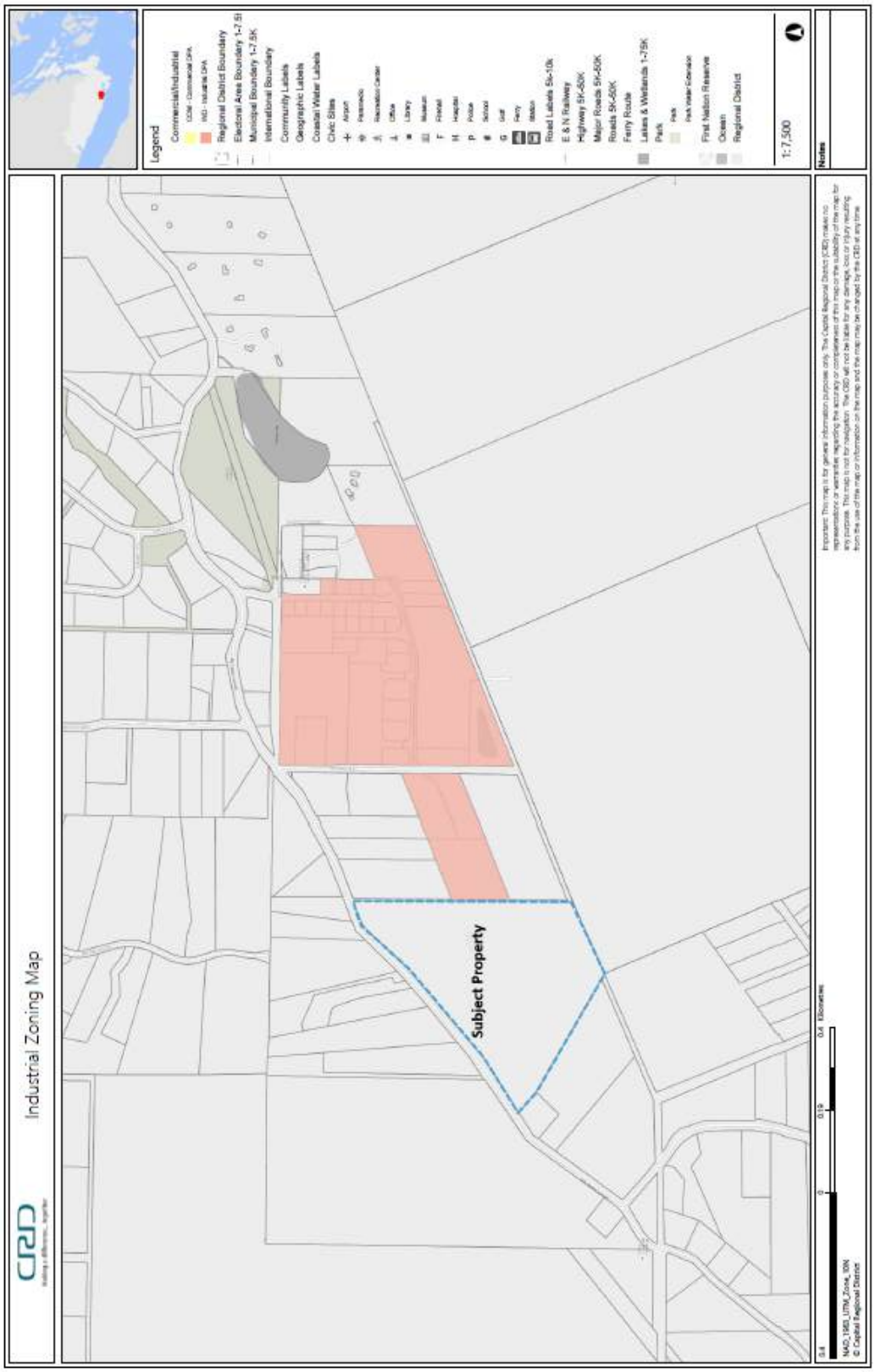
Photo 8. Channelized portion of the unmapped watercourse on the property. Uncleared, protected riparian area.



Photo 9. Filled area on adjacent property to the west of 3542 Otter Point Road (view north).



Appendix I: Industrial Zoning Map



Making a difference...together

REPORT TO THE CAPITAL REGIONAL DISTRICT BOARD
MEETING OF WEDNESDAY, OCTOBER 14, 2020

SUBJECT **CAO Quarterly Progress Report No. 3, 2020**

ISSUE SUMMARY

To provide the Board with a quarterly update on Corporate Activities and Initiatives, progress made on the 2019-2022 Board and Corporate Priorities, Corporate Climate Action Initiatives, Capital and Operating Variances, and Human Resources and Corporate Safety up to October 1, 2020.

BACKGROUND

The Board and Corporate Priorities Dashboard provides quarterly updates on progress related to Board and Corporate priority initiatives, actions, and advocacy as well as variances in financial performance and human resources trends. Following the approval of the Board Strategic Plan in March, 2019 staff prepared a Corporate Plan 2019-2022 to identify potential initiatives to advance Board and Corporate priorities. The Board completed an annual check-in on priorities in May 2020 and the priorities were confirmed and staff was directed to continue to progress the initiatives and actions as developed in the Corporate Plan.

Service plans are prepared annually in alignment with Board and Corporate Priorities, service mandates and other approved plans, with corresponding KPIs and other service information that is approved by the Board. The 2021 service and financial planning process is currently underway, and staff are providing recommendations on service levels, timing and the funding of core services and new initiatives for 2021 by way of Commission, Committee and Board review. The service planning work is now presented as a summary of Community Needs and includes information on the strategic context, core service levels, proposed initiatives, funding and reporting as well as key performance indicators and annual progress that was made on initiatives approved in the prior year. The CRD, CRHD and CRHC Financial Plans are reviewed and approved annually by the respective Boards' of these corporations.

This report presents quarterly progress on priorities, initiatives, actions and advocacy for the third quarter of 2020, however the capital and operating variances and human resources trends are for the second quarter in 2020. The Quarterly Capital Variance Report highlights differences between budget and actual expenditures on capital projects over $500,000. The Quarterly Operating Variance Report highlights provides results and forecasts for services with an annual operating budget over $1.5 million, which comprise approximately 77% of the CRD budgets for the year. The quarterly update on non-confidential human resources matters is provided to highlight workforce trends.

ALTERNATIVES

Alternative 1:
That the CAO Quarterly Progress Report No. 3 - 2020 be received for information.

Alternative 2:
That the CAO Quarterly Progress Report No. 3 - 2020 be referred back to staff for additional information.

DISCUSSION

Corporate Activities and Initiatives

Appendix A highlights corporate activities and initiatives in the last quarter and a number of photographs have been included to present announcements and events that occurred in this quarter.

Additional measures and work to manage the organization, provide for a safe work place and ensure the delivery of critical and essential services continues through the COVID 19 pandemic and state of emergency. Work site risk assessments have been completed and safety equipment and signage has been installed and additional efforts are underway to manage meetings, engage with the public and address concerns and issues to enable continued operations.

A fire broke out in Mill Hill Regional Park on July 21 and fire crews from Langford other supporting fire departments as well as CRD staff responded to quickly contain the fire with support from the BC Wildfire Service. A unified command was established and all those responders and staff are thanked for their efforts and the significant work to manage all of the impacts.

The ceremonial opening of SEAPARC's new weight room and fitness studio expansion at the Leisure Complex in Sooke took place on July 27. This project was made possible with the assistance of a $1.24 million grant from the Federal Gas Tax Fund.

On August 13 the Traffic Safety Commission awarded Cassandra Olson from Belmont Secondary School the $2,000 Cst. Sarah Beckett Memorial Scholarship. This is the fourth year the CRD Traffic Safety Commission has awarded the scholarship to a post-secondary student living in the capital region who demonstrates academic achievement, financial need, community service and an expressed interest in pursuing a career in law enforcement.

A lightning storm passed through the Greater Victoria Water Supply Area (GVWSA) and southern Vancouver Island on the night of Sunday, August 16, 2020. Nineteen lightning strikes were recorded in the GVWSA of which two caused fires within the watershed catchments of Sooke Lake Reservoir and Deception Reservoir. The Chair of the Regional Water Supply Commission and Board Chair acknowledged support from the BC Wildfire Service and all of those staff supporting the response are commended for their work.

A recognition ceremony was held on September 18 at CRD Fisgard to recognize a donation made by Mr. John Money of 30 hectares of land near Money Lake on Saturna Island worth just over $500,000. Ten hectares of the property will be managed by the CRD's Lyall Harbour/Boot Cove Water Service and the remaining 20 hectares will be used for a community park managed by the Saturna Island Parks and Recreation Commission.

Members of the First Nations Committee met on September 30 dressed for #OrangeShirtDay to honour residential school survivors and Indigenous communities. Orange Shirt Day is an annual national movement in Canada recognized every September 30 when Indigenous and non-Indigenous people come together in the spirit of hope and reconciliation to honour former residential school survivors, their families, communities and those that did not make it.

The CRD is rehabilitating the Todd Creek Trestle along the Galloping Goose Regional Trail near Sooke Potholes Regional Park. The cost of the project is an estimated $1,500,000. It is anticipated to open mid-October. This 4-story wooden trestle is 100 years-old. It is considered a valuable asset to the regional trails system and to the visitors' experience. Rehabilitation work will add an additional 35-50 year life span to the structure.

Board Priorities and Corporate Plan Initiatives

Progress on the Board Priorities and Corporate Plan initiatives from January 2019 to date is reflected in Progress Report Q3, 2020, as Appendix B. The "Comments" section provides a summary of completed actions as well as any issues or problems that have arisen that may impact progress on the priority. The "Next Steps" section identifies future planned actions and associated timing. Attached as Appendix C is the Board Priorities Dashboard Summary of Completed Actions.

Corporate Climate Change Initiatives

A quarterly update on corporate climate change initiatives tracking progress on programs, projects, education, incentives, grants, measures, studies and monitoring work is included as Appendix D. This work is also compiled and reported as an annual report in conjunction with Climate Action Revenue Incentive Program (CARIP) reporting requirements related to our commitment to the Community Climate Action Charter.

Board Advocacy

An Advocacy Dashboard has been prepared which tracks the ongoing advocacy work being done by the CRD Board, municipalities, partners and staff. Progress on advocacy is reflected in the Advocacy Dashboard Progress Report Q3, 2020 as Appendix E.

Operating Variance Report –Q2, 2020

The Operating Variance Report outlines the quarterly operating variance, providing actual results and annual forecasts for services with an annual operating budget over $1.5 million. These services make up approximately 77% of the CRD budget for the year, and also includes the Capital Regional Hospital District (CRHD) budget.

The forecasts have been compiled by staff to determine estimates for how the services are expected to perform fiscally for the year, as at the end of the second quarter. Determining these forecasts includes looking at prior year results, planned and actual changes in activity, and considering service level delivery and associated funding impacts.

The amount of budget used to the end of the second quarter will vary from service to service, based on the individual services' planned spending, seasonality, and timing of transactions. For example, services funded by requisition receive their funding in the third quarter, and water supply and distribution services receive more sales revenue over the summer months.

The Quarterly Operating Variance Report, attached in Appendix F, highlights how much of the annual budget has been used in comparison to prior year, and what the annual forecast is expected to be based on information available to the end of the second quarter. This is outlined for both expenditures and revenue.

Spending to the end of second quarter, as a % of actual budget, is in line with the same period and timeframe as 2019 for both revenue and expenses. Effects of the current COVID-19 pandemic event on operations has been limited to specific services, primarily recreation and some demand driven services such as landfill and water supply.

Capital Regional District

The annual forecast highlights that the majority of services will still track in line with the annual budget. Many of these services are providing essential services to our communities, such as

delivery of water, wastewater management, and solid waste. The notable exception to this is recreation services where forecasts incorporate a current and estimated impact on business activities as a result of current economic climate arising from the pandemic. The COVID-19 event-related closures were implemented in March, lasting through May. A gradual return to some recreational programming started in June, and is forecasted to incrementally return programming through the rest of 2020.

Capital Regional Hospital District (CRHD)

The annual forecast highlights revenue and expenses are forecasted lower than budget due to the deferral of the Nigel House redevelopment, deferring granting costs to 2021.

Capital Region Housing Corporation (CRHC)

CRHC variance reporting is included in the annual financial planning process and in the annual audited financial statements. The variances are also monitored internally by building, by agreement and by division.

Specific details on CRD and CRHD expense and revenue forecasts are outlined in Appendix F.

Capital Variance Report –Q2, 2020

The Capital Variance Report, attached in Appendix G, highlights variances on actual expenditures from the quarterly and annual capital budgets for all three entities CRD, Capital Regional Hospital District and the Capital Region Housing Corporation. It also outlines the impact on the total project plan. The Capital Variance Report is current to the end of the first quarter of 2020 and covers all capital projects with budgeted spending in 2020 greater than $0.5 million.

For 2020, the capital plan was budgeted quarterly and based on the expected delivery of the projects in the plan. In addition, the process includes quarterly forecasting to provide periodic updates and oversight on the projects. As quarters progress through the year and tenders complete, the expectation is that accuracy on estimates will be refined.

Capital Regional District
Capital expenditures on projects >$0.5 million totaled $40 million in the second quarter of 2020, 29% lower than a forecast of $56 million. Of the $16 million variance, $15 million is related to timing of construction costs on the Core Area Wastewater Treatment Project (CAWTP), while $0.5 million is related to delays on construction of phases 3 & 4 of the E&N trail. Notable projects in the balance of the variance include the South Galiano Fire Hall, and the North Ganges Transportation Plan.

Capital Regional Hospital District (CRHD)
With construction complete on the Summit Project in the first quarter, $0.6 million in expenditures were incurred in the second quarter for close-out costs, against a forecast of $0.7 million. Remaining project billings and close-out costs will be complete in 2020, and is expected to be on budget.

Capital Region Housing Corporation (CRHC)
Capital expenditures, on projects >$0.5 million totaled $1.6 million in the second quarter of 2020, 48% lower than forecast of $3.1 million. The variance is mainly due to timing of routine capital replacement, and timing differences on trades scheduling for the Westview property. The project was completed in April with project billings incurred in second and third 2020. This project is forecasted to be complete under budget due in part to the construction management model cost efficiencies and efficacy.

Human Resource Trends and Corporate Safety

Appendix H provides an analysis of current and emerging trends in workforce composition, turnover, promotions, absenteeism and occupational health and safety. The CRD continuously monitors Human Resource organizational health, and proactively modifies and adapts Human Resource programs and systems where trends may show challenges arising.

The metrics information through the second quarter of 2020 is reflective of the impact from the COVID-19 Pandemic, most particularly with regard to illness duration and Occupational Health and Safety resourcing, policies, and programs. The CRD is a defined essential service, and as such is closely monitoring the impact of COVID, and taking appropriate measures as needed to ensure the essential operations are maintained.

In addition, the CRD continues to experience increased pressures associated with a highly competitive labour market and a steady number of retirements. Local governments are becoming increasingly more complex as our role and responsibilities continue to evolve, and this continues to place more demand to secure more specialized labour. To this end, the CRD continues its significant efforts in workforce planning, organizational development initiatives, and impactful recruitment and outreach strategies.

The CRD's proactive and positive focuses on workplace health and safety remain top of priority. The CRD's fifteen (15) element OHS strategy aligned with OHS best practice standards, which meets or exceeds requirements of the municipal Certificate of Recognition (CoR) program, has been implemented and continue to ensure overall safe work and management practices. The CRD continues to experience a positive (merit) situation with WorkSafeBC resulting in an 11% lower-than-industry Employer Rating Assessment and equally reflected reduction in premiums.

CONCLUSION

As part of staff's commitment to enhanced quarterly reporting to the Board, the CAO Quarterly Progress Report No. 3 - 2020 provides a status update of Progress on Board and Corporate Priorities, Activities and Initiatives, Capital Project Variances, and Human Resource Trends across the organization.

RECOMMENDATION

That the CAO Quarterly Progress Report No. 3 - 2020 be received for information.

Submitted by:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT(S)

Appendix A: Photographs of Corporate Activities and Initiatives
Appendix B: Board Priorities Dashboard Progress Q3, 2020
Appendix C: Board Priorities Dashboard – Summary of Completed Actions
Appendix D: Corporate Climate Change Initiatives
Appendix E: Advocacy Dashboard Progress Q3, 2020
Appendix F: Operating Variance Report Q2, 2020
Appendix G: Capital Variance Report Q2, 2020
Appendix H: Human Resources Trends and Corporate Safety Q2, 2020

COVID-19 Safety



Mill Hill Regional Park Fire



SEAPARC Leisure Complex Expansion

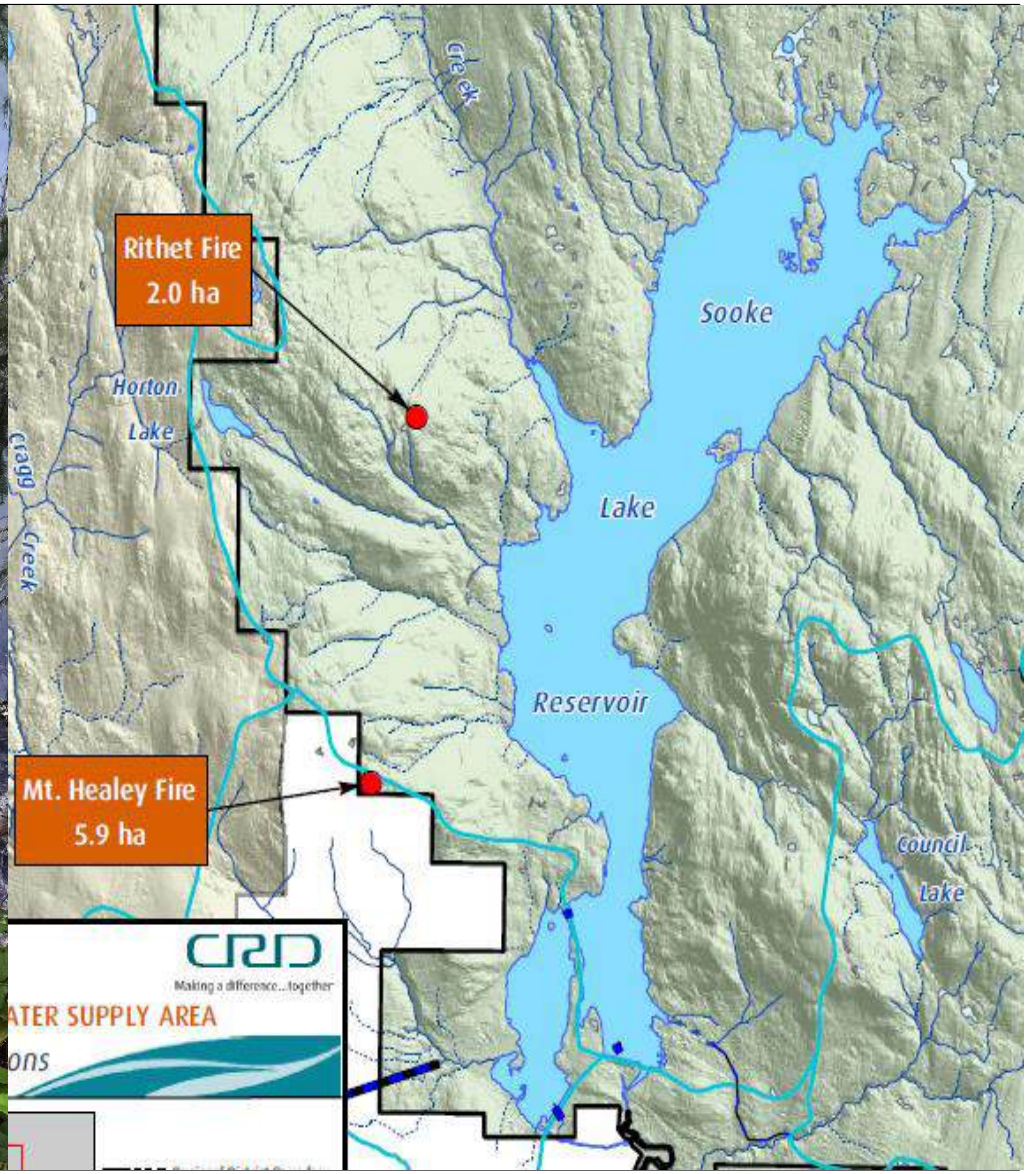


Cst. Sarah Beckett Memorial Scholarship



Watershed Catchments Fire Response





Money Lake on Saturna Island

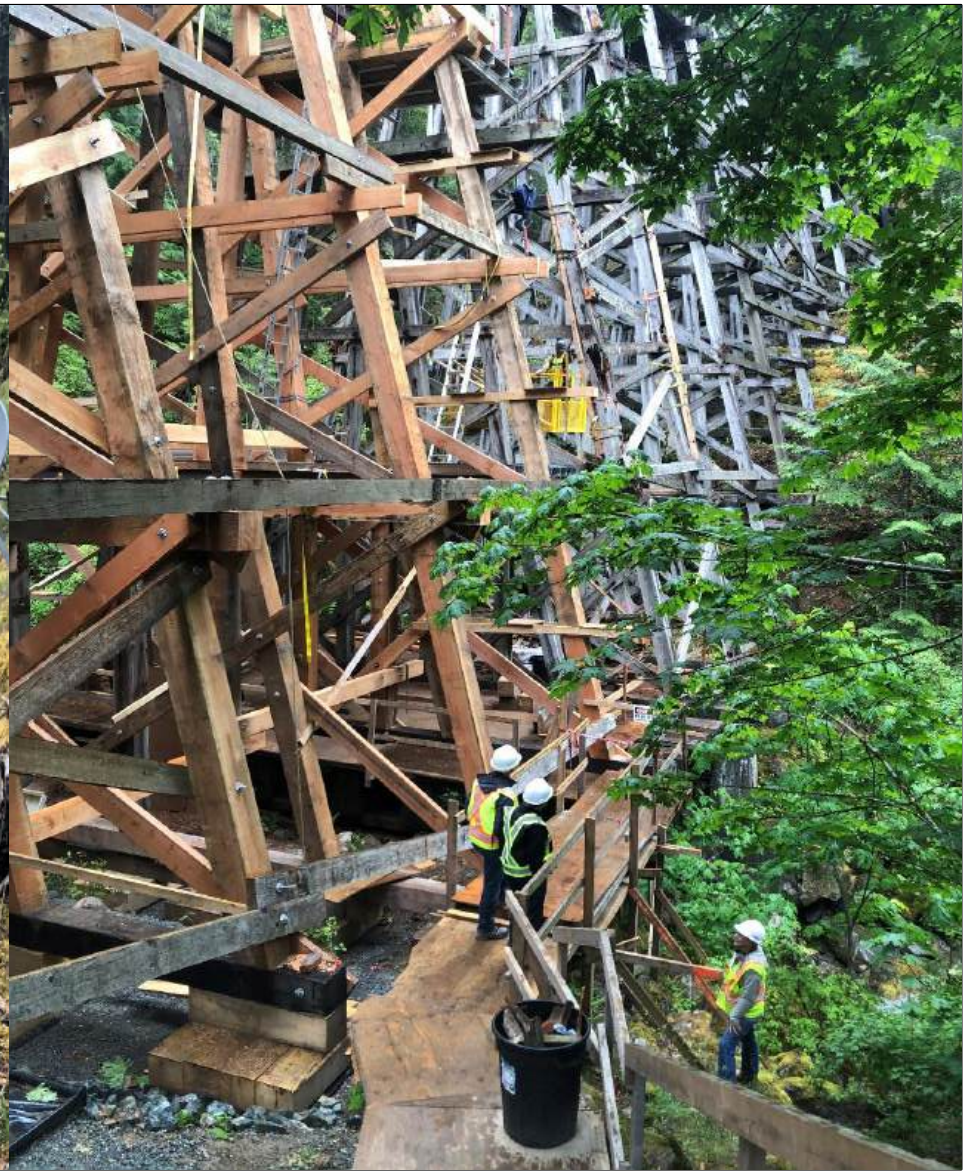


Orange Shirt Day



Todd Creek Trestle





The CRD Board will advocate, collaborate and form partnerships to address the affordable housing and transportation needs of the region's diverse and growing population.

Community Wellbeing
Transportation & Housing

Board Priorities Dashboard > Progress Report No. 7 – Q3 2020

Making a difference...together

CONDITION LEGEND — No issues / Proceeding as planned | Potential or emerging issue/problem | Problem/issue has arisen | Timing has changed

Board Initiatives	Status & Condition			Resolutions	Comments	Next Steps	
	Not Started	In Progress	Completed			Action	Timing
1a Work with government/community partners to plan for and deliver an effective, long-term regional multi-modal transportation system and to increase use of public transit, walking and cycling.		✓			MOTI's South Island Transportation Strategy was published on September 18, 2020. Staff are reviewing the findings. Staff continue to provide technical support to a number of working and steering groups, including for the Uptown Exchange, Highway 17 improvements, Westshore Transit Plan, Island Highway Transit Priority, Victoria Regional Transit System 5-10 Year Plan and Inter-Municipal Business License for Ride-Hailing Discussion Group. ***Advocacy:*** Speed enforcement on the Malahat (July 13, 2020)	▸ Staff to report back on the South Island Transportation Strategy ▸ Continue to investigate grant opportunities and look for project partners	▸ *Q4 2020* ▸ *Ongoing*
1b Protect the E&N Corridor as a transportation corridor and participate in a Provincial working group to come to agreement on the future use of the E&N corridor.		✓			The South Island Transportation Strategy considered the E&N corridor in its findings and will continue to protect it as a transportation corridor.	▸ Monitor CRD mayors' request to initiate rail service on E&N	▸ *Ongoing*
1c Create and deliver more affordable housing across the region in a manner aligned with the Regional Growth Strategy in order to address the needs of a diverse and growing population, including vulnerable residents.		ℹ			Seniors living with complex health issues and dementia have moved into Summit, a 320-bed modern long-term care home in Victoria's Quadra Village Neighbourhood. Ministry of Municipal Affairs & Housing and BC Housing ***announcement***, in partnership with CRHC on the Community Housing Fund, securing 58 new units in Langford. Groundwork for SGI Housing Strategy will start in Q4 2020 to pave the way for strategy development in early 2021. Completion date has been revised to Q2 2021. Actions from the strategy will be brought forward through service planning next year. ***Media Release***: Housing and Transportation Cost Estimate Study Reveals Impact of Transportation Costs on Household Affordability (July 29, 2020) ***Media Release***: Island Health, Capital Regional Hospital District welcome seniors to The Summit (July 9, 2020) ***Media Release***: 2020 Greater Victoria Point in Time Count Results Announced (July 31, 2020)	▸ Continue to implement Regional Housing First Program ▸ Staff develop a housing strategy for the Southern Gulf Islands Electoral Area ▸ Staff to add implementation of actions from the SGI housing strategy to the 2021 service planning process	▸ *Ongoing* ▸ ~~*Q3 2020*~~ *Q2 2021* ▸ *Q3 2021*

Standing Committee Legend

- EAC = Electoral Area Committee
- EC = Environment Committee
- FNRC = First Nations Relations Committee
- GFC = Governance & Finance Committee
- HHC = Hospitals & Housing Committee
- PEC = Parks & Environment Committee
- PPSC = Planning & Protective Services Committee
- RAFSC = Regional Arts Facilities Select Committee
- RPC = Regional Parks Committee
- TC = Transportation Committee

The CRD Board will encourage and implement bold action on climate change by enhancing its natural and built assets to achieve environmental resilience, food security and continued wellbeing of our current and future residents.

Climate Action & Environmental Stewardship

Board Priorities Dashboard > Progress Report No. 7 – Q3 2020

Making a difference...together

CONDITION LEGEND

No issues / Proceeding as planned

Potential or emerging issue/problem

Problem/issue has arisen

Timing has changed

Board Initiatives	Status & Condition			Resolutions	Comments	Next Steps	
	Not Started	In Progress	Completed			Action	Timing
2a Declare a Climate Emergency and take a leadership role to pursue regional carbon neutrality by 2030.		ℹ			The Climate Action Program will continue to support promotion of the Provincial home heating fuel switching rebate program with municipal partners to encourage residents to switch to heat pumps. Completed regional GHG inventory and associated municipal study. Study shared with municipalities.	▸ Staff working with Provincial and Federal staff on policy initiatives ▸ Staff directed to report back with options for accelerating the CRD's response to the climate emergency, including additional investments and options for increasing regional collaboration to reduce greenhouse gas.	▸ *Ongoing* ▸ ~~*Q3 2020*~~ *Q4 2020*
2b Work with local governments to further reduce emissions from buildings, transportation and solid waste.		✓			Hosted Climate Action Inter-Municipal Working Group quarterly meeting, and inter-municipal meeting to share implementation lessons regarding BC Energy Step Code implementation. Launched neighbourhood Transition 2050 'Bring It Home 4 Climate' Program (wrapping December 2020) to encourage residential energy retrofits. ***Media Release***: Homeowners Can Access Energy Retrofit Support Through New Climate Program (August 11, 2020)	▸ Host CRD Climate Action Inter-Municipal Working Group and Task Force meetings ▸ With municipal partners, complete and submit FCM Community Efficiency Funding grant application for a regional energy retrofit design study.	▸ *Quarterly* ▸ *Q4 2020*
2c Explore additional opportunities for resource recovery and identify best practices to further reduce waste, increase recycling and find beneficial uses for waste.		ℹ		▸ ***Board Aug. 12, 2020*** ▸ ***ESC July 15, 2020*** ▸ ***Board Sept. 9, 2020*** ▸ ***ESC Sept. 16, 2020***	Pending Board approval, staff will proceed with community and local government consultation on the draft Solid Waste Management Plan in 2021, including targeted engagement with residents in the areas of Hartland Landfill, Prospect Lake, Willis Point and Highlands. Findings from the Hartland Traffic Study will also be incorporated into future consultation efforts on this draft plan. Awaiting Ministry approval on Biosolids contingency plan submitted April 30, 2020. Staff submitting CRD Terms of Agreement for Renewable Natural Gas Initiative (RNGI) at Hartland Landfill to Fortis BC October 2020. FortisBC will add their Terms for a coordinated submission to the BC Utilities Commission in 2021.	▸ Conduct addtional consultation f on the draft Solid Waste Management Plan ▸ Announce Biosolids contract ▸ Submit Terms of agreement to BC Utilities Commission for approval of the RNGI at Hartland Landfill	▸ *Q4 2020* ▸ ~~*Q3 2020*~~ *Q4 2020* ▸ *Q3 2021*
2d Ensure appropriate funding for parks and trails infrastructure, improvements and maintenance by updating the Regional Parks Strategy with consideration to ecological, recreation and reconciliation principles, land acquisition capacity, and expanded partnerships with First Nations and parks user groups.		✓		▸ ***RPC Sept. 30, 2020***	Regional Parks management planning and surveys underway for Mount Work, East Sooke, Matheson Lake and Roche Cove Regional Parks. ***Media Release***: Public encouraged to complete surveys for park management plans (August 18, 2020) Parks Acquisition Fund options presented as part of 2019-2022 Parks & Natural Resource Management Service Planning. Facilitator hired for the Mountain Biking Advisory Committee and Fall meeting schedule confirmed.	▸ Staff to implement the Regional Parks sustainable service delivery report recommendations ▸ Complete Mountain Biking Advisory Committee guidelines and report	▸ *Ongoing* ▸ *Q1 2021*
2e Develop model bylaws and best practices for use by municipalities and electoral areas.		✓		▸ ***ESC July 15, 2020*** ▸ ***Board Aug. 12, 2020***	Capital Region Coastal Flood Inundation Mapping Project completed. Results and associated data shared with municipalities and First Nations. Staff reported on the Province's recent Order-in-Council amending the BC Recycling Regulation as a result of feedback received on its Plastics Action Plan consultation paper. Once in effect, these changes will provide residents with new recycling alternatives and help address issues associated with a variety of single-use items.	▸ Staff to complete Electric Vehicle Charging Roadmap with regional stakeholders. ▸ Staff to provide comment on the BC Recycling Regulation Policy Intentions Paper	▸ *Q1 2021* ▸ *Q4 2020*

The CRD Board will take measurable steps toward developing respectful government-to-government relationships and partnerships with First Nations to foster shared prosperity for all.

Board Priorities Dashboard > Progress Report No. 7 – Q3 2020

Making a difference...together

CONDITION LEGEND

- No issues / Proceeding as planned
- Potential or emerging issue/problem
- Problem/issue has arisen
- Timing has changed

First Nations Reconciliation

Board Initiatives	Status & Condition			Resolutions	Comments	Next Steps	
	Not Started	In Progress	Completed			Action	Timing
3a Look to First Nations for leadership in understanding how to create new regional planning and decision-making systems together on their Traditional Territories.		✓			Amended CRD Procedures Bylaw to include First Nations elected officials in identified CRD decision-making structures. Draft amendments to CRD Board Remuneration and Travel Reimbursement Policy and a draft First Nations Remuneration Policy presented to the First Nations Relations Committee in November 2020.	▸ Schedule CRD committee orientation sessions for First Nations elected leadership ▸ Present draft amendments and a draft policy to First Nations Relations Committee	▸ *Q4 2020* ▸ *Q4 2020*
3b Seek partnerships, share information and deliver fair and equitable services in working with First Nations on achieving their economic goals.		✓			Completed First Nations Economic Development Partnership Model Feasibility Study. Integrated Water Services continue to work towards water and wastewater service agreements with local First Nations.	▸ Include key actions from study into 2020 work plans and 2021 service planning	▸ *Q4 2020*
3c Work with First Nations on taking care of the land and water while providing space for cultural and ceremonial use, food and medicine harvesting, traditional management practices and reclaiming Indigenous place names.		✓			Supported and promoted Orange Shirt Day, Every Child Matters on September 30th, 2020. Orange Shirt Day is an annual national movement in Canada when Indigenous and non-Indigenous people come together in the spirit of hope and reconciliation to honour former residential school survivors, their families and communities.	▸ Schedule corporate-wide training on CRD archeology protocol	▸ *Q4 2020*
3d Prepare an ecological asset management plan that includes natural infrastructure, First Nations guiding principles, First Nations language and place names, historical uses and invasive species management.		✓			Work underway to draft scope and timeline for an Ecological Asset Management Plan to be undertaken in 2021/2022.	▸ Ecological Asset Management Plan scope and timeline report	▸ *Q1 2021*

Board Priorities Dashboard > Progress Report No. 7 – Q3 2020

The CRD Board will advocate for infrastructure, regulatory, legislative, financial and operational support, focus its governance and Committees/Commissions on transparently and efficiently advancing regional, sub-regional and local priorities, and work to resolve issues that the CRD may not have the direct mandate to address.

Advocacy, Governance & Accountability

CONDITION LEGEND: No issues / Proceeding as planned | Potential or emerging issue/problem | Problem/issue has arisen | Timing has changed

Board Initiatives	Status & Condition			Resolutions	Comments	Next Steps	
	Not Started	In Progress	Completed			Action	Timing
4a Develop an advocacy strategy to ensure all occupied properties have the opportunity to access high-speed internet services.		✓			Funding secured and engineering firm engaged to conduct broadband infrastructure design plan for SGI. Internet service providers have been consulted and are supporting the process with technical advice and review.	▸ Complete Connectivity Design Plan to support partnerships and investment by Internet Service providers	▸ *Q2 2021*
4b Develop a comprehensive strategy and operational review to reflect the unique needs and governance of each electoral area.		✓		▸ ***Board Sept. 9, 2020***	Met with the Province and are in the process of finalizing the report. Will meet with stakeholders in the coming weeks. A final report and recommendations will be brought to the North Salt Spring Island Waterworks District and CRD Board in the fall. ***Advocacy***: Electoral Areas Rural Status (July 17, 2020) ***Advocacy***: Investing in Canada Infrastructure Program (Sept. 20, 2020)	▸ Continue to advocate with partners (BC Transit, BC Ferries and community groups) to define a service model to best serve the transportation needs of SGI ▸ Present results of Salt Spring Island Water Optimization Study	▸ *Ongoing* ▸ *Q4 2020*
4c Explore more comprehensive regional coordination of emergency services, including an assessment of regional hazards, risks and vulnerabilities.		✓		▸ ***EAC July 8, 2020*** ▸ ***Board July 8, 2020*** ▸ ***PTPSC July 15, 2020***	Submitted Regional Emergency Management Partnership overview, 2019 highlights and role in COVID-19 report. Received $25,000 grant for the Electoral Areas Emergency Operating Centre Supplies Procurement Project. Province released its ***'What we heard' report***. The feedback period for the report ran until September 30, 2020. Once report feedback is compiled the Province will release the new Act.	▸ Initiate Firesmart Project	▸ *Q2 2021*
4d Achieve triple bottom-line sustainable budgets through innovation and streamlining while recognizing the need for infrastructure revitalization and accountability to taxpayers.		ℹ			An overhaul of the business planning process was started in the 2019 and continues through 2021. A prioritization and decision-making methodology has been developed. It will be reviewed annually to ensure it is reflective of the CRD's operating context. Financial Services will undertake a review of best practices in reserve balances for all services in 2021.	▸ Report back on decision making criteria and prioritization at COW October 28, 2020 ▸ Report back on reserve balance measures and gaps/surpluses	▸ *Q4 2020* ▸ ~~*Q3 2020*~~ *Q4 2021*
4e Facilitate a discussion of the region's art facility needs and explore partnerships to support 100% participation in the CRD arts function.		✓		▸ ***Board July 8, 2020***	Following direction form the Select Committee public engagement commenced in June. Phases of the project included pre-consultation meetings, the development of a facilities inventory and analysis, in-depth interviews with key community members and an online survey that attracted over 500 participants.	▸ Delivery of arts public engagement ▸ Workshops to vet, validate learning outcomes and propose future actions ▸ Report back to select committee on results of engagement	▸ *Ongoing* ▸ *Q4 2020* ▸ *Q1 2021*
4f Explore how the CRD can best contribute to regional economic development.		✓		▸ ***GFC July 29, 2020*** ▸ ***Board Aug. 12, 2020*** ▸ ***EAC Sept. 9, 2020*** ▸ ***Board Sept. 9, 2020***	Staff presented report on the regional role in economic development. The CRD continues to have a strong interest in supporting a regional economic development strategy and partnering with senior levels of government and stakeholders. In SGI, relationships have been established for collaboration at relevant provincial and federal level. External grants and funding opportunities collated and promoted through commissions. Approved the Rural Dividend amendments and staff authorized to direct award contract to Rural Islands Economic Partnerships Society.	▸ Continue to advance advocacy initiatives identified by the SGI and SSI community economic development commissions	▸ *Ongoing*

Accountability

CONDITION LEGEND

No issues / Proceeding as planned

Potential or emerging issue/problem

Problem/issue has arisen

Timing has changed

Corporate Initiatives	Status & Condition			Resolutions	Comments	Next Steps	
	Not Started	In Progress	Completed			Action	Timing
Business capacity & continuity: Advance our workforce planning & Organizational Health & Safety programs to support organizational capacity & resilience.		✓			Continued focus on the COVID-19 pandemic. Occupational Health & Safety continue to update and create new documents outlining health and safety protocols in line with WorkSafeBC. Preparation for Fall COVID planning, including new Human Resource processes. Face coverings were circulated to all staff.	▸ Continue to monitor, assess and adapt in response to COVID-19 pandemic ▸ Progress on implementation to be reviewed quarterly by the Executive Leadership Team	▸ *Ongoing* ▸ *Quarterly*
Fiscal responsibility: Integrate asset management & risk analysis into our capital planning processes to strengthen our fiscal management practices & support resource sustainability.		✓			A corporate risk management framework has been established and processes embedded in capital planning processes to support resource prioritization. A supporting asset componentization guide has been developed. Guide has been applied to Core Area Wastewater Treatment Project to ensure robust asset lifecycle risk analysis.	▸ Service plan initiatives to be considered for 2021	▸ *Q4 2020*
Transparency: Streamline our service planning tools & establish KPIs to effectively track & report progress on Board Priorities, Corporate Projects & operational service activities, thereby enhancing accountability.		✓			Service Planning reports on track to be reviewed by committees and commissions between September 30 and October 28, 2020. Additional organizational KPIs have been included in reports.	▸ Present 2021 service planning reports for approval at COW October 28, 2020.	▸ *Q4 2020*
Efficiency & collaboration: Develop a partnership directory & guidelines document to guide staff & existing potential partner groups & enable greater collaboration.		✓			Continue to advance initiatives under inter-governmental MOUs for Regional Housing First, Regional Emergency Management, Wildfire response and First Nations. Continue work to seek new partnerships and transition informal partnerships to formal.	▸ Identify potential new or existing informal partnerships to transition into formal partnerships to enhance and advance priorities and initiatives ▸ Develop criteria guidelines for entering into new partnerships	▸ *Ongoing* ▸ *Q4 2020*
Customer service: Enhance our systems and policies to respond to evolving best practices, adhere to legislative requirements, and provide efficient, accessible, customer service.		✓			Website, social media and media channels fully engaged to report out information as the COVID-19 pandemic evolves. Signage and other measures taken to convey new health and safety requirements and operational impacts as directed by the Public Health Officer.	▸ Progress on implementation to be reviewed quarterly by the Executive Leadership Team	▸ *Quarterly*

For a summary of completed actions on progress visit: ***www.crd.bc.ca/reporting***

For more information on advocacy, including the CRD advocacy strategy and detailed correspondence list visit: ***www.crd.bc.ca/about/board-committees/board-advocacy***

The CRD Board will advocate, collaborate and form partnerships to address the affordable housing and transportation needs of the region's diverse and growing population.

Community Wellbeing
Transportation & Housing

Board Priorities Dashboard

Summary of Completed Actions

Board Initiatives	Resolutions	Comments
1a Work with government/community partners to plan for and deliver an effective, long-term regional multi-modal transportation system and to increase use of public transit, walking and cycling.	▸ *TC Feb. 27, 2019* ▸ *Board March 13, 2019* ▸ *EAC June 12, 2019* ▸ *Board June 12, 2019* ▸ *TC July 24, 2019* ▸ *COW Jan. 29, 2020*	***Advocacy:*** Letter sent by the Board Chair to the Minister of Transportation requesting participation in the South Island Transportation Planning study. Letter sent advocating for a scope change to include a governance model and also the Electoral Areas under the South Island Transportation Strategy Plan. Requested and received presentation from BC Transit to Committee to input on Transit Planning. EAC advanced SGI transportation feasibility planning. Staff directed to include the establishment of an SGI transportation service in service and budget planning for 2020. Met with Ministry staff July 2019 on South Vancouver Island Multi-Modal Transportation Plan. Transportation Committee Chair provided updates on transportation issues after meeting with Minister of Transportation and a presentation was delivered at the July Transportation Committee. A follow-up meeting was held in November 2019. MOTI presented the draft Southern Vancouver Island Transportation Plan to the January 2020 Committee of the Whole. Release of the final Southern Vancouver Island Multi-Modal Transportation Plan expected in summer 2020, a quarter later than originally anticipated. Change of direction related to Southern Gulf Islands transportation service and budget planning.
1b Protect the E&N Corridor as a transportation corridor and participate in a Provincial working group to come to agreement on the future use of the E&N corridor.	▸ *GFC July 3, 2019*	Active Board member as Island Corridor Foundation representative. E&N Corridor is identified as a transportation corridor and is part of the multi-modal network in the 2014 Regional Transportation Plan. ***Bike BC 1M grant*** awarded May 2019 for phase 3 of the E&N rail trail. ***Media Release***: CRD Recognizes Funders and Partners of E&N Rail Trail to acknowledge over $20 million in grants towards development. The province released the Island Rail Corridor Condition Assessment Report in April 2020. It provided estimated cost and potential phasing scenarios to reinstate rail along the island corridors, including the E&N corridor. The Southern Vancouver Island Multi-Modal Transportation Plan will consider the findings.
1c Create and deliver more affordable housing across the region in a manner aligned with the Regional Growth Strategy in order to address the needs of a diverse and growing population, including vulnerable residents.	▸ *Board Feb.13, 2019* ▸ *Board Sept. 11, 2019* ▸ *Board Jan. 8, 2020* ▸ *Board Mar. 11, 2020* ▸ *Board June 10, 2020*	In December 2018, the Board approved, in partnership with the BC government, the acquisition of two properties, one located at Spencer Road and the other at Hockley Avenue. Board rise and report on acquisition for Millstream Ridge (Treanor Avenue properties). In development negotiations on West Park Lane affordable housing project in View Royal. ***Media Release***: West Park Lane mixed-income housing development project announced with Province. ***Media Release***: Reaching Home Strategy funding from Federal Government secured. ***Media Release***: New affordable homes for seniors coming to Salt Spring Island. Successful consent of electors approval to raise additional funding for Regional Housing First Program. ***Media Release***: CRD Moves Forward with Bylaw Amendments for the Regional Housing First Program. ***Media Release***: CRD Board Approves Bylaw Amendments for the Regional Housing First Program. COVID-19 addtional reaching home funding update received by Board in June 2020. Westview officially opened, creating 73 new affordable housing units. Residents began moving into their new homes mid-May 2020. ***Media Release***: CRD Continues to Provide Support for Vulnerable Populations during COVID-19 (April 6, 2020). ***Media Release***: Over 70 New Affordable Homes Opening in Saanich (May 13, 2020). ***Media Release***: Reaching Home Program Continues Focus on Community's Unhoused During COVID-19 Crisis (June 10, 2020). ***Media Release***: Regional Housing First Program Partners Announce Additional Matching Contributions (June 18, 2020).

Board Priorities Dashboard

Summary of Completed Actions

The CRD Board will encourage and implement bold action on climate change by enhancing its natural and built assets to achieve environmental resilience, food security and continued wellbeing of our current and future residents.

Climate Action & Environmental Stewardship

Board Initiatives	Resolutions	Comments
2a Declare a Climate Emergency and take a leadership role to pursue regional carbon neutrality by 2030.	▸ ***Board Feb 13, 2019*** ▸ ***Board April 10, 2019*** ▸ ***Board, April 8, 2020*** ▸ ***Board May 13, 2020***	***Advocacy***: On February 25, 2019 the Board Chair wrote letters to the Federal and Provincial Ministers of the Environment to request that the federal government strengthen progressive partnerships and direct funding, and provide additional support to regional and local governments to achieve accelerated federal and local climate action goals related to both mitigation and adaptation. Letter sent advocating the federal government deliver on climate commitments. Letter sent advocating the provincial government deliver on climate commitments. Resolution declaring a climate emergency at February meeting. Received response from Provincial Minister of Environment on March 29, 2019 advising their commitment to constructive collaboration and looking forward to a continued partnership with the CRD. Advocacy strategy completed. Provided supportive funding and Chair Plant participated in the BC Coalition Institute – Planetary Health: Local and Global event held August 8 – 11, 2019 at the University of Victoria. Submitted detailed feedback in response to the Province of BC's proposed Zero-Emissions Vehicles Act Regulations that will regulate the future sale of zero emission vehicles in the CRD, and BC more broadly. The approach and timeline for the regional neighbourhood pilot program with Transition 2050 partners is being reassessed due to the COVID-19 health emergency. The report on communicating the climate emergency was distributed to local government staff. CRD Residential (Energy) Retrofit Acceleration Strategy was completed with an increase in the number of retrofit rebates offered. The Climate Action program will continue to support promotion of the Provincial rebate program with municipal partners to encourage residents to switch to heat pumps. 2019 Climate Action Annual Report received for information and completed Climate Action Revenue Incentive Program reporting and submitted to the Province June 2020.
2b Work with local governments to further reduce emissions from buildings, transportation and solid waste.	▸ ***PEC May 22, 2019*** ▸ ***Board June 12, 2019***	***Advocacy***: On February 26, 2019 the CRD Board Chair wrote a letter to each CRD Municipality advising of the CRD Board's climate emergency declaration and urging member municipalities to place the letter on an upcoming meeting agenda for council's consideration. Met with Climate Action Program Inter-Municipal Working Group (April 2019) to prioritize new regional initiatives. Presented Corporate and Community Climate Action Annual Reports (June). Meeting schedule increased for the CRD Climate Action Inter-Municipal Task Force. Additional meetings to determine appropriate format, scope interest and ability to support a regional Forum of Community Associations on Climate Change/Climate Emergency event in 2020. Delivered an educational workshop on 'Communicating Climate Change' with Climate Change expert. Hosted Climate Action Inter-Municipal Working Group meeting. Forgoing a regional forum of community associations on climate change/climate emergency and instead plan to support a regional pilot program with Transition 2050 partners to enable neighbourhood leaders take climate action at home. The Solid Waste Management Plan 'What We Heard' report has been prepared, which summarized public consultation on the proposed strategies and targets for the new plan. Motion to allow a portion of biosolids produced at the Residuals Treatment Facility to be used at Hartland Landfill during cement factory shutdowns. ***Media Release***: CRD Board Approves Limited Beneficial Use of Biosolids at Hartland Landfill Staff continued to explore options to upgrade to renewable natural gas for sale to Fortis BC or expand capacity to produce more electricity for BC Hydro. A decision on the future of landfill gas utilization will be made in 2020. Hosted Climate Action Inter-Municipal Working Group meeting to review current projects and discuss priorities and lessons learned related to accessing grants for efficiency programs.
2c Explore additional opportunities for resource recovery and identify best practices to further reduce waste, increase recycling and find beneficial uses for waste.	▸ ***Board Mar. 13, 2019*** ▸ ***Board May 8, 2019*** ▸ ***Board June 12, 2019*** ▸ ***PEC Sept. 4, 2019*** ▸ ***Board Sept. 11, 2019*** ▸ ***Board Feb. 12, 2020***	Options reported to Board for landfill gas utilization. Received direction on next steps for landfill gas utilization technology business case (Fall 2019). Organics processing referred back to staff for report on options regarding composting. Organics processing – requests for expressions of interest – submitted to Board. Province provided conditional approval for the Definitive Plan for Beneficial Use of Biosolids. Solid Waste Management Plan proposed strategies and targets approved by Board (Summer 2019). Staff conducted first round of public consultation on the proposed strategies and targets for the new Solid Waste Management Plan (Fall 2019). ***Media Release***: CRD Seeks Input for a New Solid Waste Management Plan. Solid Waste Management Plan 'What We Heard' report was presented to the Solid Waste Advisory Committee June 2020 and will be sent to Committee and Board in July 2020. On April 30, 2020 the CRD provided the required short-term biosolids contingency plan to the Ministry of Environment & Climate Change Strategy and are currently waiting for confirmation of its approval. Announced approval in principle of an agreement where FortisBC will purchase Renewable Natural Gas (RNG) generated from Hartland Landfill for beneficial use in its natural gas distribution system April 2020. ***Media Release***: Renewable Natural Gas Project Proposed for Hartland Landfill (April 22, 2020).

The CRD Board will encourage and implement bold action on climate change by enhancing its natural and built assets to achieve environmental resilience, food security and continued wellbeing of our current and future residents.

Climate Action & Environmental Stewardship

Board Priorities Dashboard

Summary of Completed Actions

Board Initiatives	Resolutions	Comments
2d Ensure appropriate funding for parks and trails infrastructure, improvements and maintenance by updating the Regional Parks Strategy with consideration to ecological, recreation and reconciliation principles, land acquisition capacity, and expanded partnerships with First Nations and parks user groups.	▸ ***Board April 10, 2019*** ▸ ***PEC Oct. 23, 2019*** ▸ ***COW Oct. 30, 2019*** ▸ ***Board Oct. 30, 2019*** ▸ ***Board Nov. 13, 2019*** ▸ ***Board Mar. 11, 2020*** ▸ ***Board Mar. 18, 2020*** ▸ ***Board April 8, 2020*** ▸ ***Board May 27, 2020*** ▸ ***Board June 10, 2020*** ▸ ***Board June 24, 2020***	***Advocacy***: advocating the protection of Sooke Hills Regional Park. ***Media Release***: CRD Board Approves Extension of the Land Acquisition Fund. Decision to renew the Land Acquisition Fund for an additional 10 years (2020-2029) at a levy of $20/household and that land acquisitions be funded with an averaged contribution from community partners at an additional 25% and that an additional $925,000 be requisitioned each year for capital reserves to fund the refurbishment and replacement of existing assets. Financial Plans approved with several amendments, including a new approach to administering the highly successful Parks Land Acquisition Fund, with an additional $925,000 each year for capital reserves to fund the refurbishment and replacement of existing assets. ***Media Release***: CRD and CRHD Boards Approve 2020 Financial Plans ***Media Release***: CRD Acquires 30 Hectares of Land Near Money Lake on Saturna Island. Regional Parks 2020 to 2021 Land Acquisition Criteria approved. Regional Parks management planning underway for Mount Work, East Sooke and Matheson Lake/Roche Cove Regional Parks. Staff directed to report back on options to improve capacity of the Parks Acquisition Fund.Mount Work Regional Park Management Planning report received for information June 2020. Terms of Reference approved for the Mountain Biking Advisory Committee and committee members appointed.
2e Develop model bylaws and best practices for use by municipalities and electoral areas.	▸ ***PEC July 24, 2019*** ▸ ***Board Aug. 14, 2019*** ▸ ***COW Oct. 30, 2019*** ▸ ***Board Oct. 30, 2019*** ▸ ***PEC Nov. 27, 2019***	Initiated residential retrofit acceleration project. Notice of motion to reduce expanded Polystyrene Foam Waste presented to committee and Board. Staff reported back on the notice of motion to reduce expanded Polystyrene Foam Waste with options and implications for creating a model bylaw to ban single use expanded polystyrene waste items including cups and containers. Initiated Capital Region Coastal Flood Inundation Mapping Project to provide future sea level rise mapping that may inform local government flood construction level-related policies. Capital Region Coastal Flood Inundation Mapping Project data collection work completed. Completed the regional analysis to understand electric vehicle (EV) charging performance to coordinate local government bylaws and results shared with local governments in April 2020.

The CRD Board will take measurable steps toward developing respectful government-to-government relationships and partnerships with First Nations to foster shared prosperity for all.

Board Priorities Dashboard

Summary of Completed Actions

First Nations Reconciliation

Board Initiatives	Resolutions	Comments
3a Look to First Nations for leadership in understanding how to create new regional planning and decision-making systems together on their Traditional Territories.	▸ ***Board June 12, 2019*** ▸ ***FNRC Feb. 26, 2020*** ▸ ***Board March 11, 2020***	Ministers responded to formal request from Board to form a working group and staff met with senior ministry staff to initiate discussions. Provincial government staff responded to formal request from Board to form a working group and staff met with senior ministry staff to initiate discussions. Discussions with ministry staff ongoing. Suggestion to also engage via UBCM in addition to continued dialogue between CRD staff and ministry staff. Forum of All Councils event explored the opportunity to support more inclusive decision-making with First Nations as outlined in CRD Statement of Reconciliation. Forum of All Councils event summary and recommendations submitted to the First Nations Standing Committee. Staff reports prepared for First Nations inclusion on CRD Board standing committees and remuneration to support increased First Nations participation.
3b Seek partnerships, share information and deliver fair and equitable services in working with First Nations on achieving their economic goals.	▸ ***FNRC Sept. 18, 2019***	First Nations Relations Service Plan and budget amendment to include resources for Economic Development Feasibility Study. Feasibility Study of First Nations Economic Development Model process underway. CRD is working with Victoria Native Friendship Program IMDEES by offering job shadow opportunities for individuals that have had challenges entering the workforce. CRD, along with Canada Summer Jobs, has engaged an Indigenous community member as Recycling Outreach Assistant through Summer/Fall 2019 to build accountable relationship with communities and better understand needs and barriers related to waste management. IWS working towards water and wastewater service agreements with local First Nations. Feasibility Study of First Nations Economic Development Model process underway.
3c Work with First Nations on taking care of the land and water while providing space for cultural and ceremonial use, food and medicine harvesting, traditional management practices and reclaiming Indigenous place names.	▸ ***Board Mar. 13, 2019*** ▸ ***Board June 12, 2019***	Board received information report on archaeology policy and procedures. Amendment to Capital Regional Board Procedure Bylaw to add Territorial Acknowledgment. Archeology services retained through creation of Standing Offer List to support CRD-led projects. Meetings with WSANEC leadership and cultural monitors to develop archaeology protocol. Archaeology protocol policy approved. Promoted the celebration of National Indigenous History Month and Indigenous Peoples Day in June 2020.
3d Prepare an ecological asset management plan that includes natural infrastructure, First Nations guiding principles, First Nations language and place names, historical uses and invasive species management.		Service plan initiative to be considered for 2021. Other service plan initiatives prioritized for 2020.

Board Priorities Dashboard

Summary of Completed Actions

The CRD Board will advocate for infrastructure, regulatory, legislative, financial and operational support, focus its governance and Committees/Commissions on transparently and efficiently advancing regional, sub-regional and local priorities, and work to resolve issues that the CRD may not have the direct mandate to address.

Advocacy, Governance & Accountability

Board Initiatives	Resolutions	Comments
4a Develop an advocacy strategy to ensure all occupied properties have the opportunity to access high-speed internet services.	▸ ***EAC Mar. 13, 2019*** ▸ ***EAC July 10, 2019*** ▸ ***Board July 10, 2019*** ▸ ***EAC Jan. 8, 2020*** ▸ ***Board, Jan. 8 2020*** ▸ ***Board Feb. 12, 2020***	CRD staff have been in discussion with SRD staff on the connected coast project since Fall 2018. Sites identified as eligible in the ***Connected Coast project proposal***. Inclusion in various programs is greatly enhanced with a board endorsed broadband strategy. Staff directed by EAC March 13 to advance all correspondence on rural definition issue to MLA Olsen to advocate for increased access to grant funding for EAs. Correspondence sent by CRD Board Chair on March 19 to MLA Olsen. Advancing Southern Gulf Island Phase 1 connectivity strategy through community and stakeholder engagement. Staff meeting with citizen services to investigate pilot opportunities for connectivity on Southern Gulf Islands. Stakeholder engagement underway throughout Fall/Winter 2019. ***Media Release***: CRD Seeks Feedback for Internet Connectivity Plan for the Southern Gulf Islands In July 2019 Board authorized the submission of an application to the BC Rural Dividend Program for Southern Gulf Islands Connectivity Design Strategy and confirmed support for this project through its duration. In October 2019 the Provincial government canceled this grant opportunity. Staff presented results of Southern Gulf Island Phase 1 Connectivity Strategy community and stakeholder engagement. through community and stakeholder engagement. Received a grant from the Provincial Government to advance Phase 2 of the Connectivity Design Plan.
4b Develop a comprehensive strategy and operational review to reflect the unique needs and governance of each electoral area.	▸ ***Board Jan. 9, 2019*** ▸ ***EAC Mar. 13, 2019*** ▸ ***EAC April 10, 2019*** ▸ ***EAC July 10, 2019*** ▸ ***Board July 10, 2019*** ▸ ***EAC Sept. 11, 2019*** ▸ ***Board Sept. 11, 2019*** ▸ ***Board Feb. 12, 2020***	Resolution supporting the submission of a grant application for $25,000 to the UBCM Community Emergency Preparedness Fund – Evacuation Planning Stream for Evacuation Route Planning, as well as a grant application for $100,000 to the UBCM Community Resiliency Investment Program to fund FireSmart initiatives in the Electoral Areas. EAC directed staff to bring back service establishment amendments to remove JDF EA from livestock kill compensation. EAC directed staff to consult with community groups BC Transit, and BC Ferries to define a service model that would best serve the transportation needs of the Southern Gulf Islands. Establishment of a Southern Gulf Islands transportation service in service and budget planning for 2020. ***Advocacy:*** Correspondence sent regarding the application for Salt Spring Island Water Service Optimization Study (July 17, 2019). ***Advocacy***: Inclusion of the Southern Gulf Islands in Community Futures (October 7, 2019). ***Advocacy***: Request for Order in Council - CRD Electoral Areas (November 13, 2019). ***Media Release***: Salt Spring Island water study receives provincial support. Salt Spring Water Optimization Study Terms of Reference completed and contractor selected to carry out study. Bylaw No. 4325 Bylaw to establish community safety service on Salt Spring Island introduced and staff directed to conduct an alternative approval process for Bylaw 4325. ***Media Release:*** Alternative Approval Process Begins for Salt Spring Island Community Safety Service. At the close of the deadline date of December 9, 2019 for receipt of elector responses, it was determined that more than 910 elector response forms had been received and therefore elector approval by alternative approval process was not obtained. Submitted a letter of support for the application by TELUS to the Province of British Columbia Network BC Connecting British Columbia program and to the Canadian Radio-television and Telecommunications Commission Broadband Fund for a funding contribution towards the transport and last mile project for Jordan River - Port Renfrew. ***Advocacy***: Electoral Areas Rural Status (January 31, 2020) ***Advocacy***: Telus Resolution (February 13, 2020) North Ganges Transportation project tendered in March 2020 with construction started in June 2020.
4c Explore more comprehensive regional coordination of emergency services, including an assessment of regional hazards, risks and vulnerabilities.		The Regional Emergency Management Partnership (REMP) Strategic Plan and work plan was reviewed and approved with work on a Regional Concept of Operations and Hazard Vulnerability analysis to continue. Successful in grant applications of $25,000 for the UBCM Community Emergency Preparedness Fund – Evacuation Planning Stream for Evacuation Route Planning, as well as $100,000 for the UBCM Community Resiliency Investment Program to fund FireSmart initiatives in the Electoral Areas. Policy group meeting held with Board Chair and Federal Minister. Shared concept operations papers with several First Nations about how to work to advocate to work together in the case of a regional emergency. Regional concept of operations circulated to municipal CAOs to approve Memorandum of Understanding on operational protocol. Currently have 12 of 13 municipalities and two First Nations confirmed. Coordinated response to proposed new modernization of the BC Emergency Act submitted January 31. Participated through the Regional Emergency Management Partnership in a Regional Hazard, Risk and Vulnerability Assessment (HRVA) exploring three regional hazards of snow storm, extreme heat, and earthquake along with multiple stakeholders from multiple-sectors from across the capital region identifying disaster risk reduction strategies.
4d Achieve triple bottom-line sustainable budgets through innovation and streamlining while recognizing the need for infrastructure revitalization and accountability to taxpayers.		Staff working to develop process for transparent, multi-criteria decision making on Initiative Business Case (IBC) review to drive service planning and ultimately financial budgets. Also working to develop measures for adequate reserve balances across services. Financial Planning guidelines approved by Board. Service Planning and initiative prioritization with ELT has been completed. New quarterly operational variance reporting implemented.

The CRD Board will advocate for infrastructure, regulatory, legislative, financial and operational support, focus its governance and Committees/Commissions on transparently and efficiently advancing regional, sub-regional and local priorities, and work to resolve issues that the CRD may not have the direct mandate to address.

Advocacy, Governance & Accountability

Board Priorities Dashboard

Summary of Completed Actions

Board Initiatives	Resolutions	Comments
4e Seek 100% participation in the CRD arts function and facilitate a discussion of the region's art facility needs.	▸ ***GFC July 3, 2019*** ▸ ***GFC Oct. 2, 2019*** ▸ ***RAFSC Jan. 29, 2020*** ▸ ***Board, June 24, 2020***	In 2017/2018 staff along with Arts commission chair embarked on a roadshow to encourage participation in the Arts Development Service, resulting in net 1 participant increase to the service (+Sooke, +SGI, -Sidney). To advance a regional discussion on arts facilities, GFC supported two recommendations: to establish a Select Committee to facilitate a discussion of regional arts facilities; and to have the Arts Commission and Royal & McPherson Theatres Services Advisory Committee report on the potential for full participation in their respective Services. Regional Arts Facilities Select Committee first meeting held. Terms of Reference approved. Request For Proposal for a consultant to facilitate the arts facilities discussion approved and posted. Select committee confirmed proceeding with public engagement through COVID-19. External consultant presented electronic engagement plan to committee and will ensure all activities are in accordance with Public Health Officer guidelines. Updated CRD Arts & Culture Support Service Strategic Plan and submitted to Board June 24, 2020.
4f Explore how the CRD can best contribute to regional economic development.	▸ ***GFC July 3, 2019*** ▸ ***Board July 10, 2019*** ▸ ***GFC Oct. 2, 2019*** ▸ ***Board Oct. 9, 2019*** ▸ ***Board Mar 11, 2020*** ▸ ***Board May 13, 2020***	***Advocacy:*** Correspondence sent by Board Chair to support South Island Prosperity Project Smart Cities application. Advocacy plan presented to Committee and Board and approved. ***Media Release***: CRD and the Community Economic Development Commission (CEDC) have received a Rural Dividend grant. Staff presented with Ministry of Citizen Services on Broadband Connectivity across BC's rural islands at the Rural Islands Economic Forum (RIEF) in November 2019. Board Chair recommended proposed for an Economic Recovery Forum to be held. This proposed forum would be intended to bring together elected officials, business leaders and other stakeholders where we could discuss potential region-wide initiatives. Board Chair participated in the Opportunity in Recovery: Discussing BC's post COVID-19 future on June 17.2020 Community Economic Development Commission Five Year Financial Plan to fund a project with Rural Island Economic Partnership (REIP) to develop an online business directory and marketing plan for rural businesses. ***Advocacy:*** COVID-19 and Community Works Funds (April 27, 2020). ***Advocacy:*** South Island Leaders Unite to Address Economic Crisis and Recovery (April 16, 2020)

Corporate Priorities Dashboard

Summary of Completed Actions

Accountability

Corporate Initiatives	Resolutions	Comments
Business capacity & continuity: Advance our workforce planning & Organizational Health & Safety programs to support organizational capacity & resilience.	▸ *Board Mar. 18, 2020*	Organizational Development Plan Actions updated for 2019 and advanced to all staff. Received Local Government Auditor General report December 2018 on Emergency Preparedness identifying the need to improve business continuity planning efforts which included CRD response and proposed work to be implemented. Ensure CRD systems and policies are aligned to significantly improve workplace decision-making and business tracking, including alignment with business continuity requirements. Significant focus on the review and implementation of a comprehensive Human Resource Information System (HRIS), aligned to our current Enterprise Resource System (SAP), and continued review of OHS safety elements tied to certificate of recognition. Starting mid-March 2020 a significant focus on the COVID-19 pandemic. Staff and Board members have been closely monitoring the COVID-19 situation and reviewing its essential services, decision-making processes and health and safety requirements to ensure business continuity during the COVID-19 pandemic. Occupational Health & Safety created the Safety Exposure Control Plan, as well as additional documents outlining health and safety protocols in line with WorkSafeBC. Application for Certificate of Recognition (CoR) for audit postponed to 2021 due to the COVID-19 pandemic. Service plan initiative prepared for the implementation of the HRIS as part of the service planning process but deferred to 2021. ***Media Release***:* CRD Maintains Essential Services During COVID-19 Health Emergency **Many media releases have been distributed as a result of COVID-19. For a full list click here.* Successfully recruited Occupational Health and Safety Manager.
Fiscal responsibility: Integrate asset management & risk analysis into our capital planning processes to strengthen our fiscal management practices & support resource sustainability.	▸ *Board Mar. 13, 2019* ▸ *GFC Oct. 2, 2019* ▸ *PEC Oct. 23, 2019* ▸ *COW Oct. 30, 2019* ▸ *Board Oct. 30, 2019* ▸ *Board Mar. 11, 2020*	Asset Management Policy & Strategy approved by Board. COW, approved in provisional budget with a prioritized multi-year phased implementation starting with the Core Area Sewer Service. Incremental impacts included in provisional budget; 2 FTEs and a one-time costs of $125k. Regional Parks Sustainable Service Delivery Plan Report Card approved by PEC and Board. The multi-year Asset Management Initiative Business Case project continues to be implemented, with work on the Core Area Wastewater Service underway. Sustainable Service Delivery Plans are being developed across multiple service areas. Regional Parks Sustainable Service Delivery approved by Board. The multi-year Asset Management Initiative Business Case project continues to be implemented, with work on the Core Area Wastewater Service underway. All risks related to assets being integrated in the corporate risk register.
Transparency: Streamline our service planning tools & establish KPIs to effectively track & report progress on Board Priorities, Corporate Projects & operational service activities, thereby enhancing accountability.	▸ *COW Oct. 30, 2019* ▸ *Board Oct. 30, 2019* ▸ *Board Mar. 18, 2020*	Corporate Plan finalized March 2019. Service Planning templates completed. Service plans presented as part of 2020 service planning process. Staff completed a review of the 2019 service planning process and based on lessons learned, while ensuring work is aligned with the 2019-2022 Board Priorities and the 2019-2022 Corporate Business Plan have adjusted the service planning process for 2020. Board conducted the 2019-2022 Board Priorities Annual Check-in May 2020. First phase of the 2021 service planning process (initiative identification and prioritization) was completed June 2020. Changes were implemented this year, following the 2019 service planning review. Moving forward with financial planning work as well as Community Needs Summary development in line with target deadlines.
Efficiency & collaboration: Develop a partnership directory & guidelines document to guide staff & existing potential partner groups & enable greater collaboration.		Advancing initiatives under inter-governmental MOUs for Regional Housing First, Regional Emergency Management, First Nations and Wildfire response. Provide core funding to various not-for-profit groups under operating agreements. Continue to advance initiatives under inter-governmental MOUs for Regional Housing First, Regional Emergency Management, First Nations and Wildfire response. Partnerships guidelines prepared and existing formal partnerships captured in directory. Continue work to seek new partnerships and transition informal partnerships to formal.
Customer service: Enhance our systems and policies to respond to evolving best practices, adhere to legislative requirements, and provide efficient, accessible, customer service.	▸ *Board May 8, 2019* ▸ *Board June 12, 2019* ▸ *Board Dec. 11, 2019* ▸ *Board Mar. 18, 2020*	The 2019 Organizational Development Plan actions include implementing new systems to review polices, a new technology strategy aligned with corporate priorities and enhancing corporate health and wellness and recruitment strategies. Transparency initiatives endorsed by the Board, including a rise and report webpage and a monthly Board Highlights report. ***Media Release***: CRD Launches Transparency Initiatives The Board Highlights monthly e-newsletter (launched December 2019) sends a summary of key agenda items and Board decisions directly to your inbox, with links to related materials and webcasts for in-depth review. The rise and report section of the CRD website (launched December 2019) publishes decisions that were made in-camera once they are ready for public release. Website, social media and media channels fully engaged to report out information as the COVID-19 pandemic evolves. Staff developing signage to convey new health and safety requirements and operational impacts as directed by the Public Health Officer. EA email accounts have been activated for residents to send questions and comments to the CRD for response in a timely manner. Website, social media and media channels fully engaged to report out information as the COVID-19 pandemic evolves. Closed CRD offices re-opened to the public June 1, 2020. Signage and other measures taken to convey new health and safety requirements and operational impacts as directed by the Public Health Officer. Launched the water outages map allowing customers of the Juan de Fuca Water Distribution System and Local Service Areas to view current water outages online.

Standing Committee Legend

- CALWMC = Core Area Liquid Waste Management Committee
- EAC = Electoral Area Committee
- FNRC = First Nations Relations Committee
- GFC = Governance & Finance Committee
- HHC = Hospitals & Housing Committee
- PEC = Parks & Environment Committee
- PPSC = Planning & Protective Services Committee
- TC = Transportation Committee

Making a difference...together

OPEN CAPITAL REGIONAL DISTRICT BOARD
MEETING OF WEDNESDAY, OCTOBER14, 2020

APPENDIX D
CORPORATE CLIMATE CHANGE INITIATIVES

Staff hosted a CRD Climate Action Inter-Municipal Working Group meeting to review current projects and initiatives, discuss priorities and share learnings related to regional climate action. In addition, staff facilitated an inter-municipal staff meeting to share information related to implementing the BC Energy Step Code across the region to date.

Staff presented the results of two key information reports to the Board:

- Capital Region Coastal Flood Inundation Mapping Project. Results are being shared directly with local government staff and municipal councils, First Nations, senior levels of government and other key emergency management agencies. Results and FAQs are also available on the CRD website at www.crd.bc.ca/coastalflood.
- Regional Greenhouse Gas Inventory Study and associated Local Government Summary. The relevant reports are being shared directly with local government staff and municipal councils and First Nations. The reports and FAQs are also available on the CRD website at https://www.crd.bc.ca/about/data/climate-change.

The Bring it Home for Climate pilot program to support climate home retrofits launched on August 11. This pilot program, supported by the CRD and Federation of Canadian Municipalities, has been created to engage and support homeowners who are interested in being 'agents of change' by improving the energy efficiency and reducing the carbon footprint of their homes and motivating other homeowners to do the same. Qualifying participants will receive subsidized virtual home energy audits, supplies to reduce home air leakage, access to home energy coaching and peer learning opportunities.

The CRD secured a grant worth $36,000 toward the creation of an Electric Vehicle (EV) Infrastructure Road Map. The goals of the roadmap are to understand future charging station user needs and designs, and to find the opportunities for collaboration between regional fleet owners and other key stakeholders. The project, to be completed in early 2021, will be used as an input for the CRD Climate Action Strategy update.

In conjunction with a grant-funded UBC student scholar, staff completed a project that assessed the opportunity for energy and emission benchmarking for complex building (e.g., apartments, commercial) in the capital region. The report will be used as an input for the forthcoming CRD Climate Action Strategy update.

Staff participated in the BC Climate-Aligned Stimulus Working Group formed in early July to identify the potential impacts of economic stimulus that address both COVID-19 and the pressing urgency of responding to the climate crisis. The Working Group engaged BC local governments, economic developers, businesses, government entities, non-profits, and other relevant factors to identify climate-aligned COVID-19 economic recovery and stimulus projects from across BC, including the CRD renewable natural gas initiative. 323 potential projects worth more than $11 billion were identified in four weeks from across BC.

The CRD continued to support promotion of the provincial CleanBC Better Homes Rebates to regional homeowners and, together with Victoria, Saanich, Central Saanich, North Saanich and Esquimalt, to provide top-up incentives to encourage residents to switch to electric heat pumps from fossil fuel heating systems. Between September 2018 and June 2020, 297 incentives (242 from oil, 48 from natural gas and seven from propane heating) have been accessed.

Using the CRD Headquarters Building as a pilot, the CRD recently joined the Greater Victoria 2030 Resiliency District, led by Building Owners and Managers Association of British Columbia, with support from the City of Victoria and District of Saanich. This commits the CRD to work with a cohort of representatives from Victoria, Saanich and the commercial real estate industry to explore the potential of achieving aggressive energy and emissions reductions targets, while also enhancing the resilience of our buildings.

Advocacy Dashboard > Quarter 3 – 2020

Making a difference...together

Tracking #	Issue	Objective	Advocates				Comments	Status/Update
			Board	LG/EA	Partner	Staff		
19-01-01	Housing First	Advocate for matching $10M funding commitments from BC Housing and Canada Mortgage and Housing (CMHC) to enhance the $90M Housing First Program and enable the acquisition of up to 2000 units of affordable housing to address core housing needs.	✓	✓	✓	✓	Board Chair Plant and CRHC Board Chair Helps leading advocacy. Various municipalities advocating for support. Partner BC Housing has committed $10M of additional matching funding. Letter received from BC Housing committing to match funding. Request for $10M of matching funding under consideration by partner CMHC. Housing-Staff advocating and participating in housing needs events. CRD Board introduced Bylaw Amendment to increase borrowing authority and referred to municipalities for approval and for consent process in EA's. Director Helps met with Federal Ministers and staff in Ottawa to continue push for additional matching funding in late January.	Consent of municipalities requested and assent of electors required for Electoral Areas. AAP Process successfully complete March 2020. On June 18, the three partners announced agreement of an additional $10 million each, which will guarantee 400 provincial shelter rate units and up to 2000 units overall.
19-01-02	Property Purchase Tax on housing properties acquired by CRD	Request and advocate for the Ministry of Finance to exempt the CRHC from Property Purchase Transfer Tax (PPTA) on affordable housing property purchases.	✓	✓		✓	CAO correspondence to Provincial Property Tax Enquiries Agency and Minister of Finance requesting that the CRHC be granted an exemption from PPTA on affordable housing purchases. CRHC Board Chair Helps to lead any advocacy.	Report on Provincial Budget Submissions indicates no relief.

Advocacy Dashboard > Quarter 3 – 2020

Tracking #	Issue	Objective	Advocates				Comments	Status/Update
			Board	LG/EA	Partner	Staff		
							Letter to Property Transfer Tax Enquiries Letter to Minister James	
	UBCM Housing Needs Application	Ask local municipalities to support collaborative grant request for needs assessment.	✓	✓		✓	Letter requesting partner municipalities to endorse the collaborative grant based on prior support. Sent to eight municipalities and three EA areas that expressed an interest. Letter to Central Saanich Letter to Esquimalt Letter to Highlands Letter to Juan de Fuca Letter to Langford Letter to Metchosin Letter to North Saanich Letter to Saanich Letter to Salt Spring Island Letter to Southern Gulf Islands Letter to Victoria Letter from Central Saanich Letter from North Saanich Letter from Saanich	Grant request submitted with resolutions confirming support requested, some received.

Advocacy Dashboard > Quarter 3 – 2020

Making a difference...together

Tracking #	Issue	Objective	Advocates				Comments	Status/Update
			Board	LG/EA	Partner	Staff		
19-01-04	South Island Transportation Study	Advocate for improvements in Regional Transportation. Requested that the Provincial government study address governance and that EA areas be included in the study.	✓	✓	✓	✓	Letter to Minister Trevena Letter to Minister Trevena Letter from Minister Trevena Board Chair Plant and staff conferenced with Minister Trevena to discuss items included in the letters. Staff continue to liaise with the South Island Transportation Study working group reporting to the Board and Committee.	Inter-municipal CRD TAC meeting ongoing. Report to Board once study is complete in Spring 2020. Update meeting in late January. Report now expected in July or August this year.
19-01-05	Protection of Sooke Hills Wilderness park	Protect from development of highway infrastructure.	✓			✓	Letter to Premier Horgan Letter from Minister Trevena Staff continue to liaise with the South Island Transportation Study working group reporting to the Board and Committee. Province announced December 16, 2019, no alternate route pursued at this time.	Complete for now. Part of South Island Transportation Plan.
19-01-06	Protection of Greater Victoria Water Supply area	Protect from development of highway infrastructure.	✓			✓	Letter to Premier Horgan Letter from Minister Trevena Staff continue to liaise with the South Island Transportation Study working group reporting to the Board and Committee. Province announced December 16th, no alternate route pursued at this time.	Complete for now. Part of South Island Transportation Plan.

Advocacy Dashboard > Quarter 3 – 2020

Tracking #	Issue	Objective	Advocates				Comments	Status/Update
			Board	LG/EA	Partner	Staff		
20-01-01	Speed Enforcement on the Malahat	Move forward with a trial of point to point interval cameras on the Malahat.	✓		✓	✓	Letter to Minister Farnworth	
20-01-02	Increased Transit Funding	Request for new investments and reliable annual funding to support increased public transportation.	✓	✓	✓	✓	Letter to Prime Minister Trudeau, Premier Horgan, Minister McKenna and Minister Garneau. Email from the Prime Minister's Office Email from the Office of the Premier Letter from Minister Trevena Letter from Minister McKenna	

Advocacy Dashboard > Quarter 3 – 2020

Making a difference...together

Tracking #	Issue	Objective	Advocates				Comments	Status/Update
			Board	LG/EA	Partner	Staff		
19-02-01	Climate Emergency	Ask Federal government to strengthen national efforts to meet the Paris Agreement. Ask Provincial government to fully implement CleanBC and provide data on utilities vehicles and community energy emission inventories to local governments.	✓	✓	✓	✓	Letter to Premier Horgan Letter to Minister McKenna Representation from all CRD local governments on Climate Action Task force and staff Working Group sharing information and collaborating on projects. Partner with NGO's, Academic Institutions and Utilities with staff support through shared research, policy development and program delivery.	Quarterly update to enhance Annual Community and Corporate Climate Action reporting.
19-02-02	Climate Action Leadership	Seek Strategic partnership	✓				Letter to Minister Heyman Response from Minister Heyman Letter to Minister McKenna	Continue to seek partnership with senior governments.
20-02-01	Solid Waste Policy Advocacy	Ongoing Association of Vancouver Island Coastal Communities special committee on provincial Solid Waste policy and diversion programs.	✓			✓	Link to policy resolutions submitted to AVCC for debate, if passed would move on to UBCM then if passed would move to Province. Parliamentary Secretary Malcolmson toured the Hartland Landfill in early May. Memo to Parliamentary Secretary Malcolmson.	

Tracking #	Issue	Objective	Advocates				Comments	Status/Update
			Board	LG/EA	Partner	Staff		
19-03-01	First Nations Reconciliation	Enhance Indigenous reconciliation at the community level.	✓			✓	Letter from Minister Robinson identifying the opportunity to meet with Snr. Provincial staff from the Ministry of Indigenous Relations and Reconciliation. Letter to Ministers Fraser and Robinson Letter from Minister Robinson Met with senior provincial staff on March 7, 2019 and agreed to follow up as required. Letters to MPs (Collins, Garrison, MacGregor and May) Letter to JOŁEŁP (Tsartlip First Nation) Chief and Council Forum of All Councils took place on November 28, 2019.	Ongoing

Advocacy Dashboard > Quarter 3 – 2020

Making a difference...together

Tracking #	Issue	Objective	Advocates				Comments	Status/Update
			Board	LG/EA	Partner	Staff		
19-04-01	**Electoral Areas Rural Status**	Change in definition for CRD electoral areas to rural for various Federal and Provincial Funding programs.	✓	✓		✓	Letter to Premier Horgan and then follow up to MLA Olsen. Letter to Premier Horgan requesting the CRD Electoral Areas of Salt Spring Island, Southern Gulf Islands and Juan de Fuca in the regions be approved for investment by Islands Coastal Economic Trust. Letter to Minister Bains requesting inclusion of the rural Southern Gulf Islands in the regional jurisdiction of the Community Futures Cowichan Valley office. Letter to Minister Joly regarding inclusion of the Southern Gulf Islands in Community Futures.	Ongoing
19-04-02	**SSI Water Optimization Study**	Seek funding for review of governance and delivery systems.	✓	✓			Letter to Minister Robinson Letter from Minister Robinson	Funding now confirmed.
20-04-01	**Rural Home owner grant to apply in the CRD rural EA areas**	Change Provincial policy to allow designation of our EA as rural.	✓	✓			Resolution to UBCM through letter from Board Chair Plant	

20-04-02	**Investing in Canada Infrastructure Program (ICIP)**	Advocate for individual assessment of CRD Electoral Area ICIP applications to provide the same opportunity as municipalities.	✓	✓		✓	Letter to Minister Robinson	Ongoing

Advocacy Dashboard > Quarter 3 – 2020

Making a difference...together

Tracking #	Issue	Objective	Advocates				Comments	Status/Update
			Board	LG/EA	Partner	Staff		
19-05-01	Water Sampling local Waterways and Beaches	Express displeasure with decision to stop sampling at local beaches and recreation areas to Island Health and Ministry of Health.	✓				Follow up to change in Island Health policy. Letter to Dr. Stanwick	Ongoing
19-05-02	Abandoned Boats	Advocate for additional federal funding to continue program and ask Federal Government to take on 100% of costs.	✓		✓		Letter to Minister Garneau CRD and Dead Boat Society have an MOU to partner on Abandon Boat identification and disposal. The Society and its partners are advocating for continued Federal funding to take on the project directly.	Ongoing
19-05-03	Canada Goose Management Strategy	Ask Federal Government to enhance non-migratory goose management approach.	✓				Letter to Minister McKenna Letter to Minister Wilkinson Letter from Minister Wilkinson	Ongoing
19-05-04	Victoria Sexual Assault Funding	Advocating for additional funding to Victoria Sexual Assault Centre so that this Society and can continue its work.	✓				Letter to Premier Horgan Letter from Minister Farnworth	Short term funding provided.
19-05-05	Deer Management	Encourage province to take responsibility for wildlife.	✓	✓			Letter to Ministers Popham, Heyman and Donaldson Several municipalities are now advocating as a group and individually for Provincial action and support. Letter from Nancy Liesch, ED, Natural Resources	Ongoing

Advocacy Dashboard > Quarter 3 – 2020

Making a difference...together

Tracking #	Issue	Objective	Advocates				Comments	Status/Update
			Board	LG/EA	Partner	Staff		
19-05-06	Elk & Beaver Lake Remediation	Seek funding partnership from federal and provincial government as a capital project, CRD would commit some funds.	✓	✓	✓	✓	Board Chair Plant leading Board advocacy with the Premier and local MLAs. Saanich is member partner. Staff researching how other lakes received grants. Letter to Minister Popham Board Chair Plant and CAO Lapham met with Minister Popham December 11, 2019. Letter to Minister Popham	Enhanced service plan proposal for 2020.
19-05-07	Weed Control Invasive Species	Ask Province to add additional species to weed control regulation.	✓				Letter to Minister Donaldson Letter from ADM Paul Rasmussen	Ongoing
19-05-08	Ocean Legacy Foundation Report	Seek favourable consideration and action on the five recommendations in the report.	✓				Letter to Minister Heyman Letter from Minister Heyman	Ongoing
19-05-09	Plastics Action Plan	Call on Province to adopt bold legislation to significantly reduce and regulate plastics.	✓	✓	✓		Letter to Minister Heyman, CRD signatory	Ongoing
19-05-10	Letters of Congratulations to locally elected Members of Parliament	Relationship building, discuss issues of mutual interest and establish regular means of communication.	✓				Letters to MPs (Collins, Garrison, MacGregor and May)	Complete

Tracking #	Issue	Objective	Advocates				Comments	Status/Update
			Board	LG/EA	Partner	Staff		
20-05-01	**Advocate to allow stacking of gas tax funds to contribute projects for municipalities and electoral areas**	Ask Federal Government to change the way this operates for municipal governments.	✓	✓	✓	✓	Resolution sent to Association of Vancouver Island and Coastal Communities meeting January 2020 and reply letter from FCM Resolutions	
20-05-02	**Letter of Support from Board for application by TELUS.**	Support TELUS grant application to expand fiber optic network connectivity in Juan De Fuca EA.	✓		✓		Letter to TELUS	
20-05-03	**Request province develop a strategy and plan for ongoing coordination between BC Ferries, BC Transit and MoTI on integrated, low carbon, active transportation oriented solutions for SSI and SGI**	Advocate for this approach mostly around integration of transportation planning.	✓	✓			Letter to Minister Trevena Letter from Minister Trevena	
20-05-04	**Write to UBCM and FCM asking them to advocate to the Federal Government to broaden the guidelines of Community Works Funds**	Asking for relaxed guidelines in light of economic and financial impacts for up to one year subject to local government due diligence	✓	✓			Letter to UBCM and FCM Board Chair and CAO had call with FCM on May 21 Board Chair and CAO had call with UBCM on June 4 Letter from FCM Letter from UBCM	

Tracking #	Issue	Objective	Advocates				Comments	Status/Update
			Board	LG/EA	Partner	Staff		
	for capital and operating expenditures as a result of the COVID-19 pandemic	and as long as expenditures are in the public interest.					UBCM indicated that they are generally aligned with the CRD position in their advocacy with FCM to the Federal Government. UBCM is in engaged in discussions with FCM and the Federal Government to utilize the gas tax funding model for recovery funding and granting. There continue to be challenges with Regional District EAs with respect to the request for funding non profits and ineligible projects and risks to RDs in proceeding to fund projects that might ultimately not received UBCM and Federal funding approval. EA continue to what to pursue funding approvals for non profit services. UBCM administer under the Federal Provincial agreement approved in 2014 for 10 years and that would be difficult to change without renegotiating the whole agreement which would come with some risks. Acknowledged social services and emergency and public service buildings being asked to be included as eligible projects.	

Tracking #	Issue	Objective	Advocates				Comments	Status/Update
			Board	LG/EA	Partner	Staff		
20-05-05	**Board Chair participation on the South Island Prosperity Partnership (SIPP) Taskforce devoted to developing a strong and coordinated region-wide response to the economic crisis triggered by the COVID-19 pandemic.**	Multi-stakeholder approach to develop a coordinated economic recovery strategy and advance plans to create greater economic resiliency in the region.	✓	✓	✓		News Release dated April 16, 2020	

Capital Regional District
Quarterly Operating Variance Report - Q2, 2020
Service Budgets Greater than $1,500,000

		Operating Expenses							Operating Revenue						
			Year to Q2			Annual Forecast				Year to Q2			Annual Forecast		
Service Number	Service Description	Annual Budget $ (Schedule A)	Actuals $	% of Budget	2019 % of Budget	$	% Budget (over)/under	Explanation	Annual Budget $ (Schedule A)	Actuals $	% of Budget	2019 % of Budget	$	% Budget (over)/under	Explanation
1.010	Legislative & General	23,882,917	9,668,864	40%	43%	21,538,209	10%	Forecasted largely due to one-time savings on timing of staff vacancies, and deferral of one-time 2020 initiatives to 2021. Corporate Emergency costs related to COVID-19 response are forecasted to come in lower than budgeted. Support services delivering core services as planned.	23,882,917	7,204,094	30%	32%	22,057,259	8%	Half of revenue is derived from allocations to other services;. One third is funded by requisition, with the balance from reserves and other revenue. Forecasted reduction in transfers from reserve tied to lower forecasted expenses.
1.226	Health Facilities - VIHA	1,997,072	869,168	44%	43%	1,542,296	23%	Service involves leasing of CRD buildings to VIHA and is 100% recovered from tenant. Any potential surpluses are returned to tenant. Forecast updated to reflect recent negotiations with the tenant, which transfers responsibility for cleaning and security costs to the tenant.	1,997,072	473,386	24%	32%	1,542,296	23%	This service receives revenue on CRD buildings leased to VIHA, and recovers all costs from VIHA. Surpluses resuulting from reduced expenses are returned to the tenant. Forecast updated to reflect recent negotiations with the tenant, which reduces revenue in line with reduced cleaning and security costs, transferred to the tenant.
1.280	Regional Parks	15,856,932	4,809,048	30%	30%	15,645,381	1%	Delays in hiring and postponement of certain operating programs are offset by additional labour and minor COVID-19 costs, and are expected to be covered in the existing budget.	15,856,932	865,236	5%	6%	15,930,071	0%	Service is largely funded by requisition. Fee revenue for camping is expected to be lower this year, but largely offset by parking revenue. No material variance anticipated for operating revenue.
1.297	Arts Grants & Development	2,893,591	1,062,553	37%	25%	2,868,371	1%	Service is a grant funding service at full compliment, and is projected to disburse all grant funds available to arts organizations in line with budget.	2,893,591	186,071	6%	7%	2,868,371	1%	Projected on budget. Revenues from requisition.
1.310	Land Banking & Housing	2,672,605	1,508,887	56%	62%	2,599,186	3%	Forecasted slightly under budget due to RHFP debt servicing deferred to 2022, and some development team operating expenses delayed to 2021.	2,672,605	1,395,796	52%	46%	2,656,381	1%	On target for 2020. 50% revenue from requisition, 40% from grants and other, 10% surplus carry forward. Forecasted lower recoveries from capital projects for development expenses, delayed to 2021.
1.311	Regional Housing Trust Fund	4,232,219	20,880	0%	2%	1,191,018	72%	Expenses are driven by grants to 3rd party housing service providers which can vary based on eligibility and selection. Forecast based on updated 3rd party capital project schedules. Surpluses will be carried forward.	4,232,219	3,234,819	76%	69%	4,249,818	0%	On target for 2020. 24% from requisition, 75% from surplus carryfoward.
1.318	Building Inspection	1,561,459	723,621	46%	47%	1,445,876	7%	Operational services are continuing as planned. Expenditures are forecasted to be slightly under due to temporary vacancies and lower pay step for new hire.	1,561,459	452,740	29%	37%	1,445,876	7%	Revenue sources are requisition and building permit fees. Forecasted slight reduction in permit fee revenue, which is down since May.
1.324	Regional Planning Services	1,654,488	653,778	40%	37%	1,440,204	13%	Delivery of specific programs is moving forward as originally planned. Underspend is primarily due to consultant and auxiliary staffing costs, related to transportation modelling.	1,654,488	315,542	19%	11%	1,565,697	5%	Revenues for service are primarily requisition and fixed allocation. Forecasted reduction in use of operating reserve, due to reduced expenses.
1.40X	SEAPARC	4,310,976	1,269,452	29%	43%	3,516,110	18%	Projection is based on facility closure from mid-March through to May. During this period, cost savings arise from cancellation of programming, reduced energy and operating costs, a furlough of Auxiliary employees, and a redeployment of some regular staff for a 6 week period. A gradual return of programming is forecasted from June.	4,310,976	353,269	8%	13%	3,581,523	17%	Projection is based on the centre being closed until June 2020 and then gradually increasing revenues through fiscal 2021. Any revenue shortfall would be addressed by forecasted cost savings.
1.44X	Panorama Rec. Center.	9,690,732	3,664,539	38%	46%	7,182,406	26%	Projection is based on facility closure from mid-March through to May. During this period, cost savings arise from cancellation of programming, reduced energy and operating costs, a furlough of Auxiliary employees, and a redeployment of some regular staff for a 6 week period. A gradual return of programming is forecasted from June.	9,690,732	1,269,452	13%	24%	7,182,406	26%	Projection is based on the centre being closed until June 2020 and then gradually increasing revenues through fiscal 2021. Any revenue shortfall would be addressed by adjustments to transfers to reserve, and forecasted cost savings.
1.459	Salt Spring Is- Pool, Parks, Land, Art & Rec. Prog	1,949,320	816,611	42%	50%	1,744,021	11%	Projection is based on facility closure from mid-March through to May. During this period, cost savings arise from cancellation of programming, reduced energy and operating costs, a furlough of Auxiliary employees, and some redeployment of regular staff. A gradual return of programming is forecasted from June.	1,949,320	147,303	8%	9%	1,744,021	11%	Projection is based on the centre being closed until June 2020 and then gradually increasing revenues through fiscal 2021. Any revenue shortfall would be addressed by forecasted cost savings.
1.521	Environmental Resource Management	24,905,334	10,232,063	41%	36%	24,828,132	0%	Operational services are continuing as planned, and forecasted to be in line with budget for the year.	24,905,334	14,210,986	57%	26%	25,836,376	-4%	Tipping fees are projected to be $1m over budget, driven mainly from higher volume received pre COVID-19 (Jan to Feb) along with normalized tonnage after phase 2 reopening. In 2020, the landfill is also projected to receive a one-time increase in tipping fees from biosolids disposal that is not expected to continue once CAWTP facilities start to operate. Recycling contract revenue expects to be in line with budget. Projection is based on receiving no cruise ship waste in 2020.
1.576	Environmental Engineering Services	2,327,767	1,152,073	49%	43%	2,217,370	5%	Overhead service budget, continuing to provide service as planned. Forcasted minor savings on timing of temporary vacancies.	2,327,767	1,327,438	57%	47%	2,327,767	0%	Revenues are driven by providing services to other CRD services that continue to operate as planned. Recovery revenue expected to be within budgeted level for 2020.
1.577	IW - Environmental Operations	8,070,926	3,963,764	49%	50%	7,870,519	2%	Overhead service budget, continuing to provide service as planned. Expenditures are over forecast to be on track for the year.	8,070,926	4,272,837	53%	49%	7,870,519	2%	Revenues are driven by providing services to other CRD services that continue to operateas planned. Recovery revenue expected to be within budgeted level for 2020.
1.578	Environmental Protection and Water Quality	7,839,814	3,610,788	46%	62%	7,720,043	2%	Overhead service budget, continuing to provide service as planned. Expenditures are forecasted to be on track for the year.	7,839,814	3,765,324	48%	53%	7,770,038	1%	Revenues are driven by providing services to other CRD services that continue to operateas planned. Recovery revenue expected to be within budgeted level for 2020.
1.911	911 Systems	2,672,114	1,388,898	52%	42%	2,657,157	1%	Operating expenditure is continuing as planned and on target, as the expenditure is primarily for fixed costs of contract service, based on contract agreement and debt servicing cost.	2,672,114	1,239,623	46%	38%	2,657,157	1%	Revenues are primarily from fixed source of requisition and lease revenue. The variable source of 911 levy from carriers is forcasted under budget based on Q1 and Q2 actuals. This is offset by increased transfer from operating reserve.
1.921	Regional CREST	1,690,484	845,565	50%	50%	1,690,484	0%	Operating expenditure is on target, as this is solely a contribution service to provide funding to CREST based on the service agreement.	1,690,484	98,300	6%	6%	1,690,484	0%	Revenues are primarily requisition. Minor interest income might be slightly under budget.
2.610	Saanich Peninsula Water Supply	6,957,371	2,971,366	43%	45%	6,951,570	0%	Operational services and system maintenance are continuing as planned. Expenditures are forecasted to be in line with budgeted figures.	6,957,371	3,105,592	45%	24%	6,951,570	0%	Revenues are driven by seasonal water sales. Demand is expected to be within budgeted levels for 2020.
2.670	Regional Water Supply	34,055,398	12,773,010	38%	42%	33,465,720	2%	Operational services and system maintenance are continuing as planned. Operational savings forecasted are due to temporary staff vacancies, delays in filling new positions.	34,055,398	14,621,568	43%	28%	33,465,720	2%	Revenues are driven by seasonal water sales. Demand is expected to be lower than budgeted levels for 2020.
2.680	Juan de Fuca Water Distribution	20,129,341	6,430,032	32%	34%	20,214,720	0%	Operational services and system maintenance are continuing as planned. No material changes in costs are forecasted.	20,129,341	6,469,512	32%	32%	20,214,720	0%	Revenues are driven by seasonal water sales. Demand is expected to be within budgeted levels for 2020.
3.710	North West Trunk Sewer	3,111,089	1,490,112	48%	38%	3,272,163	-5%	Forecasted additional operating costs resulting from continued use of temporary facility. Additional operating costs to be funded by reducing 2020 budgeted ERF & maintenance transfers, and transfers from operating reserve.	3,111,089	368,753	12%	8%	3,272,163	-5%	Forecasted higher revenue for additional transfer from operating reserve. Operating reserve transfer required to offset operational costs resulting from project handover timing differences.
3.712	North East Trunk Sewer	1,953,665	677,615	35%	30%	2,179,885	-12%	Forecasted additional operating costs resulting from continued use of temporary facility. Additional operating costs to be funded by reducing 2020 budgeted ERF & maintenance transfers and transfers from operating reserve.	1,953,665	24,954	1%	0%	2,179,885	-12%	Forecasted higher revenue for additional transfer from operating reserve. Operating reserve transfer required to offset operational costs resulting from project handover timing differences.
3.718	Saanich Peninsula Wastewater	3,849,705	1,591,523	41%	39%	3,748,279	3%	Forecasted minor variance from plan. Remaining surplus will be transferred to the capital reserve fund at year-end based on SPWW commission direction.	3,849,705	49,457	1%	2%	3,748,279	3%	Loss of heat recovery revenue from Panorama Recreation. Revenue forecast is based on Panorama Recreation being operational in Q3.
3.755	Regional Source Control	1,605,745	772,419	48%	44%	1,532,723	5%	Operational services are continuining as planned. Minor variance due to defferal of the manhole sampling project until 2021, due to COVID-19 related business interruptions and reduction to tourism.	1,605,745	234,418	15%	8%	1,599,819	0%	Higher Q2 revenue received from permit fees compared to the same period in 2019. Overall revenue is expected to be in line with budget.
	Total Services above	189,871,064	*77%*						189,871,064	*77%*					
	Other CRD Services (excl. CAWTP)	56,358,079	*23%*						56,358,079	*23%*					
		246,229,143							246,229,143						
CRHD	Capital Regional Hospital District	37,441,471	12,972,533	35%	39%	36,162,612	3%	Forecasted savings for the year is primarily related to the NTP grant for the Nigel House redevelopment which has been postponed until 2021 due to COVID-19.	37,441,471	4,178,436	11%	13%	36,162,612	3%	Revenue is expected to be less for 2020 due the postponement of the NTP Grant for Nigel House, resulting in less reserve funding being required for 2020.

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			Quarter 2						Total 2020				Status of Total Project Plan			
Department	**Service Description**	**Capital Project Title**	**Q2 Budget**	**Q2 Forecast**	**Q2 Actuals**	**Variance (over) / under**	**Variance % (over) / under**	**Q2 Variance Explanation (if necessary)**	**Total 2020 Amended Budget (as per approved budget)**	**Total 2020 Forecast**	**Total Forecast Variance (over) / under**	**Total Forecast Variance % (over) / under**	**Scope**	**Timing**	**Budget**	**Notes**
CRD																
Integrated Water Services	Core Area Wastewater Treatment Program	Wastewater Treatment Project	53,764,292	50,256,487	35,862,623	14,393,864	29%	Q2 variance is primarily a result of conveyance contractor and engineering consultant billings being less than planned. Increased expenses forecast in Q3 and Q4 will offset Q2 variance. Project forecasted to be substantially complete in 2020. Any forecast variance will be spent in 2021 on project closeout costs. Project will be complete on total budget of $775M.	222,973,808	215,845,063	7,128,745	3%				S - on plan T - on plan B - on plan
	Core Area Wastewater Treatment Program	IT Capital Purchases	350,000	350,000	-	350,000	100%	Project start delayed to Q3 due to Covid related supply chain issues. Completion expected Q4 2020.	900,000	900,000	-	0%				S - on plan T - on plan B - on plan
	Core Area Wastewater Treatment Program	New Fleet Purchases	250,000	250,000	-	250,000	100%	Vehicles ordered in Q2 expected delivery in Q3, Q4 and 2021.	850,000	425,000	425,000	50%		R		S - on plan T - completion deferred to 2021 B - on plan
	Regional Water Supply	Sooke Intake Tower Replacement	-	-	-	-	0%	Project added in Q2 Budget Amendment. Budgeted to start in Q3, and forecasted to be complete by Q4.	1,800,000	1,800,000	-	0%				S - on plan T - on plan B - on plan
	Regional Water Supply	Implications from Sooke Dam Safety Review	143,750	-	432	- 432	-100%	Project start deferred until Q3, as work required to be performed with lower dam water levels, after summer season. Completion in 2021.	575,000	221,656	353,344	61%		R		S - on plan T - project completion in 2021 B - no change to total budget
	Regional Water Supply	Bulk Supply Meter Replacement Program	50,000	50,000	84,424	- 34,424	-69%	Q2 variance addresses an emergency replacement. The project is still on budget. Timing of meter replacements has been revised, and delayed to combine with other work requiring confined space entry and to allocate staff resources to other capital projects.	600,000	413,305	186,695	31%		R		S - on plan T - project completion in 2021 B - no change to total budget
	JDF Water Distribution	AC Pipe Replacement Program	1,000,000	1,100,000	1,250,768	- 150,768	-14%	Project scope and budget amended in Q2, which optimizes value by bringing forward required work to the existing construction plan.	4,200,000	4,188,096	11,904	0%				S - on plan T - on plan B - on plan
	JDF Water Distribution	Bear Mountain Parkway Extension Supply Mains	-	-	-	-	0%	Deferred until 2022 pending DCC funding.	1,500,000	-	1,500,000	100%		R		S - on plan T - project completion in 2022 B - no change to total budget
	JDF Water Distribution	Comprehensive Pump Station Upgrades	150,000	80,000	133,421	- 53,421	-67%	Q2 variance based on project scope revised to address emergency failure of Ludlow Pump Station. Assessment and design work to be completed by Q3 with construction in Q4.	1,150,000	1,039,372	110,628	10%				S - increased scope T - on plan B - on plan
	JDF Water Distribution	Sun River Reservoir Replacement	50,000	25,000	-	25,000	100%	Project delayed until developer agreement is completed in Q3. Project completion in 2021 instead of 2020.	900,000	450,000	450,000	50%		R		S - on plan T - completion deferred to 2021 B - no change to total budget
	JDF Water Distribution	Residential Service & Meter Replacement Program	200,000	200,000	331,155	- 131,155	-66%	Q2 variance addresses emergency replacement work.	800,000	799,942	58	0%				S - on plan T - on plan B - on plan
	JDF Water Distribution (DCC)	McCallum Pump Station	50,000	50,000	-	50,000	100%	Project start delayed to Q3. Staff resources have been redirected to other projects. Construction moved to 2021.	3,000,000	200,000	2,800,000	93%		R		S - on plan T - Construction deferred to 2021: overall project completion still in 2022 B - no change to total budget
	North West Trunk Sewer	Trunk Sewer Rehabilitation - Sections 1 & 2	20,000	20,000	7,276	12,724	64%	Project started in Q2, and forecasted to be complete by Q4.	3,500,000	3,407,276	92,724	3%				S - on plan T - on plan B - on plan
	East Coast Interceptor	Trunk Sewer Repairs and Replacement - Section 3	20,000	20,000	7,445	12,555	63%	Project started in Q2, and forecasted to be complete by Q4.	850,000	807,445	42,555	5%				S - on plan T - on plan B - on plan
	Saanich Penninsula Treatment Plant	SPWWTP Replacement of Rotary Presses	20,000	20,000	9,997	10,003	50%	Project on scope and budget. Project construction to deferred to 2021.	1,070,000	287,220	782,781	73%		R		S - on plan T - construction deferred to 2021 B - no change to total budget

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Department	**Service Description**	**Capital Project Title**	**Q2 Budget**	**Q2 Forecast**	**Q2 Actuals**	**Variance (over) / under**	**Variance % (over) / under**	**Q2 Variance Explanation (if necessary)**	**Total 2020 Amended Budget (as per approved budget)**	**Total 2020 Forecast**	**Total Forecast Variance (over) / under**	**Total Forecast Variance % (over) / under**	**Scope**	**Timing**	**Budget**	**Notes**
	Saanich Penninsula Treatment Plant	Trunk Sewer Relining	-	-	-	-	0%	Project delayed to 2021, once sizing assessment report completed late 2020.	1,100,000	5,792	1,094,208	99%		R		S - on plan T - construction deferred to 2021 B - no change to total budget
	Saanich Penninsula Treatment Plant	Turgoose Pump Station Upgrade	-	400,000	222,108	177,892	44%	Construction complete, within project scope and budget.	654,000	469,881	184,119	28%				S - on plan T - complete Q2, 2020 B - better than planned
Local Services	Community Transportation (SSI)	Pathway Booth Canal to Vesuvius - Phase 2	140,000	140,000	-	140,000	100%	Project was delayed await grant funding approval. $490k grant funding from province will be approved in Q3. Contruction tender is expected to be completed at the end of Q4 2020. Anticipated completion is in 2021	700,000	221,303	478,697	68%		R		S - on plan T - complete 2021 vs 2020 B - on plan
	Community Transportation (SSI)	North Ganges Transportation Plan	219,000	300,000	30,832	269,168	90%	Project budget amended in Q2. Majority of spending to occur in Q3 and Q4. Substantial contruction completion is expected by the end of 2020.	2,051,292	1,849,926	201,366	10%				S - on plan T - on plan B - 2020 budget amended, on plan
	Community Transportation (SSI)	Fulford Ganges Road Seaview south (Ganges Hill)	250,000	-	-	-	0%	Due to high uncertainties associated with the detail design and timeline from MOTI and funding source for SSI share of the project, this project will not continue in 2020. To be re-evaluated in the future.	1,000,000	-	1,000,000	100%				S - to be re-evaluated in the future T - to be re-evaluated in the future B - to be re-evaluated in the future
	South Galiano Fire (SGI)	South Galiano Fire Hall	612,000	612,000	225,720	386,280	63%	Work continued to be delayed due to COVID-19. Progress going forward may be further delayed in Q3 and Q4. Project completion deferred to 2021.	2,040,000	1,442,580	597,420	29%		R		S - on plan T - completion deferred to 2021 B - on plan
	Pender Island Fire Protection (SGI)	New Pumper Truck- replace E27 pumper	-	-	-	-	0%	Fire Truck Replacement is anticipated to be in RFP stage in Q3 aand actual spending in Q4 pending Society's confirmation.	695,000	695,000	-	0%				S - on plan T - on plan B - on plan
	Small Craft Facilities (SGI)	Construction of the Anson Road Facility	112,000	100,000	8,511	91,489	91%	Spending and schedule is delayed due to regulatory approval. Year end completion is still anticipated in 2020.	512,000	497,767	14,233	3%				S - on plan T - on plan B - on plan
	Saturna Island Community Parks (SGI)	Land Acquistion by Donation	-	-	4,704	- 4,704	-100%	Minor remaining soft closing cost occurred in Q2. Project complete in Q2.	516,000	515,302	698	0%				S - on plan T - on plan B - on plan
	SSI Park Land & Rec Programgs	Recreation Centre Expansion	14,200	14,200	14,107	93	1%	Project was provided grant funding from UBCM in Q2 for this initiative. Project was added to the capital plan in Q2 amendment. Design work forecasted for 2020, with project completion in 2022.	624,544	66,107	558,437			R		S - 2020 budget amended, on plan T - completion in 2022 B - 2020 budget amended, on plan
	Magic Lake Sewer Utility (SGI)	Wastewater Improvements Phase 1	50,000	50,000	19,104	30,896	62%	Detailed design work starting in Q3. Construction work deferred to Q4. Multi-year project forecasted for completion in 2022.	5,000,000	171,997	4,828,004	97%		R		S - on plan T - completion in 2022 B - on plan
Parks & Environmental Services	Regional Parks	Construct E&N Trail Phases 3 & 4	1,437,750	902,664	439,383	463,281	51%	Continued delays in construction in Q2 due to COVID-19. Phase 3 & 4 work completion forecasted to 2021.	5,923,500	3,153,982	2,769,518	47%		R		S - on plan T - revised to 2021 vs 2020 B - no change to total budget
	Regional Parks	Engineering - Todd Creek Trestle	350,000	350,000	512,107	- 162,107	-46%	Better than planned progress on trestle replacement made during Q2 vs Q3. Projected forecasted to be complete in 2020.	1,075,000	1,076,991	(1,991)	0%				S - on plan T - on plan B - on plan
	Regional Parks	Parking Lot SHW	100,000	100,000	59,081	40,919	41%	Slower start to construction, in part due to COVID-19. Project anticipated to be substantially complete in Q4 2020.	1,697,170	1,697,170	(0)	0%				S - on plan T - on plan B - on plan
	Regional Parks	Potential Land Acquisition Transactions	-	-	-	-	0%	Budget item added in Q2 amendment, to accommodate various land acquisitions that may be negotiated throughout the year. No Acquisitions in Q2.	2,020,000	2,020,000	-	0%				S - 2020 budget amended, on plan T - 2020 budget amended, on plan B - 2020 budget amended, on plan
	Panorama Recreation	Heat Recovery Plant	200,000	200,000	-	200,000	100%	Project proceeding is contingent on receipt of grant funding. Forecasted to be deferred to 2021, pending grant funding.	2,453,000	-	2,453,000	100%		R		S - on plan T - defer to 2021 for grant application B - on plan
	Environmental Resource Management	Aggregate Production for Internal Use	1,000,000	120,000	74,870	45,130	38%	Scope of 2020 planned work reduced due to unavailable storage. Overall project on track for completion in 2021 as per plan and on budget.	3,000,000	2,116,376	883,624	29%		R		S - reduced due to unavailable storage T - some work deferred to 2021 B - no change to total budget

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Department	**Service Description**	**Capital Project Title**	**Q2 Budget**	**Q2 Forecast**	**Q2 Actuals**	**Variance (over) / under**	**Variance % (over) / under**	**Q2 Variance Explanation (if necessary)**	**Total 2020 Amended Budget (as per approved budget)**	**Total 2020 Forecast**	**Total Forecast Variance (over) / under**	**Total Forecast Variance % (over) / under**	**Scope**	**Timing**	**Budget**	**Notes**
	Environmental Resource Management	Landfill Gas Utilization	113,750	113,750	63,492	50,258	44%	Initial project costs commenced in Q2. Design work is forecast to be complete in 2020, with construction staritng Q4.	750,000	701,250	48,750	7%				S - on plan T - on plan B - on plan
	Environmental Resource Management	Gas & Leachate Collection Pipe Extension	100,000	50,000	33,615	16,385	33%	Planning and design work has been progressed in Q2. Construction and gas pipe procurement will start in Q3. Project forecast to be complete in 2020, and on budget.	700,000	833,615	(133,615)	-19%				S - on plan T - on plan B - on plan
	Millstream Site Remediation	Millstream Remediation	111,914	198,691	230,840	- 32,149	-16%	Accelerated spending in Q2 on planning and design costs, partially budgeted for Q3. Additional remediation sampling work identified, increasing scope and budget in 2021. Project will be complete in 2021.	842,562	841,711	851	0%		R		S - increased scope T - revised to 2021 vs 2020 B - on plan
Planning & Protective Services	Land Banking & Housing	RHFP - Spencer Road (Langford) (CRD/CMHC/CRHC)	-	-	-	-	0%	Project on track for Q4, no change to forecast.	37,929,518	37,929,518	-	0%				S - on plan T - on plan B - on plan
	Land Banking & Housing	RHFP - West Park (View Royal) (CRD/CMHC/CRHC)	-	-	1,466	- 1,466	-100%	Minor fees incurred in Q2. Project on track for Q4, no change to forecast.	41,673,485	41,673,485	-	0%				S - on plan T - on plan B - on plan
		Total Projects >$500k	**60,878,656**	**56,072,792**	**39,627,481**	**16,445,310**	**29%**		**357,625,879**	**328,764,128**	**28,861,751**	8%				
		Total Projects <$500K							**41,049,689**							
		Total Projects							**398,675,568**							
CRHD																
Planning & Protective S	Capital Regional Hospital Dist	Summit at Quadra Village	-	699,093	588,175	110,918	16%	Project is in close-out phase; variance is due to savings and credits received from various contractors. Project will be complete in 2020.	5,261,359	5,051,694	209,665	4%				S - on plan T - on plan B - on plan
		Total Projects >$500k	**-**	**699,093**	**588,175**	**110,918**	**16%**		**5,261,359**	**5,051,694**	**209,665**	**4%**				
		Total Projects <$500K; Capital Grants							**27,187,009**							
		Total Projects							**32,448,368**							
CRHC																
Planning & Protective Services	Regional Housing	Michigan redevelopment Housing	262,500	262,500	23,204	239,296	91%	Waiting on municipal approval process and securing of remaining project funding before engaging remaining consultants and advancing design. Construction deferred to 2021.	1,050,000	250,000	800,000	76%		R		S - on plan T - construction deferred to 2021 B - no change to total budget
		Caledonia Redevelopment Housing	100,000	100,000	54,271	45,729	46%	Design and Planning work continuing in Q2. Construction costs from 2020 phase of multi year project deferred to future years.	4,900,000	800,000	4,100,000	84%		R		S - on plan T - construction costs deferred to 2021 B - no change to total budget
		Routine Capital Replacement	596,540	596,540	388,388	208,152	35%	Routine upgrades of housing townhouses and apt buildings are affected by tenant moveouts, trades availability and weather. Some costs deferred to Q3-Q4.	2,386,160	2,386,160	-	0%				S - on plan T - on plan B - on plan
		Westview Apartment Building	2,805,534	2,100,000	1,125,469	974,531	46%	Construction and most billing complete. Residual costs forecasted for Q3.	5,611,069	3,622,631	1,988,438	35%				S - on plan T - on plan B - forecasted better than plan
		Total Projects >$500k	**3,764,574**	**3,059,040**	**1,591,332**	**1,467,708**	**48%**		**13,947,229**	**7,058,791**	**6,888,438**	**49%**				
		Total Projects <$500K							**10,000**							
		Total Projects							**13,957,229**							

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APPENDIX H
HUMAN RESOURCES TRENDS AND CORORATE SAFETY Q2

OPEN CAPITAL REGIONAL DISTRICT BOARD
MEETING OF WEDNESDAY, OCTOBER 14, 2020

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1. Workforce Composition and Turnover [see Table 1]

The Chief Administrative Officer submits a Staff Establishment Chart annually together with the Financial Plan for consideration of approval by the Board. In 2020, the Staff Establishment Chart identified 661.08 full time equivalencies (FTEs) – 619.08 regular and 42 term positions exceeding one year – and the CRD has 459 registered auxiliary staff (148 active) through Quarter 2. In addition the CRD has almost 1,400 registered volunteers to assist in the support of many of its services and programs. 89.5% of the CRD's paid workforce is unionized.

The average length of service and average workforce age of CRD staff remain relatively consistent from previous years, at 10.3 years and 46.0 years respectively. Turnover rates, including retirement rates, are trending below those of the previous year, and are lower than industry average. 33% of turnover is related to employee retirements, which is slightly higher than industry average. Given the average age and length of service, the CRD can continue to expect more retirements in the coming years, which will put increased pressure on existing resources. As such, increased emphasis has been placed on enhancing our workforce planning and recruitment strategies as part of our 2020 Corporate Organizational Development Plan.

Table 1:

Corporate CRD Human Capital Performance Metric	*CRD Current (By Quarter 2020)*	CRD Current (Annual 2020)	Industry Average (Annual 2020)	*CRD Annual (2019)*	*Industry Average (2019)*
Total Unionized Workforce (all staff)	***Q1: 89.4%*** ***Q2: 89.6%***	***89.5%***	***77.2%***	*89.6%*	*87.5%*
Average Length of Service (regular staff)	***Q1: 10.3 years*** ***Q2: 10.2 years***	***10.3 years***	***11.0 years***	*10.4 years*	*10.5 years*
Average Employee Age (regular staff)	***Q1: 45.9 years*** ***Q2: 46.1 years***	***46.0 years***	***46.0 years***	*46.1 years*	*45.8 years*
Turnover Rate / Retirement Rate (regular staff)	***Q1: 1.8% (0.6% retirements)*** ***Q2: 1.3% (0.3% retirements)***	***3.1% (0.9% retirements)***	***4.0% (1.4% retirements)***	*9.2% (2.8% retirements)*	*8.7% (2.7% retirements)*

2. Job Opportunities [see Table 2]

By means of 111 job postings (64 for quarter 2), 207 individual job opportunities were open for application at the CRD through the end of quarter 2, 2020. Approximately 80% of these opportunities have been filled, with a number of the opportunities, mostly in recreation, being placed on hold with the closure and limited reopening of those facilities in light of the current health crisis. On average, the CRD experiences a low vacancy rate (1.1% of regular staff opportunities) which for 2020 is approximately one-fifth industry average.

Significant workplace onboarding and orientation is undertaken for all new employees. In addition to the workplace orientations and required training programs, all new employees attend the weekly onboarding sessions which are geared to inform and engage new staff early in their CRD careers. 39 staff were put through the program in quarter 2, and 511 employees since this program was implemented in 2018.

Table 2:

Corporate CRD Human Capital Performance Metric	*CRD Current (By Quarter 2020)*	CRD Current (Annual 2020)	Industry Average (Annual 2020)	*CRD Annual (2019)*	*Industry Average (2019)*
Job Opportunities (all staff)	***Q1: 109*** ***Q2: 98***	***207***	***N/A***	*296*	*N/A*
Vacancy Rate (regular staff)	***Q1: 1.3%*** ***Q2: 0.9%***	***1.1%***	***5.7%***	*1.3%*	*4.6%*

3. Absenteeism and Occupational Health and Safety [see Table 3]

The CRD measures and monitors absenteeism by both its sick leave usage and safety ratings, and has commenced a comprehensive disability management program aimed at early intervention and proactive and positive return to work programs. By this the CRD is continuing its proactive disability management efforts to ensure costs of absenteeism are appropriately managed, and employees are actively engaged early in return to work measures to aid in their recovery to work from illness, as well as its proactive healthy workplace program focused on providing employees personal tools to keep them healthy.

In the first and second quarter of 2020, as with many in the industry and throughout the Province, sick leave absenteeism was higher than in previous years as a result of the CoVID-19 health crisis. While illness frequency was not significantly different than other years, the duration of illness figures were significantly higher primarily as a result of the Provincial Health requirements to self-isolate when ill. These figures do not include other Provincial Health leave requirements where staff may have been required to self-isolate for reasons of travel, presumptive contact, and related. As an essential service, the CRD is closely monitoring the impact of absenteeism related to CoVID-19, and taking appropriate measures to ensure essential operations are maintained.

In addition to our regular operational and capital project safety management, significant emphasis has been placed on the leadership to manage the staff and public safety requirements associated with the CoVID-19 health crisis. As part of our Corporate Occupational Health & Safety (OHS) Program, the CRD has implemented a number of safety protocols and organizational plans including an Exposure Control and Safety Plan, a number of COVID-19 Safe Work Practices, undertaken workplace hazard assessments across the organization, to name a few. All these measures align with the CRD's comprehensive 15 element OHS Program, directive of Provincial Health and the Province of BC, and WorkSafeBC.

The CRD continues to experience a positive (merit) situation with WorkSafeBC resulting in a lower-than-industry Employer Rating Assessment. In 2020, WorkSafeBC increased the base rate for the local government industry, from 2.09% to 2.19%; the CRD's current assessment levied by WorkSafeBC is 11% better than these base rates and industry average.

Table 3:

Corporate CRD Human Capital Performance Metric	*CRD Current (By Quarter 2020)*	CRD Current (Annual 2020)	Industry Average (Annual 2020)	*CRD Annual (2019)*	*Industry Average (2019)*
Absenteeism (Sick Leave) Rate (regular staff)	***Q1: 4.9%*** ***Q2: 3.7%***	**4.3%**	**4.3% ****	*2.6%*	*3.0%*
WorkSafeBC Employer Rate (all staff)	***Q1: 1.95%*** ***Q2: 1.95%***	**1.95%**	**2.19%**	*1.77%*	*2.09%*

*** organizations have reported that these figures may be skewed as a result of staffing adjustments required as a result of the health crisis.*

CONCLUSION

The CRD continuously monitors Human Resource organizational health, and proactively modifies and adapts Human Resource programs and systems where trends may show challenges arising. While there continues to be no significantly alarming organizational health trends based on metrics information, the CRD is expected to continue to see pressures as a result of the current health crisis and the organization continues to monitor this very closely and adapt workplace practices and programs to continue to ensure essential services are maintained.

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REPORT TO CORE AREA LIQUID WASTE MANAGEMENT COMMITTEE
MEETING OF WEDNESDAY, OCTOBER 07, 2020

SUBJECT **Bylaw Nos. 4374 and 4375: Core Area Wastewater Loan Authorizations**

ISSUE SUMMARY

A Capital Regional District (CRD) Board resolution is required to commence the loan authorization process for Bylaw No. 4374, planned borrowing as set out in the Liquid Waste Management Plan; and Bylaw No. 4375, borrowing required to implement a long-term capital program for the Core Area Wastewater program.

BACKGROUND

On August 12, 2020, the Board agreed to a cost-apportionment system for the Core Area and Western Communities Liquid Waste management service, per Liquid Waste Management Core Area and Western Communities Service Establishment Bylaw No. 1, 1995, Amendment Bylaw No. 3, 2020 (Bylaw No. 4304). All conveyance and treatment capital is to be cost apportioned on the basis of treatment capacity as outlined in Schedule C to Bylaw No. 4304.

As of January 1, 2021, the entire conveyance and treatment system will be administered under one regulatory and administrative framework. Long term system infrastructure renewal and capacity upgrades will be a 'one-system' model. Capital projects are prioritized together across the entire system.

The 2021 - 2025 Provisional Financial Plan includes planned projects totaling $57.0 million. The plan reflects infrastructure renewal projects required on existing conveyance systems and are planned in each of the major asset categories including pump stations upgrades, gravity sewer and manhole upgrades and replacements, pressure pipe upgrades, flow meter installations and replacements, system control and communications upgrades, and outfall retrofits.

To fund the provisional capital program, long-term borrowing is required. The following two bylaws are proposed:

Service Area	Action	Purpose	Bylaw
3.798C	Loan Authorization Bylaw	To permit long-term borrowing related to the capital plan for this service, to conduct planned works approved by the Province in the CRD's Liquid Waste Management Plan (LWMP).	4374 Liquid Waste Management Core Area and Western Communities Service Loan Authorization Bylaw No. 1, 2020

3.798C	Loan Authorization Bylaw	To permit long-term borrowing related to the capital plan for this service, to conduct planned works arising since the approval of the LWMP.	4375 Liquid Waste Management Core Area and Western Communities Service Loan Authorization Bylaw No. 2, 2020

A portion of these upgrades were approved by the Province in the CRD's LWMP after public consultation and Ministerial review in accordance with the *Environmental Management Act*. These works are reflected in Bylaw No. 4374, the $22.7 million. Additional capital upgrades and maintenance works arising since the approval of the LWMP are reflected in Bylaw No. 4375, the $34.3 million.

ALTERNATIVES

Alternative 1
The Core Area Liquid Waste Management Committee recommends to the Capital Regional District Board:

1. That Bylaw No. 4374, "Liquid Waste Management Core Area and Western Communities Service Loan Authorization Bylaw No. 1, 2020" be introduced and read a first, second, and third time;
2. That Bylaw No. 4374 be referred to the Inspector of Municipalities for approval.
3. That Bylaw No. 4375, "Liquid Waste Management Core Area and Western Communities Service Loan Authorization Bylaw No. 2, 2020" be introduced and read a first, second, and third time;
4. That Bylaw No. 4375 be referred to the municipal councils of the participants for approval, and if two-thirds of approval is received, to the Inspector of Municipalities.

Alternative 2
The Core Area Liquid Waste Management Committee recommends to the Capital Regional District Board:

1. That Bylaw No. 4374, "Liquid Waste Management Core Area and Western Communities Service Loan Authorization Bylaw No. 1, 2020" be introduced and read a first, second, and third time;
2. That Bylaw No. 4374 be referred to the Inspector of Municipalities for approval.
3. That Bylaw No. 4375, "Liquid Waste Management Core Area and Western Communities Service Loan Authorization Bylaw No. 2, 2020" be introduced and read a first, second, and third time;
4. That Bylaw No. 4375 be referred to alternative approval process for the entire service area, and if approval is received, to the Inspector of Municipalities.

Alternative 3
The Core Area Liquid Waste Management Committee recommends to the Capital Regional District Board:

That Bylaw Nos. 4374 and 4375, "Liquid Waste Management Core Area and Western Communities Service Loan Authorization Bylaw No. 1, 2020" and "Liquid Waste Management Core Area and Western Communities Service Loan Authorization Bylaw No. 2, 2020", be deferred pending further information.

IMPLICATIONS

Legislative Implications

Long-term borrowing (i.e. loans with a term of more than 5 years) must be supported by a loan authorization bylaw, requiring elector approval and the approval of the Inspector of Municipalities.

Pursuant to the *Regional District Liabilities Regulation,* BC Reg 261/2004, as elector consultation and Provincial approval has occurred as part of establishing a LWMP, elector approval is not required for the $22.7 million loan, as it is for works implementing the plan. CRD may proceed with Bylaw No. 4374, provided the Inspector of Municipalities approves.

For the additional borrowing of $34.3 million, elector approval or a LWMP amendment is required. Elector approval can be obtained through consent on behalf by two-thirds of municipal participants' councils; or by alternative approval process for the entire service area. In a service area of this size municipal counsel consent would require less administrative resources.

Obtaining elector approval will address the legislated requirements through this transitional period. CRD continues to undertake an amendment of the LWMP to reflect the updated long term capital plan.

Financial Implications

The loan authorizations for the provisional capital program total $57 million and will support the planned 5 year capital plan starting 2021. There are no existing capital reserves in place requiring borrowings to fund the capital plan. To enable optimization of interest and timing of long term debt issuance a temporary borrowing is also being proposed.

The timing of the debt issuance will be based on the timing of expenditures and will be dependent on prevailing interest rates at the time. Before long term debt issuance can be exercised a security issuing bylaw will be brought forward for approval. The term of any debt issuances under this loan authorization will be 15 years.

The cost of borrowing is included in the Provisional Budget to be presented on October 28 with an estimated impact of $117k in 2021.

CONCLUSION

Capital program work is planned for 2021 and ongoing. The work will be funded through a combination of requisition and borrowed funds. Timely access to the borrowed funds in 2021 is critical to meeting the capital program spending needs. To that end, a CRD Board resolution is required to commence the loan authorization process for Bylaw No. 4374, planned borrowing as set out in the Liquid Waste Management Plan; and Bylaw No. 4375, borrowing required to implement a long-term capital program for the Core Area Wastewater program.

RECOMMENDATION

The Core Area Liquid Waste Management Committee recommends to the Capital Regional District Board:

1. That Bylaw No. 4374, "Liquid Waste Management Core Area and Western Communities Service Loan Authorization Bylaw No. 1, 2020" be introduced and read a first, second, and third time;
2. That Bylaw No. 4374 be referred to the Inspector of Municipalities for approval.
3. That Bylaw No. 4375, "Liquid Waste Management Core Area and Western Communities Service Loan Authorization Bylaw No. 2, 2020" be introduced and read a first, second, and third time;
4. That Bylaw No. 4375 be referred to the municipal councils of the participants for approval, and if two-thirds of approval is received, to the Inspector of Municipalities.

Submitted by:	Rianna Lachance, B.Com, CPA, CA, Senior Manager, Financial Services
Concurrence:	Nelson Chan, MBA, CPA, CMA, Chief Financial Officer
Concurrence:	Kristen Morley, J.D., General Manager, Corporate Services & Corporate Officer
Concurrence:	Ted Robbins, B. Sc., C. Tech., General Manager, Integrated Water Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT(S)

Appendix A: Bylaw 4374, "Liquid Waste Management Core Area and Western Communities Service Loan Authorization Bylaw No. 1, 2020"
Appendix B: Bylaw 4375, "Liquid Waste Management Core Area and Western Communities Service Loan Authorization Bylaw No. 2, 2020"

CAPITAL REGIONAL DISTRICT

BYLAW NO. 4374

****

A BYLAW TO AUTHORIZE PLANNED BORROWING OF TWENTY-TWO MILLION, SEVEN HUNDRED THOUSAND ($22,700,000) FOR THE IMPLEMENTATION OF THE LIQUID WASTE MANAGEMENT PLAN IN THE CORE AREA AND WESTERN COMMUNITIES LIQUID WASTE SERVICE

****

WHEREAS:

A. By Supplementary Letters Patent, Division VII dated December 28, 1967, the Capital Regional District obtained the function of acquisition, design, construction, operation, maintenance, renewal and administration of trunk sewers and sewage disposal facilities within all member municipalities of the Regional District, except the electoral areas of Sooke and Outer Gulf Islands, converted to establishing bylaw per Bylaw No. 2312, "Liquid Waste Management Core Area and Western Communities Service Establishment Bylaw No. 1, 1995";

B. Pursuant to the *Regional District Liabilities Regulation*, BC Reg 261/2004, adoption of a loan authorization bylaw is permitted if the borrowing is to implement all or part of an approved liquid waste management plan and Inspector of Municipalities approval is obtained.

C. The Capital Regional District Core Area Liquid Waste Management Plan, dated July 12, 2000, was approved March 26, 2003 by the Minister of Water, Land and Air Protection pursuant to now s. 24(5) of the *Environmental Management Act.* Approved works include the planning, study, public consultation, site selection, design, land and material acquisition, construction, supply and installation of all material, equipment and components and all construction necessary for the preparation and works relating to wastewater treatment and conveyance system in the Core Area;

D. The estimated cost is twenty-two million seven-hundred thousand dollars ($22,700,000);

E. Financing is proposed to be undertaken by the Municipal Finance Authority of British Columbia pursuant to agreements between it and the Capital Regional District;

NOW THEREFORE the Capital Regional District Board in open meeting assembled hereby enacts as follows:

1. For the purposes of the Liquid Waste Management Core Area and Western Communities Service, the Board is hereby empowered and authorized to undertake and carry out or cause to be carried out the planning, study, public consultation, site selection, design, land and material acquisition, construction, supply and installation of all material, equipment and components, and all construction necessary for the wastewater treatment facilities in the Core Area; and to do all things necessary in connection therewith and without limiting the generality of the foregoing:

(a) to borrow upon the credit of the Capital Regional District a sum not exceeding twenty-two-million, seven-hundred-thousand dollars ($22,700,000); and

(b) to acquire all such real property, easements, rights-of-way, licenses, rights or authorities as may be requisite or desirable for or in connection with construction of the said facilities.

2. The maximum term for which debentures may be issued to secure the debt intended to be created by this bylaw is 15 years.

3. This Bylaw may be cited as “Liquid Waste Management Core Area and Western Communities Service Loan Authorization Bylaw No. 1, 2020”.

READ A FIRST TIME THIS	__th	day of	202_
READ A SECOND TIME THIS	__th	day of	202_
READ A THIRD TIME THIS	__th	day of	202_
APPROVED BY THE INSPECTOR OF MUNICIPALITIES THIS	__th	day of	202_
ADOPTED THIS	__th	day of	202_

CHAIR

CORPORATE OFFICER

CAPITAL REGIONAL DISTRICT

BYLAW NO. 4375

****

A BYLAW TO AUTHORIZE THE BORROWING OF THIRTY FOUR MILLION, THREE HUNDRED THOUSAND DOLLARS ($34,300,000) FOR THE ESTIMATED COST OF WORKS RELATING TO THE LIQUID WASTE MANAGEMENT CORE AREA AND WESTERN COMMUNITIES SERVICE PROGRAM

****

WHEREAS:

A. By Supplementary Letters Patent, Division Vll dated December 28, 1967, the Capital Regional District obtained the function of acquisition, design, construction, operation, maintenance, renewal and administration of trunk sewers and sewage disposal facilities within all member municipalities of the Regional District, except the electoral areas of Sooke and Outer Gulf Islands, converted to establishing bylaw per Bylaw No. 2312, "Liquid Waste Management Core Area and Western Communities Service Establishment Bylaw No. 1, 1995";

B. It is deemed desirable to fund works relating to wastewater treatment facilities in the Core Area that had been deferred pending determination of a funding model and the final scope of the Core Area Wastewater Treatment Project, as well as future anticipated works, including the planning, study, public consultation, site selection, design, land and material acquisition, construction, supply and installation of all material, equipment and components and all construction necessary for the preparation and works relating to wastewater treatment and conveyance system in the Core Area;

C. The estimated cost of the works is the sum of thirty-four million, three-hundred thousand dollars ($34,300,000) dollars;

D. Pursuant to s. 407 of the *Local Government Act*, participating area approval is required for this borrowing and shall be obtained by municipal council consent under s. 346 of the *Local Government Act*;

E. Financing is proposed to be undertaken by the Municipal Finance Authority of British Columbia pursuant to agreements between it and the Capital Regional District;

NOW THEREFORE the Capital Regional District Board in open meeting assembled hereby enacts as follows:

1. For the purposes of the Liquid Waste Management Core Area and Western Communities Service, the Board is hereby empowered and authorized to undertake and carry out or cause to be carried out the planning, study, public consultation, site selection, design, land and material acquisition, construction, supply and installation of all material, equipment and components, and all construction necessary for the wastewater treatment facilities in the Core Area; and to do all things necessary in connection therewith and without limiting the generality of the foregoing:

   (a) to borrow upon the credit of the Capital Regional District a sum not exceeding thirty-four million, three-hundred thousand dollars ($34,300,000); and

(b) to acquire all such real property, easements, rights-of-way, licenses, rights or authorities as may be requisite or desirable for or in connection with construction of the said facilities.

2. The maximum term for which debentures may be issued to secure the debt intended to be created by this bylaw is 15 years.

3. This Bylaw may be cited as "Liquid Waste Management Core Area and Western Communities Service Loan Authorization Bylaw No. 2, 2020".

READ A FIRST TIME THIS	__th	day of	202_
READ A SECOND TIME THIS	__th	day of	202_
READ A THIRD TIME THIS	__th	day of	202_
APPROVED BY TWO-THIRDS OF PARTICIPANTS PER S.346 OF THE *LOCAL GOVERNMENT ACT* THIS	__th	day of	202_
APPROVED BY THE INSPECTOR OF MUNICIPALITIES THIS	__th	day of	202_
ADOPTED THIS	__th	day of	202_

_____ _____

CHAIR CORPORATE OFFICER

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REPORT TO CORE AREA LIQUID WASTE MANAGEMENT COMMITTEE
MEETING OF WEDNESDAY, OCTOBER 07, 2020

SUBJECT **Bylaw Nos. 4376, 4377, 4378: Core Area Sewer Reserve Bylaws**

ISSUE SUMMARY

A series of bylaws are required to facilitate administration of the combined Core Area Wastewater service.

BACKGROUND

On August 12, 2020, the Board amended the cost-sharing framework for the Core Area Wastewater Service pursuant to Liquid Waste Management Core Area and Western Communities Service Establishment Bylaw No. 1, 1995, Amendment Bylaw No. 3, 2020 (Bylaw No. 4304, amending Bylaw No. 2312). Now, all conveyance and treatment costs will be combined and cost apportioned as per Bylaw 4304. The bylaw contains two methods of cost apportionment, one for operating based on actual flows and one for capital costs based on treatment capacity allocation. To administer this, the operating costs will be accounted for in a new service area referred to as Service Area 3.717 Core Area Wastewater Operations and capital costs will be accounted for within the existing Service Area 3.798C Core Area Wastewater Capital, effective January 1, 2021.

In order to facilitate financial administration of the 2021–2025 Provisional Financial Plan, as will be presented to Committee of the Whole on October 28, 2020, staff are seeking approval of a number of bylaws to establish and amend reserve funds. The following reserve funds are required:

- Operating Reserve Fund (3.717)
- Equipment Replacement Fund (ERF) (3.717)
- Debt Retirement Reserve Fund, (3.798C) and
- Capital Replacement Reserve Fund (3.798C)

The following three (3) bylaws are recommended for approval:

Service Area	Action	Purpose	Bylaw
3.717	Amending Bylaw	Amendment to the Operating Sewer and Water Reserve Fund bylaw to include the new Core Area Wastewater Service	4376 Capital Regional District Sewer and Water Services Operating Reserve Fund Bylaw No. 1, 2016, Amendment Bylaw No. 2, 2020 (Bylaw No. 4376)

3.798C	Reserve Fund Establishment Bylaw	Establishment of a Debt Repayment Reserve Fund	4377 Liquid Waste Management Core Area and Western Communities Service Debt Repayment Reserve Establishment Bylaw No. 1, 2020 (Bylaw No. 4377)
3.798C	Reserve Fund Establishment Bylaw	Establishment of a Capital Reserve Fund	4378 Liquid Waste Management Core Area and Western Communities Service Capital Reserve No. 1, 2020 (Bylaw No. 4378)

The function of an equipment replacement reserve fund is authorized through the existing Bylaw No. 945 Equipment Replacement Fund By-law No.1, 1981. A separate bylaw is not required to establish an account.

Future Bylaws
The new combined service and apportionment comes into effect January 1, 2021. At this time the historical trunk operations and respective reserves will need to be wound up and funds transferred to the new operating and equipment replacement reserve funds. Early in 2021, Staff anticipate seeking approval on two (2) Reserve Transfer Bylaws, one for Operating and one for ERF. The following bylaws will be brought forward in 2021 once final balances are determined:

3.717	Transfer Bylaw	Transfer bylaw to move reserve funds in individual Trunks Operating Reserves to the CAWW Operating Reserve	Proposed Bylaw 2021
3.717	Transfer Bylaw	Transfer bylaw to move reserve funds in individual Trunks Equipment Replacement Reserves to the CAWW Equipment Replacement Reserve	Proposed Bylaw 2021

ALTERNATIVES

Alternative 1
The Core Area Liquid Waste Management Committee recommends to the Capital Regional District Board:

1. That Bylaw No. 4376, "Capital Regional District Sewer and Water Services Operating Reserve Fund Bylaw No. 1, 2016, Amendment Bylaw No. 2, 2020" be introduced and read a first, second, and third time; and
2. That Bylaw No. 4376 be adopted.
3. That Bylaw No. 4377, "Liquid Waste Management Core Area and Western Communities Service Debt Repayment Reserve Establishment Bylaw No. 1, 2020", be introduced and read a first, second, and third time; and
4. That Bylaw No. 4377 be adopted.

5. That Bylaw No. 4378, "Liquid Waste Management Core Area and Western Communities Service Capital Reserve No. 1, 2020", be introduced and read a first, second, and third time; and
6. That Bylaw No. 4378 be adopted.

Alternative 2
The Governance and Finance Committee recommends to the Capital Regional District Board:
That Bylaws No. 4376, 4377, and 4378 be deferred pending further analysis by CRD staff.

IMPLICATIONS

Financial Implications

Operating Reserve (3.717)

Due to the cyclical nature of some operating and maintenance costs within the wastewater service, an operating reserve is recommended to minimize fluctuations in revenue requirements in any given year. Additionally, unforeseen or extraordinary operating costs can be mitigated through use of the operating reserve.

To establish the operating reserve Bylaw No. 4376 to amend the existing Operating Sewer and Water Reserve Fund Bylaw No. 4242 by replacing Schedule A. Schedule A has been amended to remove 'Trunk Sewers & Sewage Disposal' and replace with Core Area and Western Communities Liquid Waste Management Service.

The operating reserve fund will be funded through surplus fund transfers and required amounts to meet cyclical or irregular operating expenditures commitments from year to year.

Equipment Replacement Reserve Fund (3.717)

The Equipment Replacement Reserve fund is used to pay for 'minor' equipment replacement that typically has a service life of less than five years and/or a value of less than $25,000. The reserve fund contributions are set to meet replacement lifecycle requirements of ongoing operations.

Debt Repayment Reserve Fund (3.798C)

The debt repayment reserve fund will be used to set aside funding sufficient to exercise the 10-year early payout option on debt issuances within the CAWTP debt program.

The establishment of this fund aligns with the financing strategy approved by the Board in 2019 which was designed to deliver the most cost effective financing structure, with the lowest overall cost to the participants. The annual contribution to the debt repayment reserve will be based on the forecasted obligations of early payout.

Capital Reserves (3.798C)

Establishment of the capital reserve is required to facilitate savings for long-term (over 15 years) capital works as required in the new amalgamated service and for future system betterments or expansions. Planned annual contributions to the capital reserve fund have been set low initially

to offset impacts of the debt repayment reserve contributions and with lifecycle replacement requirements further in the future on a largely new asset base. Once debts are paid in full (planned in 2032), reserve contribution levels will be maintained, but transfers will build up the capital reserve rather than service debts.

CONCLUSION

In order to facilitate financial administration of the 2021–2025 Provisional Financial Plan, as will be presented to Committee of the Whole on October 28, 2020, staff are seeking Committee recommendation for the Board to approve Bylaw Nos. 4376, 4377 and 4378. The bylaws amend and establish reserve funds required to facilitate transactions within the Core Area Wastewater Service, in compliance with the *Local Government Act.*

RECOMMENDATION

The Core Area Liquid Waste Management Committee recommends to the Capital Regional District Board:

1. That Bylaw No. 4376, "Capital Regional District Sewer and Water Services Operating Reserve Fund Bylaw No. 1, 2016, Amendment Bylaw No. 2, 2020" be introduced and read a first, second, and third time; and
2. That Bylaw No. 4376 be adopted.
3. That Bylaw No. 4377, "Liquid Waste Management Core Area and Western Communities Service Debt Repayment Reserve Establishment Bylaw No. 1, 2020", be introduced and read a first, second, and third time; and
4. That Bylaw No. 4377 be adopted.
5. That Bylaw No. 4378, "Liquid Waste Management Core Area and Western Communities Service Capital Reserve No. 1, 2020", be introduced and read a first, second, and third time; and
6. That Bylaw No. 4378 be adopted.

Submitted by:	Rianna Lachance, BCom, CPA, CA, Senior Manager, Financial Services
Concurrence:	Nelson Chan, MBA, CPA, CMA, Chief Financial Officer
Concurrence:	Ted Robbins, B. Sc., C. Tech., General Manager, Integrated Water Services
Concurrence:	Kristen Morley, J.D., General Manager, Corporate Services & Corporate Officer
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT(S)

Appendix A: Bylaw 4376 "Capital Regional District Sewer and Water Services Operating Reserve Fund Bylaw No. 1, 2016, Amendment Bylaw No. 2, 2020"
Appendix B: Bylaw 4377 "Liquid Waste Management Core Area and Western Communities Service Debt Repayment Reserve Establishment Bylaw No. 1, 2020"
Appendix C: Bylaw 4378 "Liquid Waste Management Core Area and Western Communities Service Capital Reserve No. 1, 2020"

CAPITAL REGIONAL DISTRICT

BYLAW NO. 4376

****

A BYLAW TO AMEND THE CAPITAL REGIONAL DISTRICT OPERATING RESERVE FUNDS BYLAW

****

WHEREAS:

A. Under Bylaw No. 4144, "Capital Regional District Sewer and Water Services Operating Reserve Fund Bylaw No. 1, 2016", the Board of the District established operating reserve funds for sewer and water services;

B. Bylaw No. 4242, "Capital Regional District Sewer and Water Services Operating Reserve Fund Bylaw No. 1, 2016, Amendment Bylaw No. 1, 2018", was adopted by the Board of the District on June 6, 2018, amending Bylaw No. 4144, "Capital Regional District Sewer and Water Services Operating Reserve Fund Bylaw No. 1, 2016".

C. This bylaw is required to be amended to update the language to agree to the 4304 service amendment in order to advance the objective of eliminating separate trunks and consolidating them into one amalgamated service.

D. The Board wishes to amend Bylaw 4242, "Capital Regional District Sewer and Water Services Operating Reserve Fund Bylaw No. 1, 2016, Amendment Bylaw No. 1, 2018", to expire the historic trunk sewer services language and to include the Core Area and Western Communities Liquid Waste Management Service as defined in the service amendment.

NOW THEREFORE the Board of the Capital Regional District enacts as follows:

1. Bylaw 4144, "Capital Regional District Sewer and Water Services Operating Reserve Fund Bylaw No. 1, 2016", is hereby amended as follows:

   a) By deleting SCHEDULE A in its entirety and replacing it with the following:

SCHEDULE A

1) Core Area and Western Communities Liquid Waste Management Service
2) Saanich Peninsula Wastewater

Salt Spring Island:

1) Highland/Fernwood Water
2) Beddis Water
3) Fulford Water
4) Cedar Lane Water
5) Septage Composting – Salt Spring
6) Ganges Sewer Utility
7) Maliview Sewer Utility

Southern Gulf Islands:

1) Magic Lake Estates Water
2) Lyall Harbour Boot Cover Water (Saturna)
3) Skana Water (Mayne)
4) Sticks Allison Water (Galiano)
5) Surfside Park Estates (Mayne)
6) Magic Lake Sewer Utility

Juan de Fuca:

1) Port Renfrew Water
2) Port Renfrew Sewer
3) Wildnerness Mountain Water

2. This Bylaw may be cited as “Capital Regional District Sewer and Water Services Operating Reserve Fund Bylaw No. 1, 2016, Amendment Bylaw No. 2, 2020”

READ A FIRST TIME THIS	th	DAY OF	2020
READ A SECOND TIME THIS	th	DAY OF	2020
READ A THIRD TIME THIS	th	DAY OF	2020
ADOPTED THIS	th	DAY OF	2020

CHAIR

CORPORATE OFFICER

CAPITAL REGIONAL DISTRICT

BYLAW NO. 4377

****

A BYLAW TO ESTABLISH A DEBT REPAYMENT RESERVE FUND FOR THE LIQUID WASTE MANAGEMENT CORE AREA AND WESTERN COMMUNITIES SERVICE

****

WHEREAS:

A. Under Bylaw No. 4304, "Liquid Waste Management Core Area and Western Communities Service Establishment Bylaw No. 1, 1995", Amendment Bylaw No. 3, 2020, the Regional Board converted a service established by Supplementary Letters Patent, Division VII dated December 28, 1967, as amended by further Supplementary Letters Patent, for the function of acquisition, design, construction, operation, maintenance, renewal, and administration of trunk sewers and sewage disposal facilities within all member municipalities of the Regional District except the District of Sooke and the Southern Gulf Islands, and converted such service to the authority of a bylaw under the Local Government Act;

B. Pursuant to section 377 of the *Local Government Act*, the Board of the Regional District is empowered by Section 188 of the *Community Charter* to establish a reserve fund for a specified purpose and direct that money be placed to the credit of the reserve fund.

C. It is deemed desirable to establish a reserve fund for the Liquid Waste Management Core Area and Western Communities Service to provide for expenditures related to debt servicing payments or debt retirement payments.

NOW THEREFORE the Capital Regional District Board in open meeting assembled hereby enacts as follows:

1. There shall be and is hereby established a debt repayment reserve fund pursuant to provisions of Section 188 of the *Local Government Act* to be known as the "Liquid Waste Management Core Area and Western Communities Service Debt Repayment Reserve".

2. Money from current revenues raised to pay for capital, will be paid into the reserve and will be reflected as part of the annual financial planning process.

3. Monies in the debt repayment reserve fund will fund debt servicing and early repayment of debts issued to fund the Core Area Wastewater Treatment Project.

4. This Bylaw may be cited as “Liquid Waste Management Core Area and Western Communities Service Debt Repayment Reserve Establishment Bylaw No. 1, 2020”.

READ A FIRST TIME THIS th DAY OF 2020

READ A SECOND TIME THIS th DAY OF 2020

READ A THIRD TIME THIS th DAY OF 2020

ADOPTED THIS th DAY OF 2020

CHAIR

CORPORATE OFFICER

CAPITAL REGIONAL DISTRICT

BYLAW NO. 4378

****

A BYLAW TO ESTABLISH A CAPITAL RESERVE FUND FOR THE LIQUID WASTE MANAGEMENT CORE AREA AND WESTERN COMMUNITIES SERVICE

****

WHEREAS:

A. Under Bylaw No. 4304, "Liquid Waste Management Core Area and Western Communities Service Establishment Bylaw No. 1, 1995", Amendment Bylaw No.3, 2020, the Regional Board converted a service established by Supplementary Letters Patent, Division VII dated December 28, 1967, as amended by further Supplementary Letters Patent, for the function of acquisition, design, construction, operation, maintenance, renewal, and administration of trunk sewers and sewage disposal facilities within all member municipalities of the Regional District except the District of Sooke and the Southern Gulf Islands, and converted such service to the authority of a bylaw under the Local Government Act;

B. Pursuant to section 377 of the *Local Government Act*, the Board of the Regional District is empowered by Section 188 of the *Community Charter* to establish a reserve fund for a specified purpose and direct that money be placed to the credit of the reserve fund.

C. It is deemed desirable to establish a reserve fund for the Liquid Waste Management Core Area and Western Communities Service to provide for capital expenditures for or in respect of capital projects including but not limited to, land, machinery or equipment necessary for the replacement, extension or renewal of existing capital works and related debt servicing payments.

NOW THEREFORE the Capital Regional District Board in open meeting assembled hereby enacts as follows:

1. There shall be and is hereby established a debt repayment reserve fund pursuant to provisions of Section 188 of the *Local Government Act* to be known as the "Liquid Waste Management Core Area and Western Communities Service Capital Reserve";

2. Monies from current revenues, raised to pay for capital, will be paid into the reserve and will be reflected as part of the annual financial planning process.

3. Monies in the reserve fund will be used to provide for new capital works and extension or renewal of existing capital works, including the planning, study, design, construction of facilities, land acquisition, as well as machinery or equipment necessary for capital works and related debt servicing payments.

4. This Bylaw may be cited as "Liquid Waste Management Core Area and Western Communities Service Capital Reserve No. 1, 2020".

READ A FIRST TIME THIS	th	DAY OF	2020
READ A SECOND TIME THIS	th	DAY OF	2020
READ A THIRD TIME THIS	th	DAY OF	2020
ADOPTED THIS	th	DAY OF	2020

CHAIR

CORPORATE OFFICER

Making a difference...together

REPORT TO THE GOVERNANCE AND FINANCE COMMITTEE
MEETING OF WEDNESDAY, OCTOBER 07, 2020

SUBJECT **Bylaw No. 4365: Tax Exemption (Permissive) Bylaw, 2021**

ISSUE SUMMARY

To authorize Electoral Area permissive tax exemptions for 2021.

BACKGROUND

Under Section 391 of the *Local Government Act* (LGA), the Capital Regional District (CRD) may provide tax exemption for properties in an electoral area. A bylaw must be adopted by the CRD Board prior to October 31 each year in order for the exemption to be processed by BC Assessment for the following year.

For the 2021 taxation year, there are no new requests and eight (8) renewal requests for permissive tax exemption, including one property donated to the CRD for community parks (Galiano Parks and Recreation Service) with a life interest for the donor and caretaker, and one leased property used for regional district services (North Galiano Fire Service).

Renewal Requests:

#	PROPERTY	DESCRIPTION
1	Pender Island Golf and Country Club	Granted since 1999 upon request for land and improvements used principally for public athletic or recreation purposes – LGA 391(4)(a); letter of request for 2021 attached.
2	Galiano Golf and Country Club	Granted since 1999 upon request for land and improvements used principally for public athletic or recreation purposes – LGA 391(4)(a); letter of request for 2021 attached
3	Magic Lake Property Owners Society (MLPOS)	Granted upon request for land only used principally for public athletic or recreation purposes – LGA 391(4)(a); letter of request for 2021 attached
4	Royal Canadian Legion, Branch #239 Pender Island	Granted for the first time in 2018 upon request for land and improvements used principally for public athletic or recreation purposes exemption under LGA 391(4)(a); letter of request for 2021 attached.
5	Royal Canadian Legion, Branch #92, Salt Spring Island	Granted for the first time in 2020 upon request for land and improvements used principally for public athletic or recreation purpose exemption under LGA 391(4)(a); letter of request for 2021 attached.
6	Salt Spring Island Golf and Country Club	Granted for the first time in 2020 upon request for land and improvements used principally for public athletic or recreation purpose exemption under LGA 391(4)(a); letter of request for 2021 attached.

#	PROPERTY	DESCRIPTION
7	Galiano Parks and Recreation Commission: Donated Land—Life Estate Doreen Kennedy	Granted the first time in 2019 upon request for land and improvements used for community park purposes by the Galiano Parks and Recreation Commission exemption under LGA 391(4)(g); letter of request for 2021 attached.
8	North Galiano Fire Hall	Granted in 2013 for land and improvements held by the CRD for the fire service – LGA 391(4)(g); this exemption is required given that the new fire hall has been constructed on property that the CRD leases from the North Galiano Fire Protection Society.

The CRD Board and BC Assessment have supported these exemption requests in past years.

ALTERNATIVES

Alternative 1

The Governance and Finance Committee and the Electoral Areas Committee recommend to the Capital Regional District Board:
1. That Bylaw No. 4365, "Tax Exemption (Permissive) Bylaw, 2020" be introduced and read a first, second and third time;
2. That Bylaw No. 4365 be adopted.

Alternative 2

That this report be referred back to staff for further review.

IMPLICATIONS

Financial Implications

The following values represent the estimated tax revenue of the proposed exemptions (based on 2020 assessment values and tax rates):

Estimated Total Proposed Tax Exemptions:

PROPERTY	CRD	CRHD	OTHER	TOTAL
Pender Island Golf & Country Club	$2,188	$247	$2,930	$5,365
Galiano Golf and Country Club	$2,363	$246	$3,488	$6,097
Magic Lake Property Owners Society	$6,233	$166	$2,021	$8,420
Royal Canadian Legion, Branch #239 Pender Island (Class 8 Only)	$364	$37	$441	$842

PROPERTY	CRD	CRHD	OTHER	TOTAL
Royal Canadian Legion, Branch #92, Salt Spring Island (Class 8 Only)	$412	$32	$536	$980
Salt Spring Island Golf & Country Club	$5,236	$819	$13,300	$19,355
Galiano Parks and Recreation Commission—Donated Land—Life Estate Doreen Kennedy	$2,557	$267	$3,563	$6,387
North Galiano Fire Hall	$2,772	$268	$3,090	$6,130

The estimated exemption under "Other" in the table above applies to multiple tax categories, such as School Tax, Provincial Rural Tax, Police Tax, BC Assessment, Municipal Finance Authority (MFA), Island Trust, SSI Fire and Water Protection (for SSI only).

Property tax exemptions remove the assessed value from the total taxable assessed value in a service or area. This results in allocating the requisition requirement among the remaining assessments in the service area.

CONCLUSION

The CRD has received eight (8) permissive tax exemption requests for taxation year 2021.

The proposed Bylaw No. 4365 will grant permissive tax exemption in accordance with Section 391 of the *Local Government Act*. Additionally, Bylaw 4365 will renew the permissive tax exemption required for the North Galiano Fire Hall which is now located on property that the CRD leases from the North Galiano Fire Protection Society.

RECOMMENDATION

The Governance and Finance Committee and the Electoral Areas Committee recommend to the Capital Regional District Board:

1. That Bylaw No. 4365, "Tax Exemption (Permissive) Bylaw, 2020" be introduced and read a first, second and third time;
2. That Bylaw No. 4365 be adopted.

Submitted by:	Rianna Lachance, BCom, CPA, CA, Senior Manager, Financial Services
Concurrence:	Nelson Chan, MBA, CPA, CMA, Chief Financial Officer
Concurrence:	Kristen Morley, J.D., General Manager, Corporate Services & Corporate Officer
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT(S)

Appendix A: Bylaw 4365
Appendix B: Correspondence (7)
Appendix C: BC Assessment Property Classifications

CAPITAL REGIONAL DISTRICT

BYLAW NO. 4365

****

A BYLAW TO AUTHORIZE ELECTORAL AREA PERMISSIVE TAX EXEMPTIONS

****

WHEREAS:

A. Under Section 391 of the *Local Government Act*, the Capital Regional District may provide tax exemption for properties in an electoral area that meet any of the conditions listed in Section 391 (4).

B. The Board wishes to exempt certain properties owned, held or operated for the uses or purposes set out in Section 391 (4) (a) and (g) of the *Local Government Act* from taxation for the calendar year 2021.

NOW THEREFORE, the Regional Board of the Capital Regional District in open meeting assembled, enacts as follows:

1. Each property described in Schedule "A" attached to this bylaw shall be exempt from taxation under Section 391 of the *Local Government Act* for the year 2021 by virtue of it being used, held, owned or occupied by the organizations named in the Schedule;

2. This Bylaw may be cited as "Tax Exemption (Permissive) Bylaw, 2020".

READ A FIRST TIME THIS	day of	2020
READ A SECOND TIME THIS	day of	2020
READ A THIRD TIME THIS	day of	2020
ADOPTED THIS	day of	2020

_____ _____

CHAIR CORPORATE OFFICER

Bylaw No. 4365

SCHEDULE "A"

OWNER / OCCUPIER / HOLDER	DESCRIPTION	EXEMPTION	LGA REFERENCE
Pender Island Golf & Country Club	Lot A, Plan VIP52327, Section 17, Cowichan Land District, Portion Pender Island (2314 Otter Bay Road) Tax Roll No. 01-64-764-08647.010	Land and improvements	391(4)(a)
Galiano Golf & Country Club	Lot AM11, Block 1, Plan 24167, District Lot 4, Cowichan District, Portion Galiano Island, and Lot 6, Block 2, District Lot 4, Galiano Island, Cowichan District, Plan 24167 (Linklater Road) Tax Roll No. 01-64-764-02192.023	Land and improvements	391(4)(a)
Magic Lake Property Owners Society	Lot A, Plan VIP41807; Section 9; Portion Pender Island; District Lot 465 Cowichan Land District (Thieves Bay Marina) Tax roll No. 01-764-13027.026 Tax roll No. 01-764-13027.027	Land only (excludes improvement and water lot)	391(4)(a)
Magic Lake Property Owners Society	Lot 21, Plan VIP22335; Section 9; Cowichan Land District , Portion Pender Island (Land adjacent to Mouat Park) Tax roll No. 01-764-08454.305, Lot 18, Plan VIP22424; Section 10; Cowichan Land District Portion Pender Island (Tennis Court & Play Area) Tax roll No. 01-764-08455.036, Lot 67, Plan VIP22335, Section 9, Cowichan Land District Portion Pender Island Tax roll No. 01-764-08454.397	Land only (excludes improvements and water lot)	391(4)(a)
Royal Canadian Legion, Branch #239 Pender Island	Lot 6 PL; VIP7196 SEC: 17 Parcel A, Portion PENDER ISLAND, Parcel A (DD 47774W) Tax Roll No. 01-764-08666.000	Land and improvements (Class 8 Only)	391(4)(a)
Royal Canadian Legion, Branch #92 Salt Spring Island	Lot A, Plan VIP11826, Section 4, Range 3, Cowichan Land District, Portion North Salt Spring Tax Roll No. 01-764-00655.001	Land and improvements (Class 8 Only)	391(4)(a)
Salt Spring Island Golf & Country Club	Section 5, Range 2, Cowichan Land District, (805 Lower Ganges Rd) Tax Roll No. 01-764-00481.000	Land and improvements	391(4)(a)
Capital Regional District (Galiano Community Park)	Lot A, Plan VIP15952, District Lot 2&8, Cowichan Land District, Portion GALIANO ISLAND Tax Roll No. 01-764-002145.005	Land and improvements	391(4)(g)
Capital Regional District (North Galiano Fire Hall)	Lot 1 of Lot 83, Galiano Island, Cowichan District, Plan VIP69843 Tax roll No. 01-764-02273.110	Land and improvements	391(4)(g)

Pender Island Golf & Country Club
2305 Otter Bay Road, Pender Island, B.C. • www.penderislandgolf.ca
P.O. Box 6, Pender Island, B.C. V0N 2M0
Golf Shop: 250-629-6659

A scenic 9 hole golf course located on Pender Island amidst B.C.'s beautiful Gulf Islands.

January 20, 2020

Attention: Ms. Rianna Lachance

Capital Regional District
Senior Manager, Financial Services
625 Fisgard Street, PO Box 1000
Victoria, BC V8W 2S6

Dear Ms. Lachance:

The Pender Island Golf and Country Club respectfully requests exemption from taxes for the year 2020 under Section 809(3)(a) of the *Local Government Act.*

Background

The Pender Island Golf and Country Club has been in existence since 1937 and, except for a period during the Second World War, has been in operation ever since. The Golf Club is a not-for-profit society and was incorporated under the *Societies Act* on July 3, 1945 (Charter No. 1047671-7). The purpose of this Society as stated in the constitution is to maintain the Golf Club "for the use and pleasure of club members and the public".

The Club in the Community

The Pender Island "community" is quite small, with about 2,500 full time residents, a high percentage of who are retired or semi-retired. The summer time community expands substantially with many short-term residents and visitors coming to the island for vacation activities. In terms of recreation, Pender Island is somewhat isolated; however, the Golf Club provides an excellent outlet for recreational activities and is one of the major attractions for both residents of and visitors to Pender Island.

In terms of members, the Golf Club has junior, intermediate, social and regular memberships. The Golf Club also provides recreational opportunities to many more residents and visitors on a casual green fee basis and these participants are increasing. We estimate that about 500 people regularly use these facilities. With few other recreational activities on the island other than boating, disc golf, cycling and walking, the Golf Club is one of the major providers of recreation on Pender Island. There are no bowling facilities, no public swimming pool, no curling or hockey rinks and no theatre.

There are no restrictions to membership in the Golf Club. While members can play as often as they wish, there is no preference given to members over green fee players. All golfers' play on a first-come/first booked, first-to-play basis.

This year, in order to provide more community access, we have entered into a trial contract with Pender Island Disc Golf Club to allow them to play on our golf course. The duration of the *trial* period is six (6) months. The number of community members using our golf club has greatly increased and we anticipate that Disc Golf will become a permanent addition to our course.

Pender Island is very much a volunteer environment and the Golf Club is no exception. The Club was built by volunteers and volunteers continue to help maintain the course and work to continually improve its infrastructure.

Each year we hold a "Pro-Am" tournament and a portion of the proceeds are donated to local community organizations. In the past several years proceeds have gone to the Pender Island Medical Clinic and to the Roger Coleman Bursary Fund. As well, an active junior golf program provides free lessons to junior golfers through our involvement with the Pender Island School. Adult lessons are also available allowing senior residents to take advantage of golf as a recreational activity.

The Golf Club provides employment and training for up to twelve full and part-time employees.

Tax History

We have requested and been very appreciative to have received a tax exemption each year since 1999. We endeavor to be fiscally responsible and at the same time provide a product that is appreciated and of benefit to all Pender Island residents and visitors at as low cost as possible.

The Club has maintained its fees and charges at break-even levels. A tax bill would place a heavy burden on our financial situation and would undoubtedly necessitate higher recreation costs to the community as well as reductions in services and employment.

We respectfully request a tax exemption under Section 809(3)(a) of the *Local Government Act* for the year 2020. Should you require additional information regarding this request, we would be pleased to provide it.

Yours sincerely,

Shirley Nord

Shirley Nord
President, Pender Island Golf & Country Club

Encl: Copy of 2019 Assessment Notice

cc: David Howe, Capital Regional District Director
SGI Community Resource Centre
PO Box 95
Pender Island, BC V0N 2M0

BC ASSESSMENT

IMPORTANT INFORMATION FOR PROPERTY IDENTIFICATION

Area: 01-Capital
Jurisdiction: 764-Gulf Islands Rural
Roll: 08647.010

CONFIDENTIAL PIN: 0000948597

School District: 64-Gulf Islands
Neighbourhood: 910

2020 PROPERTY ASSESSMENT NOTICE

Property Location & Description

2305 OTTER BAY RD
LOT A, PLAN VIP52327, SECTION 17, COWICHAN LAND DISTRICT, PORTION PENDER ISLAND; PARCEL F, SECTION 17, COWICHAN LAND DISTRICT, PORTION PENDER ISLAND, EXCEPT PLAN 22933 36581
PID: 017-337-178 009-675-698

2020 Assessment – represents your property value as of July 1, 2019

Assessed Value	**Value**	**Class**
Land	21,300	Business/Other
	775,000	Rec/Non Profit
Buildings	186,000	Business/Other
2020 Assessed Value	**$982,300**	
Taxable Value	**Rural**	
Less Exemptions	982,300	
2020 Taxable Value	**NIL**	

This is not a tax notice. Tax notices are issued by local governments and taxing authorities.

This notice contains important information about your property. Please review and keep for your records. No action is required unless you disagree with your assessment.

YOUR PROPERTY VALUE HISTORY

2020	+8%	$982,300
2019	0%	$909,400
2018	0%	$909,400
2017	-11%	$909,400

Visit **bcassessment.ca/propertytax** and refer to the back page to learn how your value change relates to your property taxes.

Important messages about your 2020 Assessment

- 2020 tax rates will be set in May. For tax information, please go to gov.bc.ca/ruralpropertytax

IMPORTANT DATES

July 1, 2019
Assessed value is the property's market value as of this date.

October 31, 2019
Assessed value reflects property's physical condition and permitted use as of this date.

DEADLINE FOR FILING A NOTICE OF COMPLAINT (APPEAL) IS JANUARY 31, 2020

Important information about the complaint process can be found on the back page.

The Assessment Office for this property is:

Victoria Assessment Office
102-3350 Douglas St
Victoria BC V8Z 7X9
01-64-764-08647.010

The Owner/Lessee of this property is:

149576

S-03
PENDER ISLAND GOLF & COUNTRY CLUB
2305 OTTER BAY RD
RR 1 PO BOX 6
PENDER ISLAND BC V0N 2M0

CONTACT US

For more information about your Assessment Notice go to **bcassessment.ca**

From our website you can search for your property, compare your assessment and update your mailing address.

Galiano Golf Course Society

24 St. Andrews Crescent

Galiano, BC V0N 1P0

Ms. Lia Xu, Finance Manager, Financial Services

Capital Regional District

625 Fisgard St.

PO Box 1000, Victoria, BC

V8N 2S6

September 02, 2020

Dear Ms. Lia Xu,

I am writing on behalf of the Galiano Golf Course Society to request exemption from property taxes for the year 2021. Relief from taxation has been granted to the Golf Course Society under section 391 of the local government act since year 2000.

Our Golf Course Society continues to operate as a nonprofit society providing an important recreational facility to Galiano Island residents and visitors alike. Our course is open to everyone year round and encourages exercise, mental stimulation, practicing social engagement through social distancing (respecting COVID – 19 Provincial Health & WorkSafe BC Guidelines) in a beautiful natural setting. Our Course is a focal point for many seniors.

As in past years we host two educational clinics during the summer & fall months. One student and one adult clinic. These clinics are attended by local school

children, adult members and seniors. Our island recreational facilities are limited compared to other districts in the Capital regional District.

We would be happy to provide you with any further documentation or information about the Galiano Golf Course that you may require.

Sincerely,

John F. Hatch

John Hatch, President

BC ASSESSMENT

IMPORTANT INFORMATION FOR PROPERTY IDENTIFICATION

Area: 01-Capital
Jurisdiction: 764-Gulf Islands Rural
Roll: 02192.023

School District: 64-Gulf Islands
Neighbourhood: 910

2020 PROPERTY ASSESSMENT NOTICE

Property Location & Description

ST. ANDREWS CRES
LOT 6, BLOCK 2, PLAN VIP24167, DISTRICT LOT 4, COWICHAN LAND DISTRICT, PORTION GALIANO ISLAND, FOR COMMUNITY GOLF COURSE, CLUBHOUSE & RELATED FACILITIES PURPOSES, LEASE/PERMIT/LICENCE # 111975; LOT 11, BLOCK 1, PLAN VIP24167, DISTRICT LOT 4, COWICHAN LAND DISTRICT, PORTION GALIANO ISLAND, FOR COMMUNITY GOLF COURSE, CLUBHOUSE & RELATED FACILITIES PURPOSES, LEASE/PERMIT/LICENCE # 111975; LOT 6, BLOCK 2, PLAN VIP24167, DISTRICT LOT 4, COWICHAN LAND DISTRICT, PORTION (ET CETERA)

2020 Assessment – represents your property value as of July 1, 2019

Assessed Value	Value	Class
Land	47,500	Residential
	12,200	Business/Other
	916,000	Rec/Non Profit
Buildings	38,800	Residential
	99,700	Business/Other
2020 Assessed Value	**$1,114,200**	
Taxable Value	**Rural**	
Less Exemptions	1,114,200	
2020 Taxable Value	**NIL**	

Important messages about your 2020 Assessment

- A copy of this Property Assessment Notice is sent to all owners
- 2020 tax rates will be set in May. For tax information, please go to gov.bc.ca/ruralpropertytax
- Visit bcassessment.ca and create a free account to unlock additional features such as favourites, comparisons and our interactive map.

The Assessment Office for this property is:

Victoria Assessment Office
102-3350 Douglas St
Victoria BC V8Z 7X9
01-64-764-02192.023

The Owner/Lessee of this property is:

163043

S-04
GALIANO GOLF & COUNTRY CLUB
PO BOX 186
GALIANO ISLAND BC V0N 1P0

This is not a tax notice. Tax notices are issued by local governments and taxing authorities.

This notice contains important information about your property. Please review and keep for your records. No action is required unless you disagree with your assessment.

YOUR PROPERTY VALUE HISTORY

2020	+9%	$1,114,200
2019	0%	$1,023,800
2018	0%	$1,023,800
2017	+13%	$1,023,800

Visit **bcassessment.ca/propertytax** and refer to the back page to learn how your value change relates to your property taxes.

IMPORTANT DATES

July 1, 2019
Assessed value is the property's market value as of this date.

October 31, 2019
Assessed value reflects property's physical condition and permitted use as of this date.

DEADLINE FOR FILING A NOTICE OF COMPLAINT (APPEAL) IS JANUARY 31, 2020

Important information about the complaint process can be found on the back page.

CONTACT US

For more information about your Assessment Notice go to **bcassessment.ca**

From our website you can search for your property, compare your assessment and update your mailing address.

Call us at **1-866-valueBC** (1-866-825-8322) or 604-739-8588.

COPY

BCA_PROD_ANOT_20_CPYPDF_A01_20191206 163043_1_2

Before using information in this Notice for non-assessment purposes, please verify records with your Land Title Office. Wherever words or expressions used in this Notice differ from wording of the legislation, the legislation shall prevail. This information is current as of printing deadline.

P.O. Box 65, Pender Island, BC V0N 2M0

February 3, 2020.

Rianna Lachance, Senior Manager, Financial Services
Capital Regional District
625 Fisgard Street, PO Box 1000
Victoria, BC V8W 2S6

To the Senior Manager, Financial Services,

The Magic Lake Property Owners' Society (MLPOS) recognizes, with thanks, our 2020 tax exemption and requests a further exemption from rural property taxes for the year 2021 under Section 809 (3) (a) of the Local Government Act. Our 2020 Property Assessment Notices are enclosed.

MLPOS was incorporated as a non-profit society on 29 August 1975, Charter No. 11823. The objectives of MLPOS are two-fold: (1) To represent the members in matters affecting their property or their life style in Magic Lake Estates. (2) To acquire, maintain and administer, or dispose thereof, property in Magic Lake Estates or the foreshore adjacent thereto for the recreational use of the members.

The North and South Pender Islands have roughly 2500 full-time residents – with approximately one third of these full-time residents living in Magic Lake Estates.

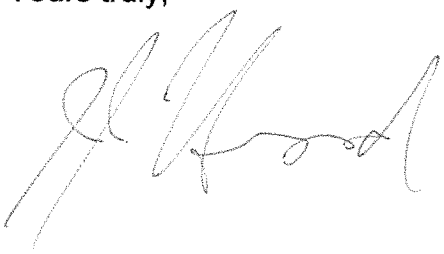
MLPOS operates and maintains a recreational marina at Thieves Bay with 180 berths for the use of members and guests of the society. Our marina provides emergency moorage for any vessel in the area requiring shelter and/or assistance. We reserve, at no charge, a designated berth for the Ambulance Service to conduct medical evacuations for anyone on the Pender Islands. The RCMP and Coast Guard have used our marina for emergency incidents. MLPOS also maintains a public launching ramp beside the marina and we have equipped the marina breakwater with picnic tables open to the public. This Thieves Bay spot has become a very popular, and spectacular, public whale watching site as well as being a favourite walk/drive destination.

In addition to Thieves Bay Marina, MLPOS operates and maintains the only public tennis courts on the Pender Islands. These courts are open year round to members of the Society and to the public, on a pay-per-use basis. We also maintain a children's playground beside the tennis courts and a public park (Mouat Park) designated for the propagation of plants native to the Gulf Islands.

Volunteerism thrives on the Pender Islands and this is apparent in MLPOS. Volunteers build, maintain and manage the marina, tennis courts and playground. We keep all fees charged for the use of these facilities at break-even levels and use all funds generated solely for the short and long-term upkeep and improvement of these recreational facilities.

We hope that you grant our request for a property tax exemption for the year 2021. Such an exemption will significantly enhance our ability to maintain and provide these important recreational facilities for the benefit of our members, our community and tourists to the Gulf Islands.

Yours truly,



Jeremy Harwood
President, Magic Lake Property Owners' Society

Encl: Copy of 2020 Property Assessment Notices

Cc: David Howe, CRD Director, Southern Gulf Islands.

BC ASSESSMENT

IMPORTANT INFORMATION FOR PROPERTY IDENTIFICATION

Area: 01-Capital
Jurisdiction: 764-Gulf Islands Rural
Roll: 13027.027

CONFIDENTIAL PIN: 003371340

Bulk Mail: 5316
School District: 64-Gulf Islands
Neighbourhood: 935

2020 PROPERTY ASSESSMENT NOTICE

Property Location & Description

THIEVES BAY
DISTRICT LOT 465, COWICHAN LAND DISTRICT, COMMERCIAL MARINA IN THIEVES BAY, 1.57 HA ISSUED FOR GROUP MOORAGE, BREAKWATER & BOAT LAUNCHING PURPOSES, LEASE/PERMIT/LICENCE # 114382
LBF:0288670

2020 Assessment – represents your property value as of July 1, 2019

Assessed Value	Value	Class
Land	417,000	Rec/Non Profit
Buildings	277,000	Business/Other
2020 Assessed Value	**$694,000**	
Taxable Value	**Rural**	
Less Exemptions	123,000	
2020 Taxable Value	**$571,000**	

This is not a tax notice. Tax notices are issued by local governments and taxing authorities.

This notice contains important information about your property. Please review and keep for your records. No action is required unless you disagree with your assessment.

YOUR PROPERTY VALUE HISTORY

2020	-3%	$694,000
2019	+2%	$730,000
2018	0%	$714,000
2017	-14%	$714,000

Visit **bcassessment.ca/propertytax** and refer to the back page to learn how your value change relates to your property taxes.

Important messages about your 2020 Assessment

- A copy of this Property Assessment Notice is sent to all owners
- 2020 tax rates will be set in May. For tax information, please go to gov.bc.ca/ruralpropertytax

IMPORTANT DATES

July 1, 2019
Assessed value is the property's market value as of this date.

October 31, 2019
Assessed value reflects property's physical condition and permitted use as of this date.

JAN 31 DEADLINE FOR FILING A NOTICE OF COMPLAINT (APPEAL) IS JANUARY 31, 2020

Important information about the complaint process can be found on the back page.

The Assessment Office for this property is:

Victoria Assessment Office
102-3350 Douglas St
Victoria BC V8Z 7X9
01-64-764-13027.027

The Owner/Lessee of this property is:

MAGIC LAKE PROP OWNER'S SOCIETY
PO BOX 65
PENDER ISLAND BC V0N 2M0

CONTACT US

For more information about your Assessment Notice go to **bcassessment.ca**

From our website you can search for your property, compare your assessment and update your mailing address.

Call us at **1-866-valueBC** (1-866-825-8322) or 604-739-8588.

Before using information in this Notice for non-assessment purposes, please verify records with your Land Title Office. Wherever words or expressions used in this Notice differ from wording of the legislation, the legislation shall prevail. This information is current as of printing deadline.

FOLLOW US

We Value BC

3031 9 10

BC ASSESSMENT

IMPORTANT INFORMATION FOR PROPERTY IDENTIFICATION

Area: **01-Capital**
Jurisdiction: **764-Gulf Islands Rural**
Roll: **13027.026**

CONFIDENTIAL PIN: 003371340

Bulk Mail: 5316
School District: 64-Gulf Islands
Neighbourhood: 935

2020 PROPERTY ASSESSMENT NOTICE

Property Location & Description

THIEVES BAY
LOT A, PLAN VIP41807, SECTION 9, COWICHAN LAND DISTRICT, PORTION PENDER ISLAND
PID: 000-952-141

2020 Assessment – represents your property value as of July 1, 2019

Assessed Value	Value	Class
Land	102,000	
2020 Assessed Value	**$102,000**	**Rec/Non Profit**
Taxable Value	**Rural**	
Less Exemptions	102,000	
2020 Taxable Value	**NIL**	

Important messages about your 2020 Assessment

- 2020 tax rates will be set in May. For tax information, please go to gov.bc.ca/ruralpropertytax

The Assessment Office for this property is:

Victoria Assessment Office
102-3350 Douglas St
Victoria BC V8Z 7X9
01-64-764-13027.026

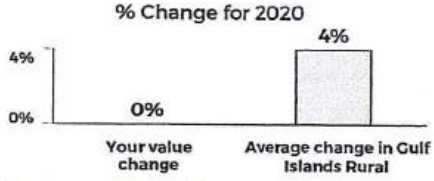
The Owner/Lessee of this property is:

MAGIC LAKE PROP OWNER'S SOCIETY
PO BOX 65
PENDER ISLAND BC V0N 2M0

This is **not** a tax notice. Tax notices are issued by local governments and taxing authorities.

This notice contains important information about your property. Please review and keep for your records. No action is required unless you disagree with your assessment.

YOUR PROPERTY VALUE CHANGE



Visit **bcassessment.ca/propertytax** and refer to the back page to learn how your value change and average change relate to your property taxes.

YOUR PROPERTY VALUE HISTORY

2020	0%	$102,000
2019	+5%	$102,000
2018	+4%	$97,300
2017	+4%	$93,600

IMPORTANT DATES

July 1, 2019
Assessed value is the property's market value as of this date.

October 31, 2019
Assessed value reflects property's physical condition and permitted use as of this date.

JAN 31 **DEADLINE FOR FILING A NOTICE OF COMPLAINT (APPEAL) IS JANUARY 31, 2020**

Important information about the complaint process can be found on the back page.

CONTACT US

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BC ASSESSMENT

IMPORTANT INFORMATION FOR PROPERTY IDENTIFICATION

Area: **01-Capital**
Jurisdiction: **764-Gulf Islands Rural**
Roll: **08455.036**

CONFIDENTIAL PIN: 003371340

Bulk Mail: 5316
School District: 64-Gulf Islands
Neighbourhood: 910

2020 PROPERTY ASSESSMENT NOTICE

Property Location & Description

PRIVATEERS RD
LOT 18, PLAN VIP22424, SECTION 10, COWICHAN LAND DISTRICT, PORTION PENDER ISLAND
PID: 003-246-442

2020 Assessment – represents your property value as of July 1, 2019

Assessed Value	Value	Class
Land	215,000	Rec/Non Profit
Buildings	18,500	Business/Other
2020 Assessed Value	**$233,500**	
Taxable Value	**Rural**	
Less Exemptions	225,000	
2020 Taxable Value	**$8,500**	

This is not a tax notice. Tax notices are issued by local governments and taxing authorities.

This notice contains important information about your property. Please review and keep for your records. No action is required unless you disagree with your assessment.

YOUR PROPERTY VALUE HISTORY

2020	-12%	$233,500
2019	+43%	$265,700
2018	+23%	$185,300
2017	+13%	$150,300

Visit **bcassessment.ca/propertytax** and refer to the back page to learn how your value change relates to your property taxes.

Important messages about your 2020 Assessment

- 2020 tax rates will be set in May. For tax information, please go to gov.bc.ca/ruralpropertytax

IMPORTANT DATES

July 1, 2019
Assessed value is the property's market value as of this date.

October 31, 2019
Assessed value reflects property's physical condition and permitted use as of this date.

JAN 31 DEADLINE FOR FILING A NOTICE OF COMPLAINT (APPEAL) IS JANUARY 31, 2020

Important information about the complaint process can be found on the back page.

The Assessment Office for this property is:

Victoria Assessment Office
102-3350 Douglas St
Victoria BC V8Z 7X9
01-64-764-08455.036

The Owner/Lessee of this property is:

MAGIC LAKE PROP OWNER'S SOCIETY
PO BOX 65
PENDER ISLAND BC V0N 2M0

CONTACT US

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Call us at **1-866-valueBC** (1-866-825-8322) or 604-739-8588.

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FOLLOW US

We Value BC

BC ASSESSMENT

IMPORTANT INFORMATION FOR PROPERTY IDENTIFICATION

Area: **01-Capital**
Jurisdiction: **764-Gulf Islands Rural**
Roll: **08454.305**

CONFIDENTIAL PIN: 003371340

Bulk Mail: 5316
School District: 64-Gulf Islands
Neighbourhood: 910

2020 PROPERTY ASSESSMENT NOTICE

Property Location & Description

STORM CRES
LOT 21, PLAN VIP22335, SECTION 9, COWICHAN LAND DISTRICT, PORTION PENDER ISLAND
PID: 003-275-400

2020 Assessment – represents your property value as of July 1, 2019

Assessed Value	Value	Class
Land	104,000	
2020 Assessed Value	**$104,000**	**Rec/Non Profit**
Taxable Value	**Rural**	
Less Exemptions	104,000	
2020 Taxable Value	**NIL**	

Important messages about your 2020 Assessment

- Due to the specialized nature of your property, it is not displayed on Assessment Search (bcassessment.ca). Please contact us if you require additional information.
- 2020 tax rates will be set in May. For tax information, please go to gov.bc.ca/ruralpropertytax

The Assessment Office for this property is:

Victoria Assessment Office
102-3350 Douglas St
Victoria BC V8Z 7X9
01-64-764-08454.305

The Owner/Lessee of this property is:

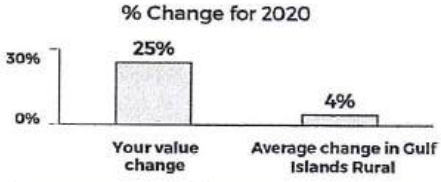
3031

S-01
MAGIC LAKE PROP OWNER'S SOCIETY
PO BOX 65
PENDER ISLAND BC V0N 2M0

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YOUR PROPERTY VALUE CHANGE



Visit **bcassessment.ca/propertytax** and refer to the back page to learn how your value change and average change relate to your property taxes.

YOUR PROPERTY VALUE HISTORY

2020	+25%	$104,000
2019	+22%	$83,300
2018	+33%	$68,400
2017	+19%	$51,300

IMPORTANT DATES

July 1, 2019
Assessed value is the property's market value as of this date.

October 31, 2019
Assessed value reflects property's physical condition and permitted use as of this date.

JAN 31 **DEADLINE FOR FILING A NOTICE OF COMPLAINT (APPEAL) IS JANUARY 31, 2020**

Important information about the complaint process can be found on the back page.

CONTACT US

For more information about your Assessment Notice go to **bcassessment.ca**

From our website you can search for your property, compare your assessment and update your mailing address.

Call us at **1-866-valueBC** (1-866-825-8322) or 604-739-8588.

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BC ASSESSMENT

IMPORTANT INFORMATION FOR PROPERTY IDENTIFICATION

Area: **01-Capital**
Jurisdiction: **764-Gulf Islands Rural**
Roll: **08454.397**

CONFIDENTIAL PIN: 003371340

Bulk Mail: 5316
School District: 64-Gulf Islands
Neighbourhood: 910

2020 PROPERTY ASSESSMENT NOTICE

Property Location & Description

LOT 67, PLAN VIP22335, SECTION 9, COWICHAN LAND DISTRICT, PORTION PENDER ISLAND
PID: 003-219-666

2020 Assessment – represents your property value as of July 1, 2019

Assessed Value	Value	Class
Land	12,700	
2020 Assessed Value	**$12,700**	**Residential**
Taxable Value	**Rural**	
Less Exemptions	12,700	
2020 Taxable Value	**NIL**	

Important messages about your 2020 Assessment

- Due to the specialized nature of your property, it is not displayed on Assessment Search (bcassessment.ca). Please contact us if you require additional information.
- 2020 tax rates will be set in May. For tax information, please go to gov.bc.ca/ruralpropertytax
- Visit bcassessment.ca and create a free account to unlock additional features such as favourites, comparisons and our interactive map.

The Assessment Office for this property is:

Victoria Assessment Office
102-3350 Douglas St
Victoria BC V8Z 7X9
01-64-764-08454.397

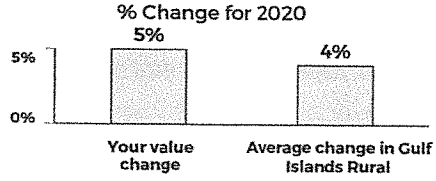
The Owner/Lessee of this property is:

MAGIC LAKE PROP OWNER'S SOCIETY
PO BOX 65
PENDER ISLAND BC V0N 2M0

This is not a tax notice. Tax notices are issued by local governments and taxing authorities.

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YOUR PROPERTY VALUE CHANGE



Visit **bcassessment.ca/propertytax** and refer to the back page to learn how your value change and average change relate to your property taxes.

YOUR PROPERTY VALUE HISTORY

2020	+5%	$12,700
2019	+5%	$12,100
2018	+5%	$11,500
2017	+10%	$11,000

IMPORTANT DATES

July 1, 2019
Assessed value is the property's market value as of this date.

October 31, 2019
Assessed value reflects property's physical condition and permitted use as of this date.

JAN 31 **DEADLINE FOR FILING A NOTICE OF COMPLAINT (APPEAL) IS JANUARY 31, 2020**

Important information about the complaint process can be found on the back page.

CONTACT US

For more information about your Assessment Notice go to **bcassessment.ca**

From our website you can search for your property, compare your assessment and update your mailing address.

Call us at **1-866-valueBC** (1-866-825-8322) or 604-739-8588.

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We Value BC

FOLLOW US

LEGION

Royal Canadian Legion
Branch #239
1344 Mackinnon Road
Pender Island, BC V0N 2M1

Tel: 250-629-3441
email: branch239.rcl@gmail.com

February 6, 2020.

Capital Regional District
Attention: Rianna Lachance
Senior manager, Financial Services
625 Fisgard Street, PO Box 1000
Victoria, BC V8W 2S6

Dear Ms. Lachance:

The Royal Canadian Legion - Branch #239 (Pender Island) respectfully requests relief from municipal taxes for the year 2021 under Section 391(3)(a) of the *Local Government Act.*

Background

Branch #239 has been active on Pender Island since 1959, and has occupied its current premises since 1972. Current membership stands at 279, representing 12% of the island's full time population of 2302 per 2016 census.

Contributions to the Island Community

Below is brief description of its contribution to island life.

Every year, Branch #239 organizes the island's Canada Day and Remembrance Day celebrations and services. Its gaming funds typically return to the community $9,000-$10,000 per year in bursaries, scholarships and donations in support of island youth and their activities. In the same way, its poppy fund generates $2,500 in support of both island youth and Canadian veterans. The branch also provides part time employment for (5) staff.

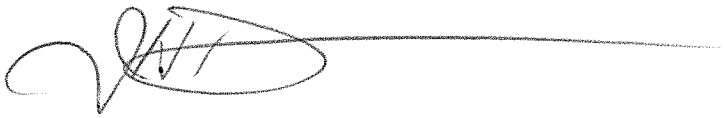
As well as hosting the Legion's own functions, the building is available as a low cost venue for other Pender Island community clubs and services. It is currently being used by (14) such organizations. It also hosts when needed private functions and memorials. Finally, it functions as one of Pender Island's emergency muster points and shelters, with its crisis-ready condition maintained by Legion volunteers.

Tax History

We were granted our first tax exemption in 2018, having managed to remain largely solvent to this point in our history. This tax exemption has been most gratefully received. In 2015-16 we were forced into additional expenses by the need to renovate our aging building, not least because its substandard acoustics had rendered it largely unusable for our aging, hearing-impaired population. This effort overstrained our resources, and while we intend to remain financially responsible, municipal taxes are a heavy burden. Without this burden, we will feel less pressure to cut back on our services, reduce employment or increase our charges.

Therefore, we respectfully request another tax exemption under Section 391(3)(a) of the *Local Government Act* for the year 2021. Should you require additional information regarding this request, we would be pleased to provide it.

Yours sincerely,



Jean Deschenes
President, Royal Canadian Legion Branch #239 (Pender Island)

Enclosure: Copy of 2020 Assessment Notice

CC: David Howe, Capital Regional District Director

BC ASSESSMENT

IMPORTANT INFORMATION FOR PROPERTY IDENTIFICATION

Area: 01-Capital
Jurisdiction: 764-Gulf Islands Rural
Roll: 08666.000

CONFIDENTIAL PIN: 0001048707

School District: 64-Gulf Islands
Neighbourhood: 910

2020 PROPERTY ASSESSMENT NOTICE

Property Location & Description

1344 MACKINNON RD
PARCEL A, LOT 6, PLAN VIP7196, SECTION 17, COWICHAN LAND DISTRICT, PORTION PENDER ISLAND, PCL A (DD 47774W)
PID: 005-758-289

2020 Assessment – represents your property value as of July 1, 2019

Assessed Value	Value	Class
Land	68,300	Business/Other
	116,000	Rec/Non Profit
Buildings	41,200	Business/Other
	70,200	Rec/Non Profit
2020 Assessed Value	**$295,700**	
Taxable Value	**Rural**	
Less Exemptions	196,200	
2020 Taxable Value	**$99,500**	

This is not a tax notice. Tax notices are issued by local governments and taxing authorities.

This notice contains important information about your property. Please review and keep for your records. No action is required unless you disagree with your assessment.

YOUR PROPERTY VALUE HISTORY

2020	+11%	$295,700
2019	+1%	$266,200
2018	0%	$262,800
2017	+7%	$263,100

Visit **bcassessment.ca/propertytax** and refer to the back page to learn how your value change relates to your property taxes.

IMPORTANT DATES

July 1, 2019
Assessed value is the property's market value as of this date.

October 31, 2019
Assessed value reflects property's physical condition and permitted use as of this date.

JAN 31 **DEADLINE FOR FILING A NOTICE OF COMPLAINT (APPEAL) IS JANUARY 31, 2020**

Important information about the complaint process can be found on the back page.

Important messages about your 2020 Assessment

- 2020 tax rates will be set in May. For tax information, please go to gov.bc.ca/ruralpropertytax

The Assessment Office for this property is:

Victoria Assessment Office
102-3350 Douglas St
Victoria BC V8Z 7X9
01-64-764-08666.000

The Owner/Lessee of this property is:

S-03 149592
ROYAL CANADIAN LEGION PENDER ISLAND BRANCH NO. 239
1344 MACKINNON RD
RR 1
PENDER ISLAND BC V0N 2M1

CONTACT US

For more information about your Assessment Notice go to **bcassessment.ca**

From our website you can search for your property, compare your assessment and update your mailing address.

Call us at **1-866-valueBC** (1-866-825-8322) or 604-739-8588.

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Royal Canadian Legion Branch 92
120 Blain Road Salt Spring Island V8K 2P7
250 537-5822
legionbr92@shaw.ca

RECEIVED
AUG 2 7 2020

Capital Regional District

Attention: Chief Financial Officer, Nelson Chan PO
Box 1000

Victoria, BC V8W 2S6
Dear Mr. Chan:

The Royal Canadian Legion - Branch #92, Salt Spring Island) respectfully requests relief from municipal taxes under Section 391(3)(a) of the *Local Government Act*.

Background

Branch #92 has been active on Salt Spring Island since 1931 and has occupied its current premises for over 30 years. The branch's current membership stands at 612, approximately 6% of Salt Spring Island's full-time population of 10,557 (2016 census).

Contributions to the Island Community

Branch #92 makes significant contributions to Salt Spring Island's social fabric in many ways. Every year, Branch #92 organizes the island's Canada Day celebration and Remembrance Day service. The branch strives to support the community of Salt Spring Island by raising Gaming, Poppy and General Funds which are then contributed to local recipient organizations and individuals as grants, donations, scholarships and bursaries. Branch #92 issues approximately $30,000 to such organizations and individuals. The Branch also currently employs 7 part-time employees and a contract bookkeeper.

Branch #92 facilities, in addition to being used for Legion functions, are available to other Salt Spring Island community clubs and services as a cost-effective venue for meetings and events. Branch facilities are also available as a location for private functions and memorials.

The Branch has an integral role for the island in the event of an emergency. The Salt Spring Island Emergency Preparedness supply container is located on the Branch's property and the Branch is a designated emergency muster point and shelter for several of the island's emergency pods. Finally, the Branch's lower floor is a designated back- up location for Lady Minto Hospital if required.

Tax History

While the Branch manages to remain solvent, it is under regular and continual financial pressure. An exemption from paying property taxes would lessen this financial pressure significantly. As a result, the Branch will be able to continue with its good work and contributions to the Salt Spring Island community; avoiding possible service cutbacks, reduced employment or increased prices.

Tax exemption under Section 391(3)(a) of the *Local Government Act* is respectfully requested. If additional information about this request is required, please contact the undersigned.

Yours truly,

Tom Woods

President, Royal Canadian Legion Branch #92 (Salt Spring Island)

Enclosure: Copy of 2020 Property Assessment Notice

cc: Gary Holman, CRD Salt Spring Island Electoral Area Director

BC ASSESSMENT

IMPORTANT INFORMATION FOR PROPERTY IDENTIFICATION

Area: 01-Capital
Jurisdiction: 764-Gulf Islands Rural
Roll: 00655.001

CONFIDENTIAL PIN: 0001048708

School District: 64-Gulf Islands
Neighbourhood: 810

2020 PROPERTY ASSESSMENT NOTICE

Property Location & Description

120 BLAIN RD
LOT A, PLAN VIP11826, SECTION 4, RANGE 3E, COWICHAN LAND DISTRICT, PORTION NORTH SALT SPRING, EXCEPT PLAN VIP64146
PID: 000-553-387

2020 Assessment -- represents your property value as of July 1, 2019

Assessed Value	Value	Class
Land	322,000	Business/Other
	94,500	Rec/Non Profit
Buildings	79,700	Business/Other
	70,700	Rec/Non Profit
2020 Assessed Value	**$566,900**	

Taxable Value	Rural
Less Exemptions	175,200
2020 Taxable Value	**$391,700**

Important messages about your 2020 Assessment

- The tax exemptions applied to your property value have changed from last year. This may result in a change to your property taxes in 2020.
- 2020 tax rates will be set in May. For tax information, please go to gov.bc.ca/ruralpropertytax

The Assessment Office for this property is:

Victoria Assessment Office
102-3350 Douglas St
Victoria BC V8Z 7X9
01-64-764-00655.001

The Owner/Lessee of this property is:

140285

S-03
ROYAL CANADIAN LEGION SALT SPRING ISLAND BRANCH NO. 092
120 BLAIN RD
SALT SPRING ISLAND BC V8K 2P7

This is not a tax notice. Tax notices are issued by local governments and taxing authorities.

This notice contains important information about your property. Please review and keep for your records. No action is required unless you disagree with your assessment.

YOUR PROPERTY VALUE HISTORY

2020	-13%	$566,900
2019	+24%	$652,000
2018	-2%	$527,700
2017	-10%	$536,600

Visit **bcassessment.ca/propertytax** and refer to the back page to learn how your value change relates to your property taxes.

IMPORTANT DATES

July 1, 2019
Assessed value is the property's market value as of this date.

October 31, 2019
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Important information about the complaint process can be found on the back page.

CONTACT US

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Salt Spring Island Golf & Country Club
P.O. Box 242 Ganges Post Office
Salt Spring Island, B.C. V8K 2V9
Telephone: 250-537-2121
Fax: 250-537-2126
Email: president@saltspringgolf.com
Web Site: www.saltspringgolf.com

Date: Aug 5th, 2020

General Manager Corporate Services
Capital Regional District
PO Box 1000, 625 Fisgard Street
Victoria, BC V8W 2S6

To the General Manager Corporate Services,

The Salt Spring Island Golf and Country Club (SSIGCC) gratefully acknowledges our first permissive tax exemption for the year 2020 and respectfully requests relief from property taxes for the year 2021 under Section 391(4)(a) of the Local Government Act.

Background:

While best known for the golf course that was first opened here on Salt Spring Island in 1928, residents and visitors currently enjoy a variety of recreational activities on the property, including golf, tennis, squash, disc golf and a restaurant. The tennis and squash facilities are operated by not-for-profit societies under contractual agreements with the Golf Club. Disc golf is played on and around the golf course layout itself. The golf course, indoor tennis and squash facilities provide the only public access to these activities on Salt Spring (there is outdoor tennis elsewhere).

The Salt Spring Golf and Country Club is a not-for-profit society incorporated under the B.C. Societies Act. Title to the property is held by non-society Salt Spring Recreational Holdings Ltd (SSRHL) which leases it to majority shareholder SSIGCC. The property tax is paid by SSIGCC on behalf of SSRHL.

Public Use of the Facilities:

Typically, there are about 16,000 9-hole rounds played on the course per year, with 6,000 rounds being played by public greens-fee paying residents or visitors to the island. Our junior, intermediate, regular and social members play the bulk of the remaining rounds with about 300 members currently in the above categories. Our driving range and putting green facilities are also a popular public attraction. Disc golf was brought to the club recently in partnership with the local disc golf club and has also expanded the appeal of the club to the general public.

Contributions to the Community:

The facility is widely used for charitable fundraising events as well as supporting many on-site and off-site programs for various community groups. In a typical year we would see programs such as free beginner golf

lessons for the public, a junior golf program, and high school use of the driving range. A new program in 2019 provided weekly instruction to 14 Special Olympics athletes here on Salt Spring.

During the windstorm of December 2018, our facilities were used as an unofficial emergency site and we continue to work with the Salt Spring Island Emergency Coordinator as a potential public reception centre.

The club currently provides 11 staff positions (the majority seasonal/part-time positions to local residents while substantial volunteer effort supplements maintenance and administration activities. The club works with local businesses to promote tourism. Several tournaments (including disc golf) bring participants from off-island for a day or more.

Financial Background and Covid-19 Update:

On March 22nd, 2020, the club shut down in response to the pandemic. On April 25th , it cautiously re-opened under guidance from, and support of, health and government officials, while following a series of strict protocols and limited play. By late May, the general public was able to enjoy our facility again with continuously monitored and updated sanitizing and distancing rules in place. The re-opening was met with an enthusiastic response as one of the initial outdoor recreational options available to residents.

The club's not-for-profit fee structure is geared towards covering operating costs without the use of public funding. Demand for repair or replacement of our aging clubhouse assets and maintenance equipment is a challenge and often requires fund-raising or donations. An exemption on eligible property tax would be of great assistance in continuing and enhancing the community's enjoyment of this historic Salt Spring Island recreational hub.

Sincerely,

Drew Stotesbury
President, Salt Spring Island Golf and Country Club

David MacPherson
President, Salt Spring Recreational Holdings Ltd

Contact: Jim Shultz jim@saltspringgolf.com
Enclosures: 2020 Property Assessment Notice

RECEIVED 01/03/20

BC ASSESSMENT

IMPORTANT INFORMATION FOR PROPERTY IDENTIFICATION

Area: 01-Capital
Jurisdiction: 764-Gulf Islands Rural
Roll: 00481.000

CONFIDENTIAL PIN: 0001060821

School District: 64-Gulf Islands
Neighbourhood: 810

2020 PROPERTY ASSESSMENT NOTICE

Property Location & Description

805 LOWER GANGES RD
SECTION 5, RANGE 2, COWICHAN LAND DISTRICT, EXCEPT PLAN 2183 39530, RGE 2E, N SALT SPRING ISLAND, EXC PT IN PLANS 2183 & 39530; SECTION 6, RANGE 2, COWICHAN LAND DISTRICT, EXCEPT PLAN 14185, RGE 2E, N SALT SPRING ISLAND, EXC THE EASTERLY 6.75 CHAINS THEREOF; EXC PCL B (DD 77036I), & EXC PT IN PL 14185
PID: 009-600-451 009-600-426

2020 Assessment - represents your property value as of July 1, 2019

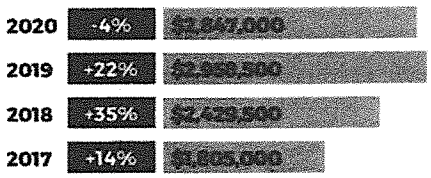
Assessed Value	Value	Class
Land	61,000	Business/Other
	1,914,000	Rec/Non Profit
Buildings	872,000	Business/Other
2020 Assessed Value	**$2,847,000**	

Taxable Value	Rural
Less Exemptions	2,847,000
2020 Taxable Value	**NIL**

This is not a tax notice. Tax notices are issued by local governments and taxing authorities.

This notice contains important information about your property. Please review and keep for your records. No action is required unless you disagree with your assessment.

YOUR PROPERTY VALUE HISTORY



Visit **bcassessment.ca/propertytax** and refer to the back page to learn how your value change relates to your property taxes.

IMPORTANT DATES

July 1, 2019
Assessed value is the property's market value as of this date.

October 31, 2019
Assessed value reflects property's physical condition and permitted use as of this date.

JAN 31 **DEADLINE FOR FILING A NOTICE OF COMPLAINT (APPEAL) IS JANUARY 31, 2020**

Important information about the complaint process can be found on the back page.

Important messages about your 2020 Assessment

- 2020 tax rates will be set in May. For tax information, please go to gov.bc.ca/ruralpropertytax

The Assessment Office for this property is:

Victoria Assessment Office
102-3350 Douglas St
Victoria BC V8Z 7X9
01-64-764-00481.000

The Owner/Lessee of this property is:

139766

S-03
SALT SPRING REC HOLDINGS
PO BOX 242 STN GANGES
SALT SPRING ISLAND BC V8K 2V9

CONTACT US

For more information about your Assessment Notice go to **bcassessment.ca**

From our website you can search for your property, compare your assessment and update your mailing address.

Call us at **1-866-valueBC** (1-866-825-8322) or 604-739-8588.

Before using information in this Notice for non-assessment purposes, please verify records with your Land Title Office. Wherever words or expressions used in this Notice differ from wording of the legislation, the legislation shall prevail. This information is current as of printing deadline.

We Value BC

FOLLOW US

139766_1_2

BCA_PROP_ANOT_20_STD_20191206

August 11, 2020

Capital Regional District
625 Fisgard Street
Victoria, B.C.
V8W 2S6

Re: Permissive Tax Exemption for 720- Active Pass Drive, Galiano BC
Elizabeth Kennedy's Life Estate

I am writing to respectfully request relief from property taxes for year 2021 under Section 391 (4) (g) of the *Local Government Act*.

Our family has owned property on Galiano Island since 1962. The property is over 9 acres in area and is situated on Active Pass at Collinson Point at the western entrance to the Pass. It has a cliff of about 125 feet at the water. The property contains a house, work shop, garage storage for wood and garden tools. There is an extensive garden - about 2 acres and an irrigation system.

Betty Kennedy donated the property to the CRD in 2015, and retained a life interest for herself and I. My primary home is in Oak Bay. Betty Kennedy used to care for the garden until her failing health and arthritis when she was no longer able to do the work. When she donated the property for a park to the CRD she set up an additional trust fund of $300,000, the income from which was to maintain the garden and buildings.

The property was donated to the CRD for Community Park purposes. The house and garden on the property were used during Betty's lifetime by the Galiano Parks and Recreation Commission of the CRD for various social functions and occasional garden tours by the public. These uses have stopped since Betty's death, but might resume when the Covid 19 pandemic has substantially diminished.

The maintenance is high which is why Betty set up a trust fund. But at the rate the assessment has risen, all of the income will be going for taxes. Interestingly, the increased assessment is based on properties which have been sold, and that of course is an invalid comparison since this property can never be sold.

I am hoping to surrender my Life Interest before the end of 2021, at which time the GIPRC will take over maintaining the property, and inherit the balance of the trust fund Betty set up to assist them.

Please exempt this property from taxation in 2021 and in the future.

Sincerely,

Paul Longridge

Paul Longridge
1 -720 Active Pass Drive,
Galiano Island, BC V0N 1P0

BC ASSESSMENT

IMPORTANT INFORMATION FOR PROPERTY IDENTIFICATION

Area: 01-Capital
Jurisdiction: 764-Gulf Islands Rural
Roll: 02145.005

Bulk Mail: 7103
School District: 64-Gulf Islands
Neighbourhood: 935

2020 PROPERTY ASSESSMENT NOTICE

Property Location & Description

1720 ACTIVE PASS DR
LOT A, PLAN VIP15952, DISTRICT LOT 2&8, COWICHAN LAND DISTRICT, PORTION GALIANO ISLAND
PID: 004-601-009

2020 Assessment – represents your property value as of July 1, 2019

Assessed Value	Value	Class
Land	1,132,000	
Buildings	229,000	
2020 Assessed Value	**$1,361,000**	**Residential**
Taxable Value	**Rural**	
Less Exemptions	1,361,000	
2020 Taxable Value	**NIL**	

Important messages about your 2020 Assessment

- A copy of this Property Assessment Notice is sent to all owners
- 2020 tax rates will be set in May. For tax information, please go to gov.bc.ca/ruralpropertytax
- Visit bcassessment.ca and create a free account to unlock additional features such as favourites, comparisons and our interactive map.

The Assessment Office for this property is:

Victoria Assessment Office
102-3350 Douglas St
Victoria BC V8Z 7X9
01-64-764-02145.005

The Owner/Lessee of this property is:

162883

S-04
CAPITAL (REGIONAL DISTRICT)
ATTN FACILITIES MANAGER
PO BOX 1000 STN CENTRAL
VICTORIA BC V8W 2S6

This is not a tax notice. Tax notices are issued by local governments and taxing authorities.

This notice contains important information about your property. Please review and keep for your records. No action is required unless you disagree with your assessment.

YOUR PROPERTY VALUE CHANGE



Visit **bcassessment.ca/propertytax** and refer to the back page to learn how your value change and average change relate to your property taxes.

YOUR PROPERTY VALUE HISTORY

2020	-7%	$1,361,000
2019	+18%	$1,460,000
2018	+13%	$1,234,000
2017	+5%	$1,093,000

IMPORTANT DATES

July 1, 2019
Assessed value is the property's market value as of this date.

October 31, 2019
Assessed value reflects property's physical condition and permitted use as of this date.

DEADLINE FOR FILING A NOTICE OF COMPLAINT (APPEAL) IS JANUARY 31, 2020

Important information about the complaint process can be found on the back page.

CONTACT US

For more information about your Assessment Notice go to **bcassessment.ca**

From our website you can search for your property, compare your assessment and update your mailing address.

Call us at **1-866-valueBC** (1-866-825-8322) or 604-739-8588.

COPY

BCA_PROD_ANOT_20_CPYPDF_A01_20191206 162883_1_2

Before using information in this Notice for non-assessment purposes, please verify records with your Land Title Office. Wherever words or expressions used in this Notice differ from wording of the legislation, the legislation shall prevail. This information is current as of printing deadline.

Log in (https://www.bcassessment.ca/Home/LoginInfo/) Register (https://auth.bcassessment.ca/register)

BC ASSESSMENT

Understanding property classes and exemptions

BC Assessment places property in one or more of nine classes, typically based on the property's type or use. Municipal zoning does not determine property class, though it may be a factor in some cases.

The Property classes:

Class 1, Residential — single-family residences, multi-family residences, duplexes, apartments, condominiums, nursing homes, seasonal dwellings, manufactured homes, some vacant land, farm buildings and daycare facilities.

Class 2, Utilities — structures and land used for railway transportation, pipelines, electrical generation or transmission utilities, or telecommunications transmitters. This property class does not include gathering pipelines, offices or sales outlets.

Class 3, Supportive Housing —this property class only includes eligible supportive housing property that has been designated by Cabinet. Eligible supportive housing property is funded by the provincial government or a health authority for the provision of housing that includes on-site support services for persons who were previously homeless, at risk of homelessness, and who are affected by mental illness or who are recovering from drug or alcohol addictions or have other barriers to housing. For more information, visit Classifying Supportive Housing Property (/Services-products/property-classes-and-exemptions/classifying-supportive-housing-property).

Class 4, Major Industry — land and improvements (buildings and structures) of prescribed types of industrial plants, including lumber and pulp mills, mines, smelters, large manufacturers of specified products, ship building and loading terminals for sea-going ships.

Class 5, Light Industry — property used or held for extracting, processing, manufacturing or transporting products, including ancillary storage. Scrap metal yards, wineries and boat-building operations fall within this category. Exceptions include properties used for the production or storage of food and non-alcoholic beverages and retail sales outlets, which fall into Class 6. For more information, visit Light Industrial vs. Business and Other Property Classifications. (/Services-products/property-classes-and-exemptions/light-industrial-vs-business-and-other-property-classifications)

Class 6, Business Other — property used for offices, retail, warehousing, hotels and motels all fall within this category. This class includes properties that do not fall into other classes.

Class 7, Managed Forest Land — privately-owned, forest land managed in accordance with the *Private Managed Forest Land Act* or the *Forest and Range Practices Act*. Property owners in this class have an obligation to provide good resource management practices, such as reforestation, care of young trees, protection from fire and disease and sound harvesting methods.

For more information on managed forest land, consult the pages: Managed Forest Classification in British Columbia (/Services-products/property-classes-and-exemptions/managed-forest-classification-in-british-columbia) and How Managed Forest Land is Assessed (/Services-products/property-classes-and-exemptions/managed-forest-classification-in-british-columbia/how-managed-forest-land-is-assessed).

Class 8, Recreational Property, Non-profit Organization — includes two very different categories:

Recreational Land

- land used solely as an outdoor recreational facility for specific activities such as golf, skiing, tennis, public swimming pools, waterslides, amusement parks, marinas and hang gliding. Improvements on the land (such as a clubhouse) fall into Class 6.
- land in a rural area that is part of parcel used for overnight commercial accommodation that exists predominantly to facilitate specific outdoor recreational activities such as hunting, fishing and kayaking. Improvements on the land most likely fall within Class 6 (e.g. a hotel).

Non-Profit Organization Land and Improvements

- property used or set aside for at least 150 days per year as a place of public worship or as a meeting hall by a non-profit, fraternal organization. The 150 days cannot include activities with paid admission or the sale/consumption of alcohol.
- additionally, the 150 days needs to be in the year ending on June 30 of the calendar year preceding the calendar year for which the assessment roll is being prepared.

Class 9, Farm — to qualify as farm for assessment purposes, the land must produce a prescribed amount of qualifying primary agricultural products for sale, such as crops or livestock. Farm buildings come within Class 1. For more information on farm land, visit Classifying Farm Land (/Services-products/property-classes-and-exemptions/farm-land-assessment).

Split Classification

Property with several distinct uses can fall into more than one class. For example, commercial and residential space might be combined in one building, or a property combines residential, farm and forest land. In these cases, BC Assessment determines the share of the value of the property attributable to each class.

Exemptions from Property Tax

BC Assessment is required to determine the "actual value" of land and improvements (i.e., property) in the Province. However, property taxes are levied on a property's "taxable value", not its actual value. "Taxable value" is a property's actual value minus the value of any tax exemptions.

What is a tax exemption?

A tax exemption is a tool that reduces or eliminates liability to property tax. In a few unusual situations property may be exempt from assessment, in which case it is not included on the assessment roll. But more commonly, property is assessable (i.e., included on the roll) but exempt from property tax in whole or in part. This page focuses on exemptions from property tax.

How exemptions work

Exemptions from property tax operate in a number of different ways. Exemptions may be whole or partial; that is, they may exempt all or only part of a property from taxes, or they may provide relief from all or only some property taxes. In all cases, specified criteria such as ownership, use, location, or property type, must be met before an exemption applies. In some cases, the discretion to grant or deny an exemption lies with the taxing jurisdiction.

Look up tax exemptions

The majority of property tax exemptions are contained in taxing statutes such as the *Community Charter*, the *Vancouver Charter*, the *Local Government Act* and the *Taxation (Rural Area) Act*. However, exemptions are also set out in more subject-specific legislation such as the *School Act*, the *Health Authorities Act* or the *University Act*.

Examples of exemptions providing full relief from property taxes

• Property owned by the federal or provincial government is fully exempt from property taxes for all purposes: section 125 of the *Constitution Act*.
• Property owned by a municipality is fully exempt from property taxes for all purposes: section 220(1)((b) of the *Community Charter*; and section 131(1) of the *School Act*.

Examples of exemptions providing partial relief from property taxes

• A farmer's dwelling in a rural area is exempt from provincial general property taxes, but subject to school taxes: section 15(1)(f) of the *Taxation (Rural Area) Act*; and section 131(4)(a) of the *School Act*.
• Up to $10,000 of the assessed value of improvements in Class 4 – major industry, Class 5 – light industry and Class 6 – business and other is exempt from all property taxes: Industrial and Business Property Exemption Regulation, made under the *Community Charter*.
• 50% of the assessed value of a parcel of land in Class 9 – farm is exempt from school taxes: section 130(1)(a) of the *School Act*.

This information is not intended to be a comprehensive guide on exemptions from property tax.

More information

More information about property taxation and exemptions can also be found at the following provincial government links:

1) Municipalities - http://www.cscd.gov.bc.ca/lgd/finance/property_tax.htm (http://www.cscd.gov.bc.ca/lgd/finance/property_tax.htm)

2) Rural areas - BC Government Website - Rural Area (http://www2.gov.bc.ca/gov/topic.page?id=BBB16B457CFA4B718448F04493368F9A&title=Rural%20Area)

Making a difference...together

EEP 20-45

REPORT TO ELECTORAL AREAS COMMITTEE
MEETING OF WEDNESDAY, OCTOBER 14, 2020

SUBJECT **Salt Spring Island – Stormwater Quality Service Bylaw Amendment**

ISSUE SUMMARY

The Salt Spring Island Stormwater Quality Service establishing bylaw requires an amendment to set a maximum requisition suitable for future enhanced service delivery.

BACKGROUND

Bylaw No. 2454, *Salt Spring Island Stormwater Quality Management Extended Service Establishment Bylaw No. 1, 1996* (Appendix A) established a service for the control of pollution in stormwater runoff from land within the Salt Spring Island Electoral Area but did not set a maximum requisition for the service. Bylaw No. 4178 (Amendment No. 1, Appendix B) expanded the scope of the service in 2017 to include watershed and groundwater assessment and protection, as well as reclaimed water investigation and implementation programs and added a maximum requisition clause.

The Salt Spring Island (SSI) Electoral Area Director has requested staff amend the service establishment bylaw with a new maximum requisition, in order to provide funding for special projects, and to add a standard clause to tie maximum requisition to net taxable value of land and improvements. This amendment expands the ways that the service can accept revenue in order to allow alternate funding mechanisms, if needed for the benefit of the service. The proposed amending Bylaw No. 4360, ***Salt Spring Island Stormwater Quality Management Extended Service Establishment No. 1, 1996, Amendment Bylaw No. 2, 2020*** (Appendix C) incorporates these changes.

ALTERNATIVES

Alternative 1

The Electoral Areas Committee recommends to the Capital Regional District Board:

1. That Bylaw No. 4360, "Salt Spring Island Stormwater Quality Management Extended Service Establishment No. 1, 1996, Amendment Bylaw No. 2, 2020" be introduced and read a first, second and third time; and
2. That Bylaw 4360 be referred to the SSI Electoral Area Director for consent and upon receiving consent, be referred to the Inspector of Municipalities for approval.

Alternative 2

That Bylaw No. 4360 be referred back to staff for further review.

IMPLICATIONS

Financial Implications

This amendment raises the maximum requisition for the service by 25% from $27,500 to $34,365, which allows for increasing the annual requisition for the service at the request of Salt Spring Island Electoral Area Director in the future. No increase is planned for the 2021 service budget beyond what is currently allowed under Bylaw No. 4178.

Service Delivery Implications

This available increase in requisition will provide future financial flexibility to fund special projects or enhance service delivery, if needed in future years.

CONCLUSION

The Salt Spring Island Electoral Area Director has requested an amendment to the Salt Spring Island Stormwater Quality Service establishing bylaw to increase the maximum requisition, in order to have flexibility for requisitioning funds in future years for enhanced service delivery. This amendment raises the maximum requisition by 25% to $34,365 for potential use after 2021. After it is given introduction through to third reading by the Board, Bylaw No. 4360 will be sent to the Province of BC, Inspector of Municipalities for approval, prior to adoption.

RECOMMENDATION

The Electoral Areas Committee recommends to the Capital Regional District Board:

1. That Bylaw No. 4360, "Salt Spring Island Stormwater Quality Management Extended Service Establishment No. 1, 1996, Amendment Bylaw No. 2, 2020" be introduced and read a first, second and third time; and
2. That Bylaw 4360 be referred to the SSI Electoral Area Director for consent and upon receiving consent, be referred to the Inspector of Municipalities for approval.

Submitted by:	Glenn Harris, Ph.D., R.P.Bio, Senior Manager, Environmental Protection
Concurrence:	Kristen Morley, J.D., General Manager, Corporate Services & Corporate Officer
Concurrence:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENTS

Appendix A: Bylaw No. 2454, *Salt Spring Island Stormwater Quality Management Extended Service Bylaw Establishment No. 1, 1996*
Appendix B: Bylaw No. 4178, *Salt Spring Island Stormwater Quality Management Extended Service Bylaw Establishment No. 1, 1996, Amendment Bylaw No. 1, 2017*
Appendix C: Bylaw No. 4360, *Salt Spring Island Stormwater Quality Management Extended Service Bylaw Establishment No. 1, 1996, Amendment Bylaw No. 2, 2020*

APPENDIX A

CAPITAL REGIONAL DISTRICT

BYLAW NO. 2454

****

A BYLAW TO ESTABLISH AN EXTENDED SERVICE AREA WITHIN THE SALT SPRING ISLAND ELECTORAL AREA OF THE CAPITAL REGIONAL DISTRICT FOR THE PURPOSE OF CONTROL OF POLLUTION IN STORMWATER RUNOFF

****

WHEREAS the Regional Board of the Capital Regional District may, by bylaw, establish and operate an extended service under section 789 (1) (b) of the *Municipal Act* for control of pollution;

AND WHEREAS the Regional Board wishes to establish an extended service for the purpose of controlling pollution in stormwater runoff from land by means of investigation, monitoring and reporting on stormwater quality, sediment quality, near-shore marine waters and discharges to stormwater; prioritization of areas for investigation; public education; coordination of stormwater quality management programs; liaison with other government agencies and other related activities;

AND WHEREAS the Regional Board pursuant to section 800 (1) (b) of the *Municipal Act* has waived the assent requirement of section 795 (2) (a) (i);

AND WHEREAS the Director for the Electoral Area of Salt Spring Island pursuant to section 800 (2) of the *Municipal Act* has consented in writing to adoption of this Bylaw;

AND WHEREAS the approval of the Inspector of Municipalities is required under section 795 (1) (a) of the *Municipal Act*.

NOW THEREFORE the Regional Board of the Capital Regional District in open meeting assembled ENACTS AS FOLLOWS:

1. **Extended Service**

   (a) The extended service being established, and to be operated, is the control of pollution in stormwater runoff from land.

   (b) In this bylaw, "stormwater runoff" includes seepage, overland flow and stormwater runoff within ditches, streams, rivers, ponds, lakes and other watercourses.

2. **Service Area**

   The boundaries of the service area are the boundaries of the Electoral Area of Salt Spring Island.

3. **Participating Area**

   The participating area includes all of the Electoral Area of Salt Spring Island.

4. **Cost Recovery**

   The annual operating costs for the extended service, net of grants and other revenue, shall be recovered by either or both of the following:

   (a) the imposition of fees and other charges that may be fixed by separate bylaw;

(b) the requisition of money under section 809.1 of the *Municipal Act*, to be collected by a property value tax to be levied and collected under section 810.1 (1) of the *Municipal Act*.

5. This Bylaw may be cited as the "Salt Spring Island Stormwater Quality Management Extended Service Establishment Bylaw No. 1, 1996."

READ A FIRST TIME THIS	27th	day of	November	1996
READ A SECOND TIME THIS	27th	day of	November	1996
READ A THIRD TIME THIS	27th	day of	November	1996
RECEIVED CONSENT ON BEHALF OF THE ELECTORS UNDER SECTION 800 OF THE *MUNICIPAL ACT* THIS	27th	day of	November	1996
APPROVED BY THE INSPECTOR OF MUNICIPALITIES THIS	21st	day of	February	1997
ADOPTED THIS	26th	day of	February	1997

CHAIRPERSON

SECRETARY

FILED WITH THE INSPECTOR OF MUNICIPALITIES THIS 6th day of March 1997

CAPITAL REGIONAL DISTRICT

BYLAW NO. 4178

****

A BYLAW TO AMEND THE SALT SPRING ISLAND STORMWATER QUALITY MANAGEMENT EXTENDED SERVICE ESTABLISHMENT BYLAW NO. 1, 1996

****

The Board of the Capital Regional District in open meeting assembled, enacts as follows:

1. Bylaw No. 2454, the "Salt Spring Island Stormwater Quality Management Extended Service Establishment Bylaw No. 1, 1996" is hereby amended as follows:

   (a) By replacing section 1(a) in its entirety with the following:

   (a) The extended service is established to be operated for the following purposes:

   i. the control of pollution in stormwater runoff from land;
   ii. watershed assessment, protection and enhancement;
   iii. groundwater monitoring, assessment, and protection;
   iv. investigation and implementation of reclaimed water programs; and
   v. other related activities.

   (b) By adding subsection (c) to section 1 as follows:

   (c) In this bylaw, "reclaimed water" means water that is used more than one time before it passes into the natural water cycle.

   (c) By renumbering section 5 as section 6 and adding a new section 5 as follows:

   "**5. Maximum Requisition**

   In accordance with Section 339 of the *Local Government Act*, the maximum amount that may be requisitioned annually for the cost of the Service is $27,500.00."

2. This bylaw may be cited as the "Salt Spring Island Stormwater Quality Management Extended Service Establishment Bylaw No. 1, 1996, Amendment Bylaw No. 1, 2017."

READ A FIRST TIME THIS	10th	day of	May	2017
READ A SECOND TIME THIS	10th	day of	May	2017
READ A THIRD TIME THIS	10th	day of	May	2017
THIRD READING RESCINDED, AMENDED AND READ A THIRD TIME THIS	12th	day of	July	2017
CONSENTED TO BY THE DIRECTOR OF THE ELECTORAL AREA OF SALT SPRING ISLAND THIS	12 th	day of	July	2017
APPROVED BY THE INSPECTOR OF MUNICIPALITIES THIS	29 th	day of	August	2017

ADOPTED THIS 11th day of October 2017

CHAIR

CORPORATE OFFICER

FILED WITH THE INSPECTOR OF MUNICIPALITIES THIS th 14 day of Nov. 2017

CAPITAL REGIONAL DISTRICT

BYLAW NO. 4360

****

A BYLAW TO AMEND THE SALT SPRING ISLAND STORMWATER QUALITY MANAGEMENT EXTENDED SERVICE ESTABLISHMENT BYLAW NO. 1, 1996

****

WHEREAS:

A. Under Bylaw No. 2454, Salt Spring Island Stormwater Quality Management Extended Service Establishment Bylaw No. 1, 1996, the Regional Board has established a bylaw for the control of pollution in stormwater runoff from land;

B. The Board of the Capital Regional District wishes to amend Bylaw No. 2454 to properly detail and set a maximum requisition for the service;

C. Pursuant to sections 347 and 349 of the *Local Government Act*, the Electoral Area Director may consent on behalf of the electors to an establishing bylaw amendment;

NOW THEREFORE, the Board of the Capital Regional District in open meeting assembled hereby enacts as follows:

1. Bylaw No. 2454, Salt Spring Island Stormwater Quality Management Extended Service Establishment Bylaw No. 1, 1996, is hereby amended as follows:

(a) by replacing section 4 in its entirety with the following:

4. Cost Recovery

The annual costs for the Service may be recovered by the following:

a) by the requisition of money under Section 385 and 387 of the *Local Government Act* to be collected by a property value tax, based on land and improvements levied and collected under Section 386 and 388 of the *Local Government Act*;

b) fees and charges imposed under Section 397 of the *Local Government Act*;

c) revenues raised by other means authorized under the *Local Government Act* or another Act; or

d) revenues received by agreement, enterprise, gift, grant or otherwise.

(b) by replacing Section 5 in its entirety with the following:

5. Maximum Requisition

In accordance with Section 339 of the *Local Government Act*, the maximum amount that may be requisitioned annually for the cost of the Service is the greater of:

a) Thirty-four Thousand, Three Hundred and Sixty-Five Dollars ($34,365); or

b) a property value tax rate of 0.007805 Dollars per One Thousand Dollars ($1,000) that, when applied to the net taxable value of land and improvements in the Service Area, will yield the maximum amount that may be requisitioned for the Service.

2. This bylaw may be cited for all purposes as “Salt Spring Island Stormwater Quality Management Extended Service Establishment Bylaw No. 1, 1996, Amendment Bylaw No. 2, 2020".

READ A FIRST TIME THIS	th	day of	2020
READ A SECOND TIME THIS	th	day of	2020
READ A THIRD TIME THIS	th	day of	2020
CONSENTED TO BY THE DIRECTOR OF THE ELECTORAL AREA OF SALT SPRING ISLAND THIS	th	day of	2020
APPROVED BY THE INSPECTOR OF MUNICIPALITIES THIS	th	day of	2020
ADOPTED	th	day of	2020

CHAIR

SECRETARY

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EFE 20-43

REPORT TO ENVIRONMENTAL SERVICES COMMITTEE
MEETING OF WEDNESDAY, SEPTEMBER 16, 2020

SUBJECT **Hartland Traffic Study – Follow Up**

ISSUE SUMMARY

To report back on the cost analysis of a shorter passing lane on Willis Point Road, the impacts of changing the commercial vehicle access to Hartland Landfill in the near future, and current season traffic study results.

BACKGROUND

On July 15, 2020, the Environmental Services Committee (ESC) received the Bunt & Associates *Hartland Landfill Alternate Access Transportation Impact Analysis* and the Stantec *Opinion of Probable Cost* for the Willis Point Road truck passing lane for information. The ESC recommended to the Capital Regional District (CRD) Board that staff report back to the ESC on the following items:

1. the cost estimate of a shorter passing lane on Willis Point Road
2. operational reasons for relocating commercial vehicle road access to the landfill
3. additional consulting plan for the residents of Willis Point Road and Highlands; and
4. a current season traffic study as an update to the Bunt & Associates report.

On August 12, 2020, the CRD Board approved items 1,2, and 4 and tabled item 3 for consideration at its September 9 meeting.

In response to this direction, staff retained Stantec Consulting Ltd. (Stantec) to develop high-level cost estimates for a shorter passing lane on Willis Point Road and retained Bunt & Associates to evaluate the impacts for vehicle movement through the landfill site and compare to changing the commercial vehicle access to the Willis Point route, and also to conduct current seasonal traffic studies on Willis Point Road and Hartland Avenue.

ALTERNATIVES

Alternative 1

The Environmental Services Committee recommends to the Capital Regional District Board:

1. That the revised Stantec *Opinion of Probable Cost* for the Willis Point Road truck climbing lane options and the revised Bunt & Associates *Hartland Landfill Alternate Access Transportation Impact Analysis* be received for information; and
2. That these materials be incorporated into future public consultation for the draft Solid Waste Management Plan.

Alternative 2

That staff be directed to provide additional information.

IMPLICATIONS

Financial Implications

The Stantec report breaks down the previous cost estimate to determine an estimate for a shorter passing lane on Willis Point Road between Wallace Drive and the north access point to the landfill. There are two locations that can accommodate a passing lane at a lower cost per metre. The Opinion of Probable Cost can be found in Appendix A and the concept drawings can be found in Appendix B. The two locations are shown in Appendix C. Stantec's revised Opinion of Probable Cost for passing lane option 1 is $1,524,922 and for option 2 is $920,417.

Currently, the CRD pays approximately $80,000 annually for snow removal service on Hartland Avenue and a similar cost for this service would be expected on Willis Point Road.

Operational Implications

Within the landfill footprint, the location of the active face (where waste is disposed) has been shifting progressively northwestward, within the existing property, for a number of decades. In 1985, when the CRD took over operations of the landfill, the location of the active face was in the southeast corner of the property, close to Hartland Avenue. The near future filling area is approximately 1.4 km northwest from this original filling location. As the active face moves within the property, vehicle access and onsite operations must also shift in order to maintain safe and efficient operations.

Figures 1 to 5 in Appendix D present the long-term conceptual filling plan for the landfill. The landfill will be developed in stages, called cells. Currently, active landfilling is occurring in Cell 3. A further three cells need to be developed over the course of the landfill life to 2048. The critical issue impacting traffic movement onsite is the elevation of Cell 3, versus that of Cells 4, 5 and 6. Cell 3 will reach a maximum elevation of 200 m, whereas the starting elevation of Cell 4 will be at 135 m. Commercial traffic will need to access this new filling elevation, which requires approaching the area from the north, as it is not possible to build an access road from the top of Cell 3 to the bottom of Cell 4 due to the 65 m (213 ft) elevation difference.

Traffic access, road infrastructure and the long-term filling plan must be planned cohesively to ensure safe and efficient operations. As the landfill is developed, if traffic does not approach from the north, the following safety and operational issues are created:

- safety concerns due to loaded trucks travelling excessively steep grades and sharp turns, increasing the probability for truck roll-overs and accidents
- no ability to create runaway lanes for trucks that lose breaking ability
- rebuilding of roadways to accommodate future blasting
- internal roads from the south will be buried in garbage and need to be rebuilt
- approaching from the south exposes traffic to higher risk activities and increases the potential for safety incidents on the site for patrons, contractors and landfill staff
- wide two-way, safe roadways are not possible to build from the south due to the location of other critical underground landfill gas and leachate infrastructure
- roadways from the south will have numerous areas that are out-of-sight and staff will not be able to monitor traffic as it moves through the site, leading to issues such as lost customers, U-turns, trespassing onto unsanctioned areas of the landfill and accidents
- access from the south would have to be partially constructed under the BC Hydro right of way and upgrades to this section may be limited based on the location of the BC Hydro infrastructure

By having traffic approach from the north, the following operational advantages are created:

- this route has the lowest grades, both internal and external to the landfill
- this route has the most appropriate turns and intersections
- this is the most direct route to the working face, which minimizes the potential interactions with the numerous on-site operational vehicles
- the main access route to the future cells will be maintained and won't be buried by garbage at any point in the future

Further to the operational and safety issues highlighted above, future relocation of the main entrance facilities at the north, in approximately 2040, would provide an opportunity to design a purpose built recycling facility at the north end of the site that would provide better access and customer service than the existing location. This relocation of the main entrance will remove all traffic from the south of the landfill, which would provide an opportunity to create a significantly enhanced gateway and user experience for mountain bikers and hikers accessing the trail network on Mount Work.

Transitioning the primary access to the north side of the landfill (Willis Point Road entrance) is critical for ensuring the safety of staff, contractors, and customers, the efficient movement of vehicles on-site, and for maximizing the lifespan of Hartland Landfill. Furthermore, if access is moved to Willis Point Road, the CRD will coordinate with the District of Saanich to reclassify Willis Point Road as a priority one service road (same designation as schools) for additional maintenance, snow removal and salting. Currently Hartland Avenue is cleared on a priority basis due to steep grades and heavy truck traffic accessing the landfill.

Social Implications

In addition to the onsite operational impacts of moving the access in the long-term, the offsite implications are addressed in the Bunt & Associates analysis in Appendix E. If commercial vehicle access is shifted to Willis Point Road, the average Willis Point Road driver could expect to see on average:

- 14 additional trucks per hour accessing the landfill between 7 am and 4 pm weekdays
- 5 additional trucks per hour accessing the landfill between 7 am and 2 pm Saturdays

Blasting contracts to create airspace at the landfill, as well as production of aggregate for use on site, have taken place for many years. The resulting rock has been stored on site until it is used in the landfilling process. In the next 3-4 years, a large amount of rock needs to be removed to create cells 4, 5 and 6. This large quantity, combined with the loss of the previous storage area to the Residuals Treatment Facility project, has presented a challenge to provide sufficient storage space on site. Staff have identified a new storage location within the Hartland site boundary that will provide sufficient storage for this large amount of rock. Planning to develop this location is underway and will involve clearing of up to 5 hectares of land within the next year. Completion of this new rock storage area in a timely manner will eliminate the need to remove surplus rock from the site and will provide the required aggregate for use in the landfilling process through to the year 2050.

As directed by the ESC, staff retained Bunt & Associates to complete a current season traffic study on Willis Point Road and Hartland Avenue. The hourly vehicle profiles for Willis Point Road and Hartland Avenue during summer 2020 show that the COVID-19 pandemic has significantly reduced the number of "travel to work and school" trips but has increased the number of recreational trips. The total number of vehicles using Hartland Avenue was 40% higher in

July 2020 compared to March 2019, primarily due to increased use mid-day, and 42% higher for Willis Point Road in July 2020 compared to April 2019. The Bunt & Associates analysis recommends that the overall impact of relocating the landfill's vehicle access be based on non-summer period counts, as this represents 10 out of the 12 months of the year and is consistent with transportation planning best practices. However, even with the higher volumes, Willis Point Road still has less than 75% of the vehicles of a typical rural collector road and is forecast to remain below capacity, even if all landfill access is relocated to Willis Point Road.

Figures 1 and 2 below illustrate the portion of summer traffic on Hartland Avenue and Willis Point Road on the peak summer Saturday during COVID-19 for three scenarios:

- Scenario 1: all traffic uses Hartland Avenue
- Scenario 2: commercial traffic uses Willis Point and residential traffic uses Hartland Avenue
- Scenario 3: all traffic uses Willis Point

It is clear from the data that Hartland Avenue is currently over capacity and that Willis Point remains well below capacity under all scenarios, including the potential addition of periodic trucking for surplus rock removal.

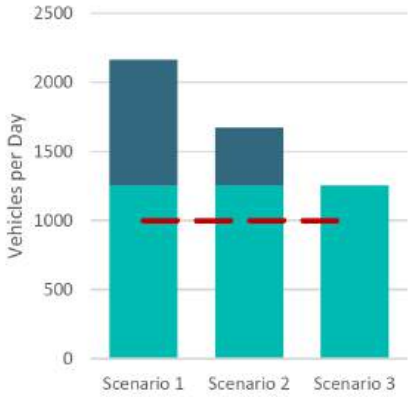


Figure 1 – Hartland Avenue summer 2020 traffic

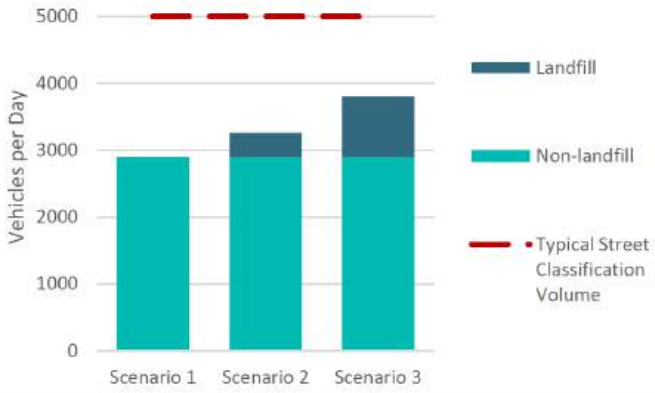


Figure 2 – Willis Point Road summer 2020 traffic

With regards to a potential passing lane on Willis Point Road, based on engineering design guidelines, 2017, 2019 and summer 2020 traffic studies, and concerns around speeding and safety, the revised Bunt & Associates traffic study maintains that a passing lane of any length is not recommended. The District of Saanich, the approving jurisdiction for roadway changes along Willis Point Road, concurs with this recommendation. There is a direct relationship between the width of a street and the speed in which drivers choose to travel. Adding a passing lane on Willis Point Road is anticipated to further increase vehicle speeds where the average speed is already above the speed limit. It is noted that, at this location, over 75% of westbound (uphill) vehicles were observed exceeding the 60 km/h speed limit during the summer traffic study.

With regards to travel time impacts, the Option 1 passing lane would allow westbound through vehicles to pass the landfill 15 seconds quicker. Option 2 allows landfill bound vehicles to exit the westbound lane on Willis Point Road 450 m sooner compared to the existing left-turn lane and would reduce travel times of westbound through vehicles by up to 4 seconds.

Environmental & Climate Implications

Previous vehicle emissions analysis presented at the July 15 Environmental Services Committee meeting did not include emissions associated with vehicle travel within the landfill property. The

revised analysis includes these emissions, and results from modelling indicate that the Willis Point Road access scenarios have marginally lower greenhouse gas emissions (3-5% lower). The difference in emissions was estimated using the SimTraffic traffic analysis model, which considers vehicle volume, speed, driving distances and street grades. The reduction in greenhouse gas emissions is primarily created by commercial vehicles being able to access the landfill's active face using flatter higher speed roads (Wallace Drive and Willis Point Road) compared to steeper lower speed roads (Hartland Avenue and internal landfill roads).

CONCLUSION

In response to the Environmental Services Committee's direction at its July 15 meeting, staff engaged with two engineering firms to obtain cost estimates for shorter passing lane options on Willis Point Road, review the operational impacts of relocating road access to Hartland Landfill longer term, and conduct a current season traffic study. The results from the revised analysis, using both the latest traffic data and pre-COVID-19 data, found that a passing lane is not warranted, would increase speeding, and would cost $920,417 to $1,524,922, depending on the option selected. Moving the access to the landfill to the north enables staff, contractors and customers to access the landfill using the safest, and shortest internal route and ensures that operations can continue to follow the long-term filling plan, which maximizes the lifespan of Hartland Landfill. All of this information is recommended to be incorporated into the next stage of public consultation of the draft Solid Waste Management Plan.

RECOMMENDATION

The Environmental Services Committee recommends to the Capital Regional District Board:

1. That the revised Stantec *Opinion of Probable Cost* for the Willis Point Road truck climbing lane options and the revised Bunt & Associates *Hartland Landfill Alternate Access Transportation Impact Analysis* be received for information; and
2. That these materials be incorporated into future public consultation for the draft Solid Waste Management Plan.

Submitted by:	Stephen May, P. Eng., Senior Manager, Facilities Management & Engineering Services
Submitted by:	Russ Smith, Senior Manager, Environmental Resource Management
Concurrence:	Larisa Hutcheson, P. Eng., General Manager, Parks & Environmental Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENTS

Appendix A: Willis Point Road Truck Passing Lane Options 1 and 2 Class C – Opinion of Probable Cost (Stantec)
Appendix B: Willis Point Road Truck Climbing Lane Concept Drawings (Stantec)
Appendix C: Willis Point Road Truck Climbing Lane Options 1 and 2 Location Map
Appendix D: Hartland Long-term Conceptual Filling Plan
Appendix E: Hartland Landfill Alternate Access Transportation Impact Analysis (Bunt & Associates)

Willis Point Road

Truck Passing Lane - Option 1 - Class C - Opinion of Probable Cost

111720088 August 14, 2020

1.0 Civil Works	Unit	Quantity		Unit Price		Total
Mobilization/demobilization	LS	1	$	200,000	$	200,000
Traffic Control	LS	1	$	50,000	$	50,000
Environmental Protection	LS	1	$	25,000	$	25,000
Quality control/materials testing	LS	1	$	25,000	$	25,000
Sawcutting (2+495 to 3+142)	m	652	$	10	$	6,520
Asphalt milling and disposal	m2	326	$	20	$	6,520
Clearing and Grubbing (disposal at CRD site)	m2	5,466	$	5	$	27,330
Excavation and disposal (disposal at CRD site)	m3	3,735	$	50	$	186,750
Rock Excavation (disposal at CRD site)	m3	1,034	$	275	$	284,350
Subgrade Fill (provided by CRD)	m3	1,013	$	20	$	20,260
Base and subbase gravel (provided by CRD)	m3	1,133	$	20	$	22,660
Asphalt paving (80mm thick)	m2	2,500	$	75	$	187,500
Line Painting	m	1,956	$	5	$	9,780
Subtotal					**$**	**1,051,670**

Subtotal	$1,051,670
30% Contingency	$315,501
15% Project Management and Engineering	$157,751
Total	**$1,524,922**

Note: This estimate is preliminary for an order of magnitude cost for widening Willis Pt. Road from 430m west of Wallace Drive to create a 500m long truck passing lane.

Limits of Commission:
Whereas any opinions of probable cost prepared by Stantec Consulting Ltd. ("the Engineer") will be based on incomplete or preliminary information, and will also be based on factors over which the Engineer has no control, the Engineer does not guarantee the accuracy of these opinions of probable cost and shall have no liability where the probable costs are exceeded.

Stantec

By: KP
8/17/2020
111720088_opc.xlsx

Willis Point Road

Extended Turn Lane - Option 2 - Class C - Opinion of Probable Cost

111720088 August 14, 2020

1.0 Civil Works	Unit	Quantity		Unit Price		Total
Mobilization/demobilization	LS	1	$	200,000	$	200,000
Traffic Control	LS	1	$	50,000	$	50,000
Environmental Protection	LS	1	$	25,000	$	25,000
Quality control/materials testing	LS	1	$	25,000	$	25,000
Sawcutting (1+170 to1+590)	m	420	$	10	$	4,200
Asphalt milling and disposal	m2	210	$	20	$	4,200
Clearing and Grubbing (disposal at CRD site)	m2	3,620	$	5	$	18,100
Excavation and disposal (disposal at CRD site)	m3	3,322	$	50	$	166,100
Rock Excavation (disposal at CRD site)	m3	-	$	275	$	-
Subgrade Fill (provided by CRD)	m3	352	$	20	$	7,040
Base and subbase gravel (provided by CRD)	m3	674	$	20	$	13,480
Asphalt paving (80mm thick)	m2	1,538	$	75	$	115,350
Line Painting	m	1,260	$	5	$	6,300
Subtotal					**$**	**634,770**

Subtotal	$634,770
30% Contingency	$190,431
15% Project Management and Engineering	$95,216
Total	**$920,417**

Note: This estimate is preliminary for an order of magnitude cost for widening Willis Pt. Road from the start of the existing left turn lane into the CRD Residual Solids Treatment facility to create an additional 500m of storage.

Limits of Commission:
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Stantec

By: KP
8/17/2020
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CAPITAL REGIONAL DISTRICT

WILLIS POINT ROAD TRUCK CLIMBING LANE



Stantec Consulting Ltd.
400 655 Tyee Road
Victoria BC Canada
V9A 6X5
www.stantec.com
250.388.9161

OPTION 1

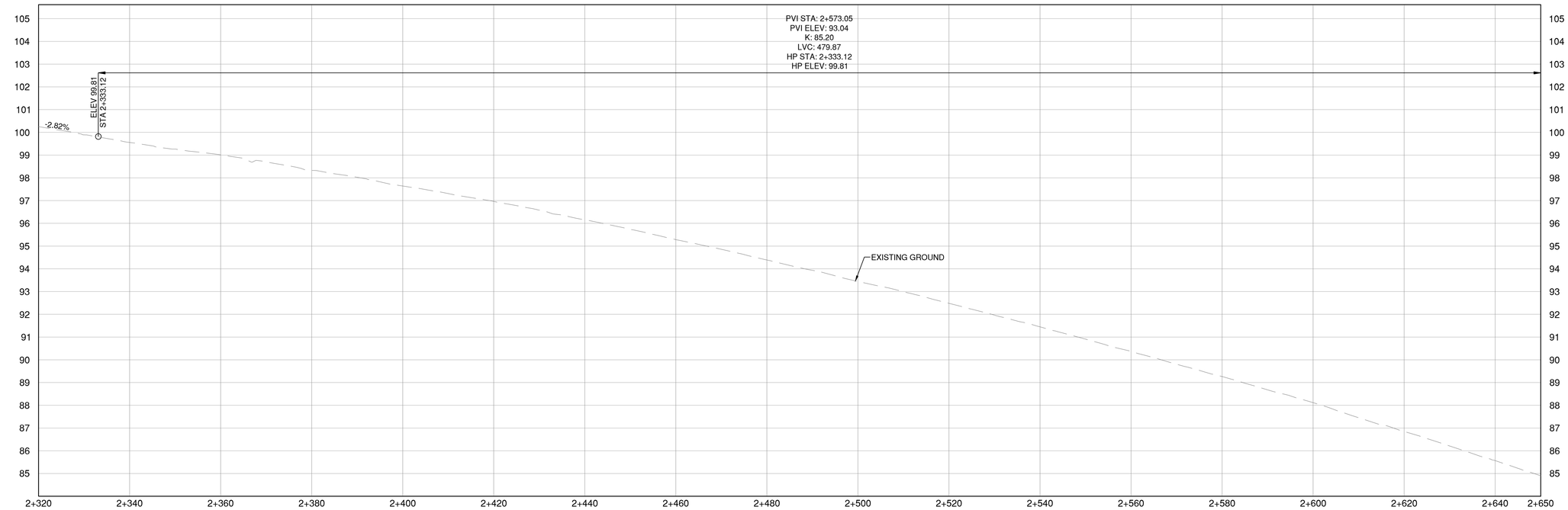
- 500m TRUCK CLIMBING LANE
- 1.5m PAVED SHOULDERS
- MAXIMUM GRADE 8.5%
- LENGTH OF ROAD WORK - 675m

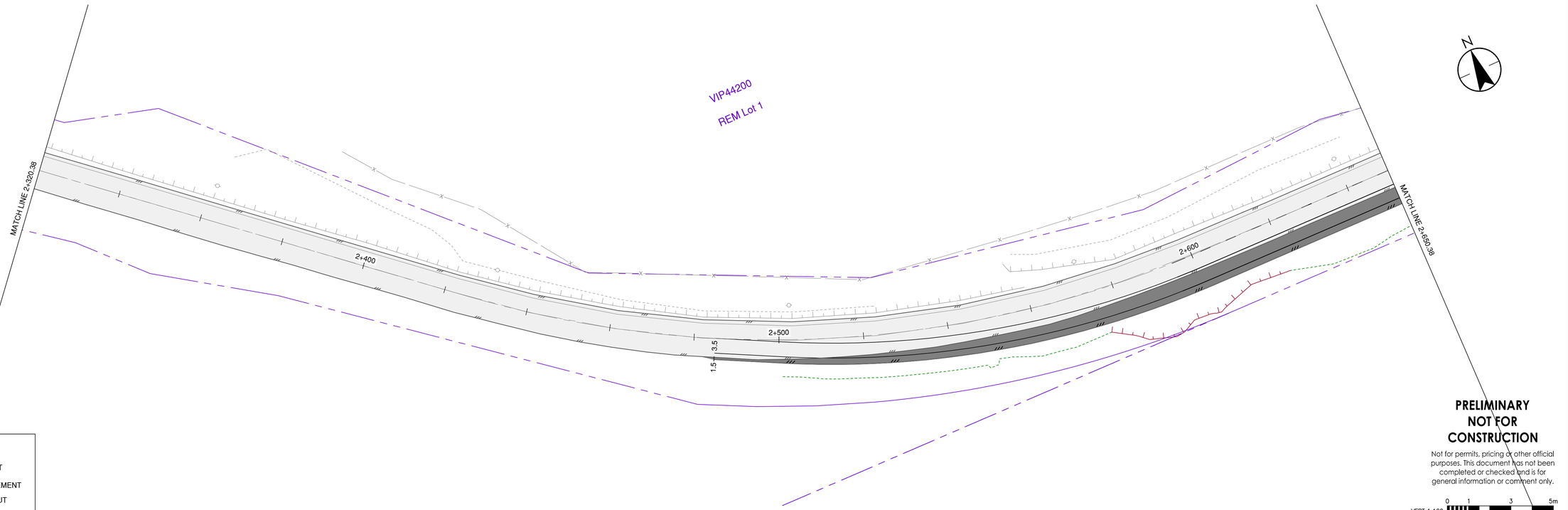
OPTION 2

- 500m ADDED TO LEFT TURN LANE
- 1.5m PAVED SHOULDERS
- MAXIMUM GRADE 4.4%
- LENGTH OF ROAD WORK- 485m

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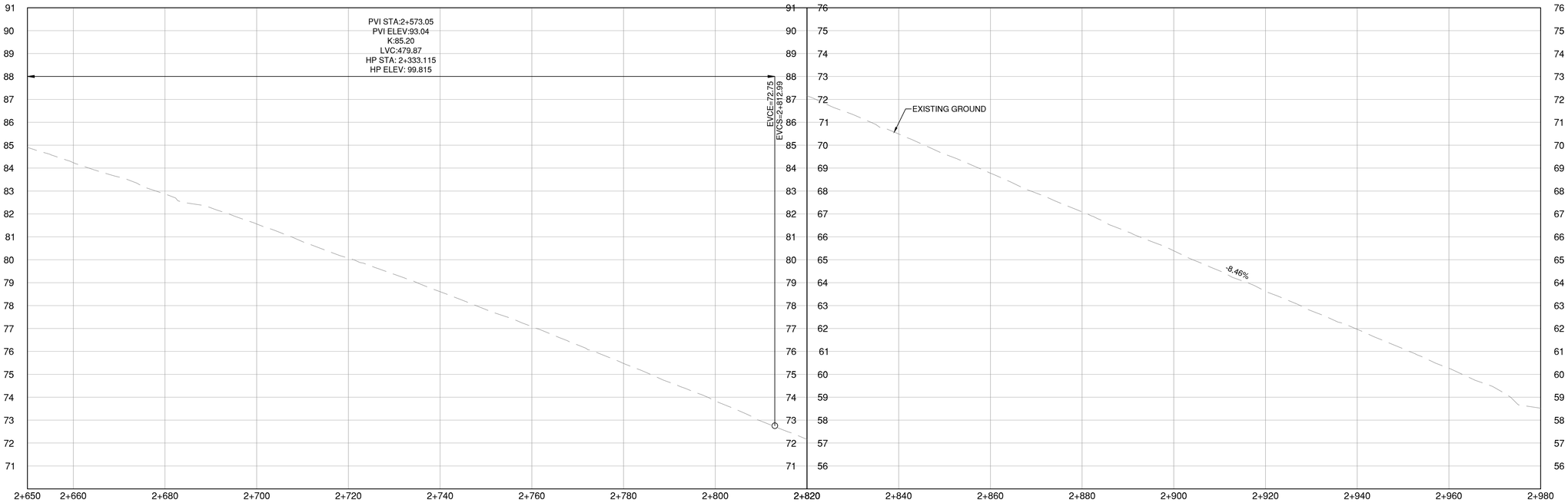
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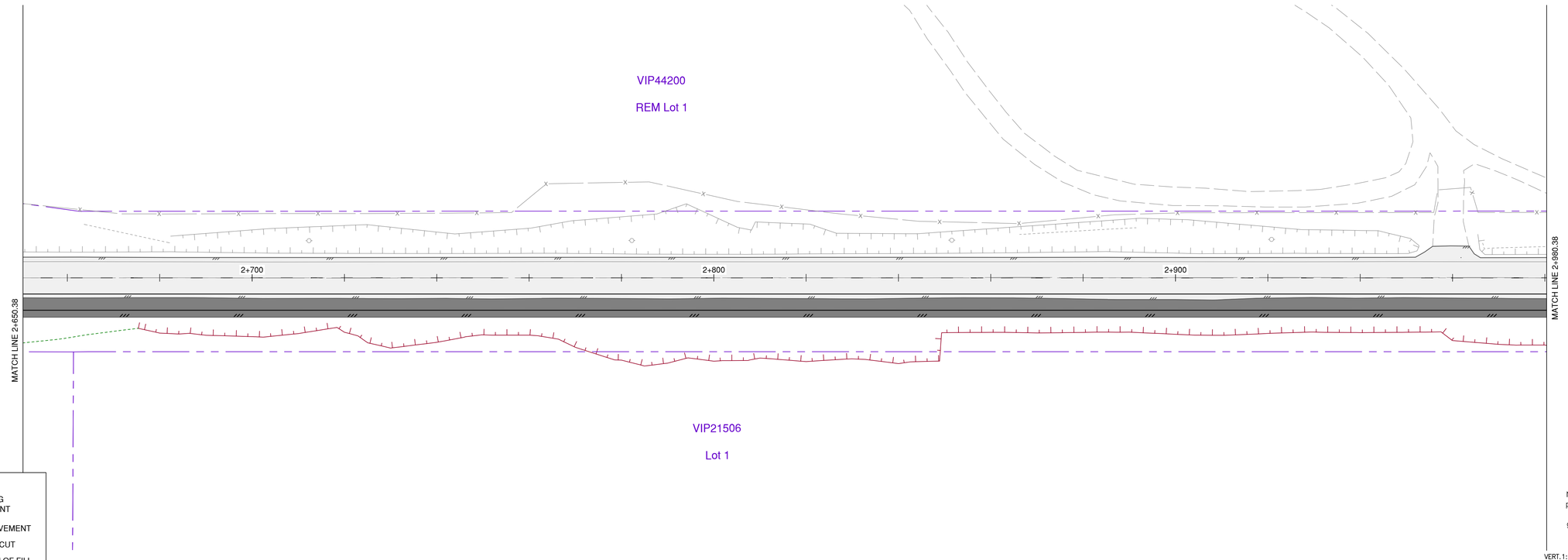
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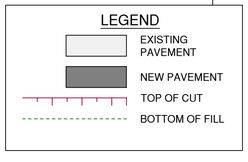
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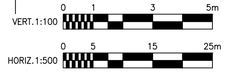






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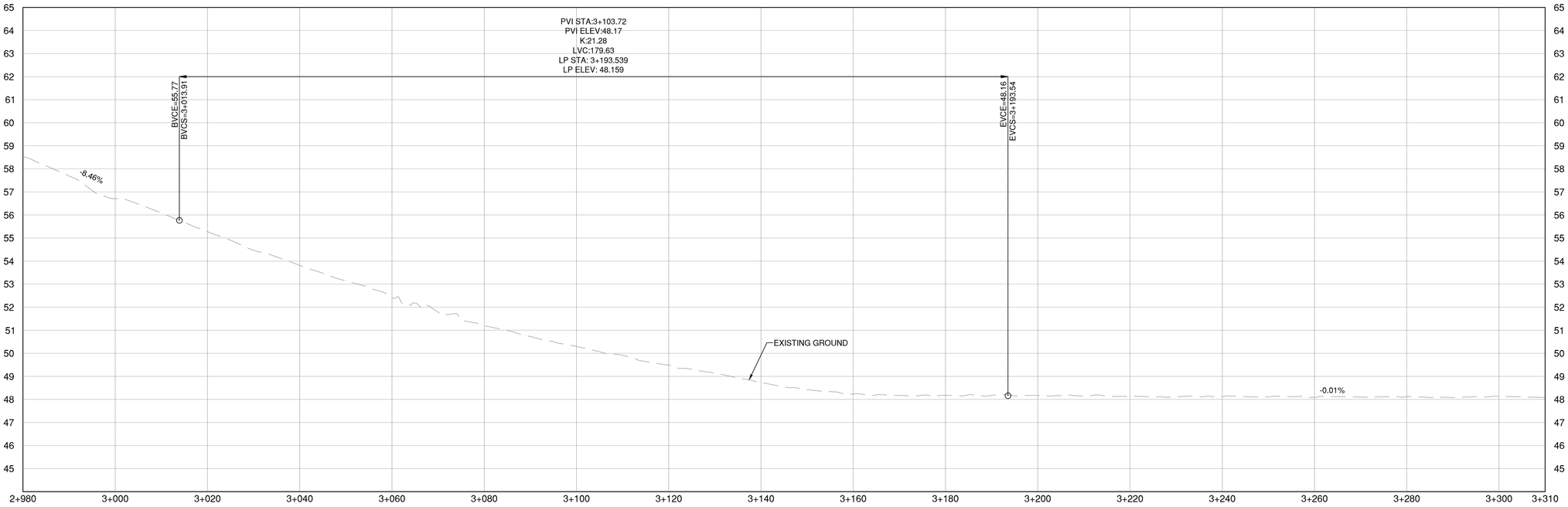
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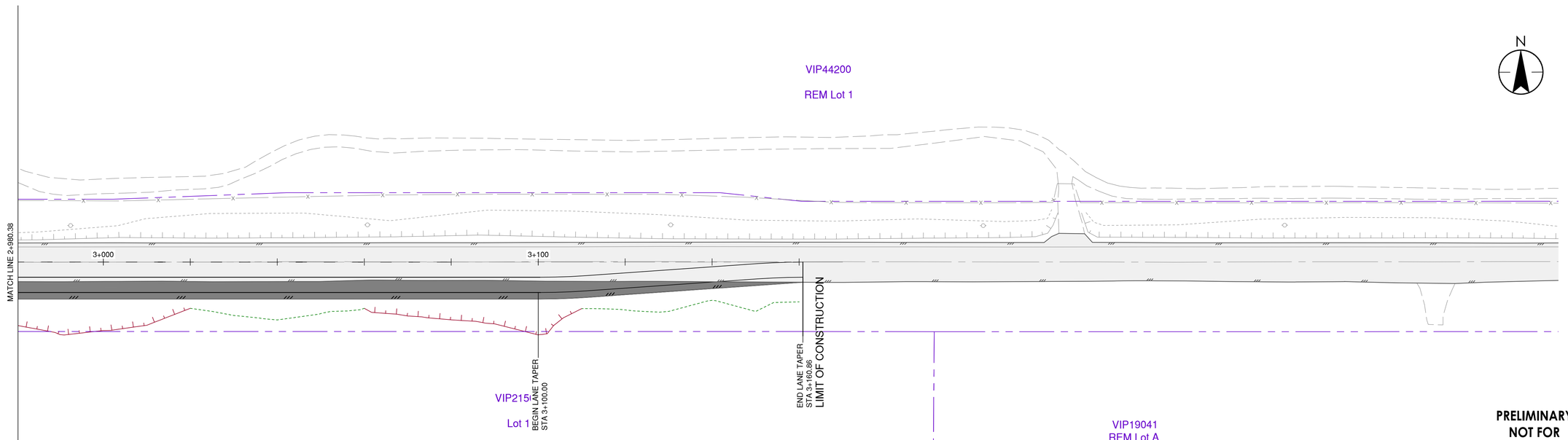
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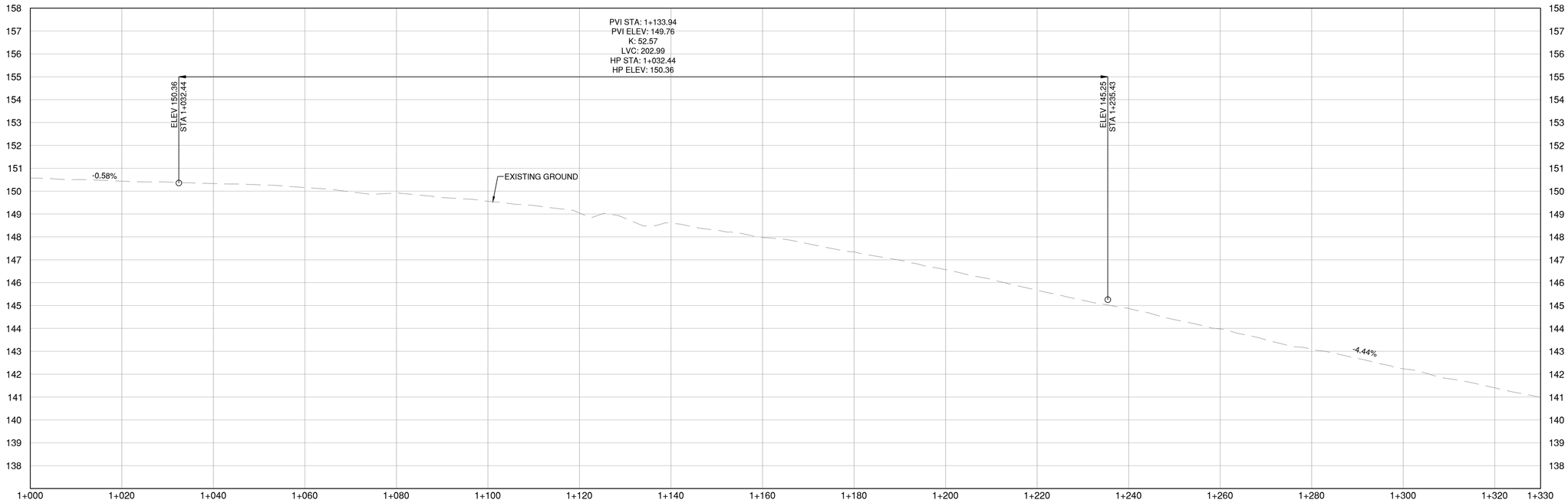
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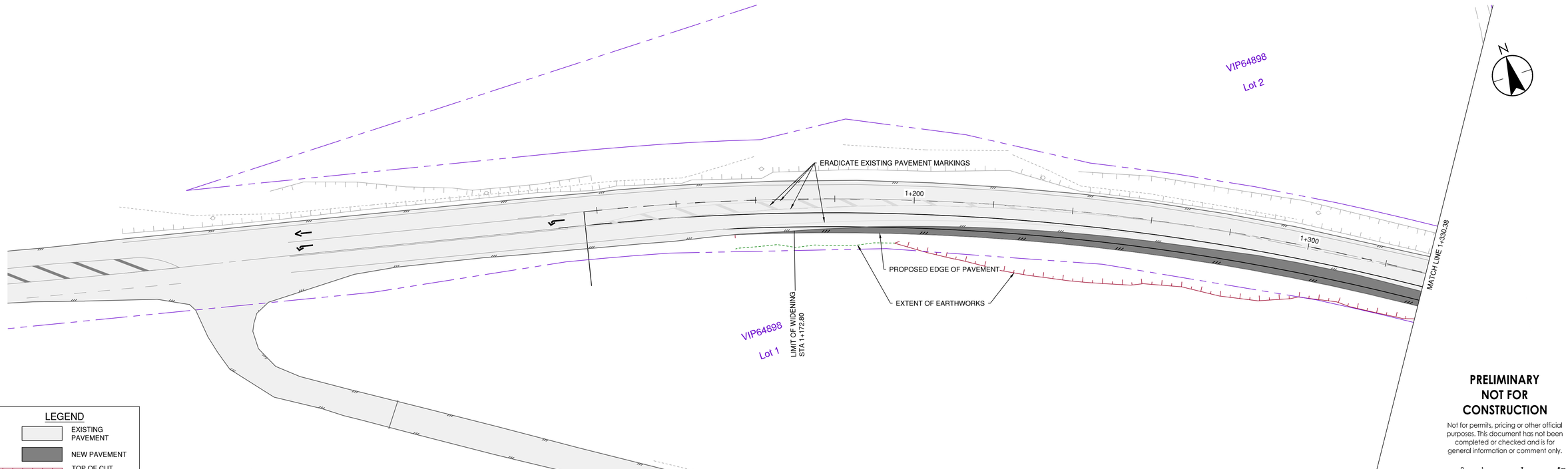
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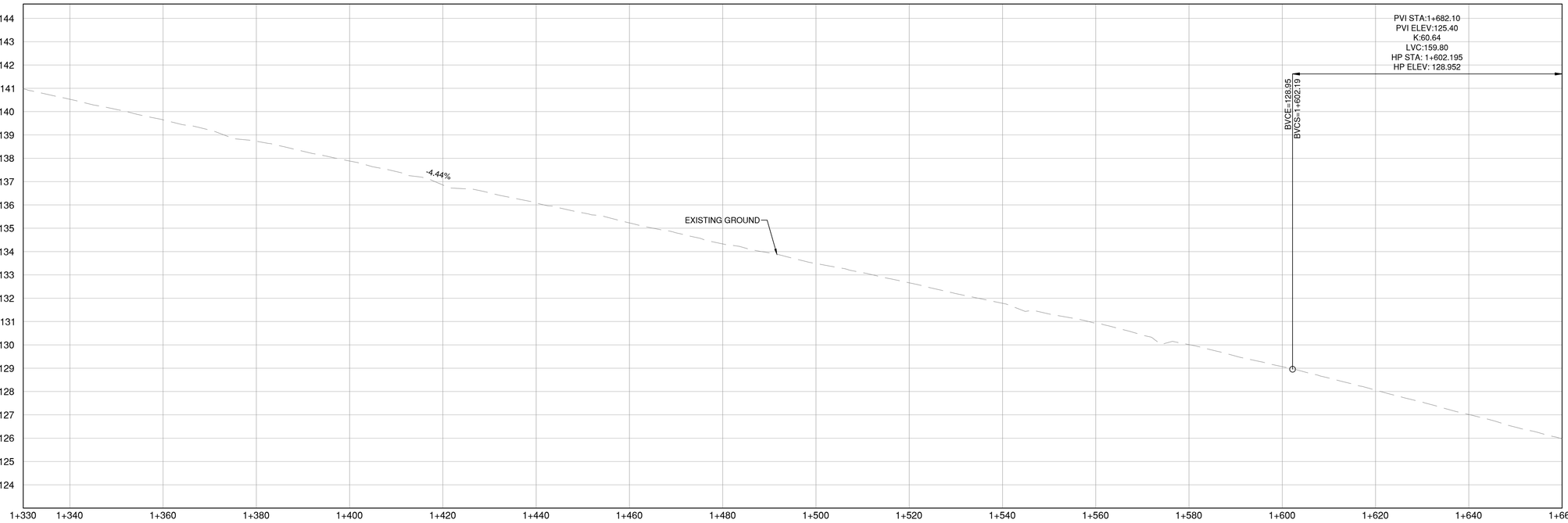
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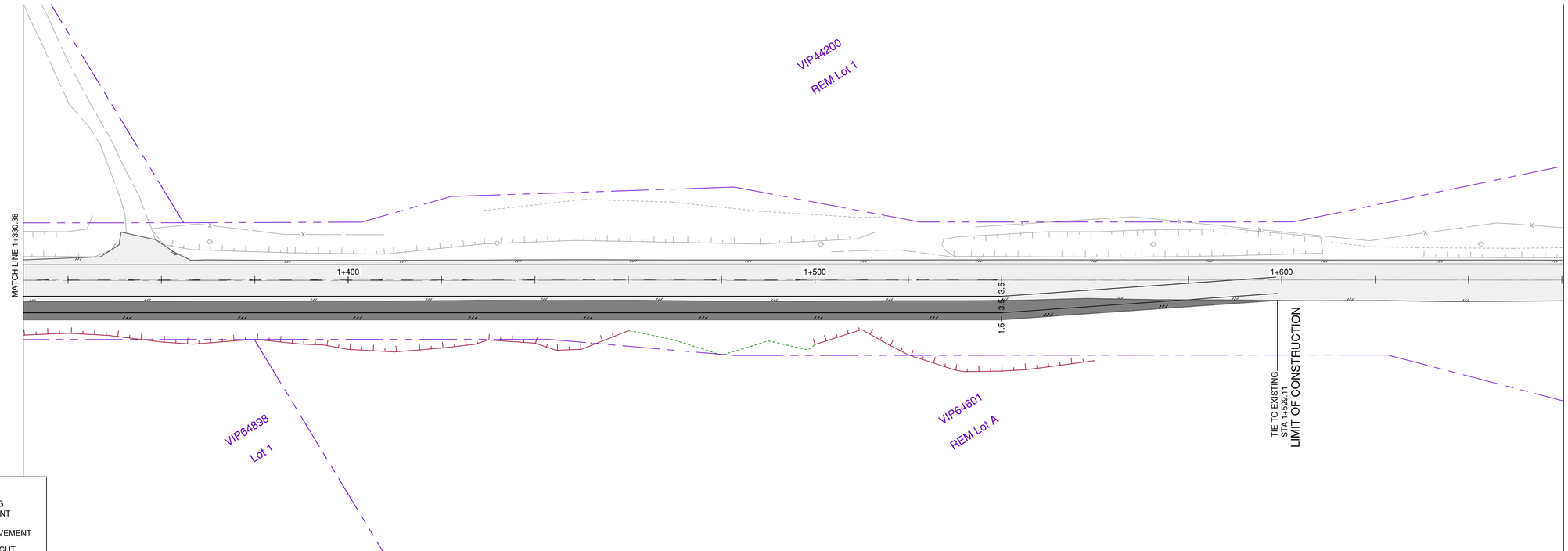
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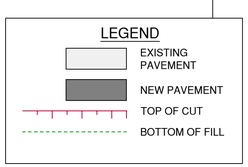
OPTION 2
STA. 1+170 TO STA. 1+330

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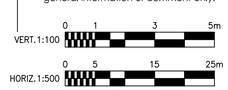






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No.	DATE	ISSUE

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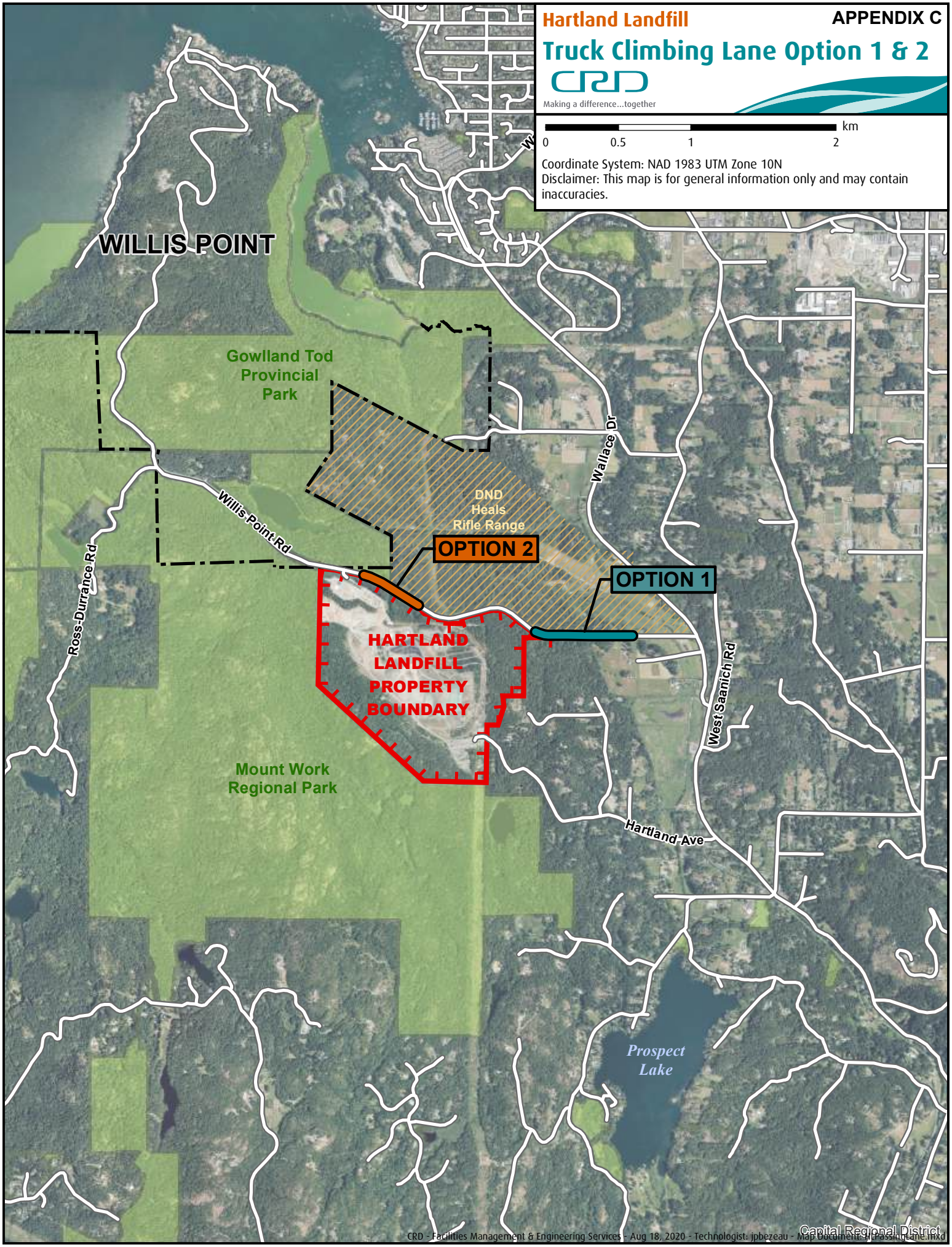
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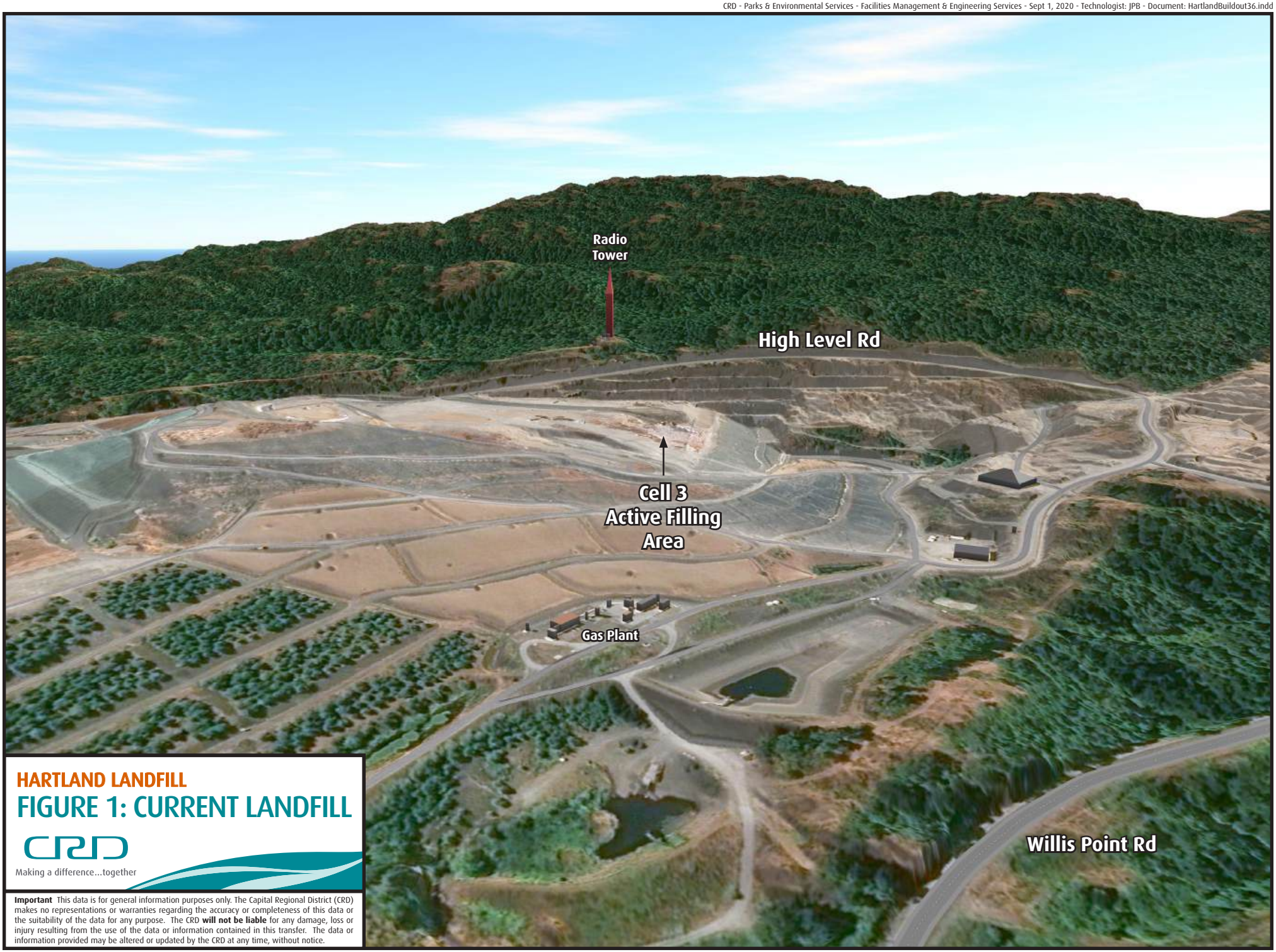
OPTION 2
STA. 1+330 TO STA. 1+600

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Hartland Landfill
APPENDIX C
Truck Climbing Lane Option 1 & 2
CRD
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km
0
0.5
1
2
Coordinate System: NAD 1983 UTM Zone 10N
Disclaimer: This map is for general information only and may contain inaccuracies.
WILLIS POINT
Gowlland Tod Provincial Park
DND Heals Rifle Range
OPTION 2
OPTION 1
HARTLAND LANDFILL PROPERTY BOUNDARY
Mount Work Regional Park
Willis Point Rd
Ross-Durrance Rd
Wallace Dr
West Saanich Rd
Hartland Ave
Prospect Lake
Capital Regional District
CRD - Facilities Management & Engineering Services - Aug 18, 2020 - Technologist: jpbezeau - Map Documents\Passage.mxd

CRD - Parks & Environmental Services - Facilities Management & Engineering Services - Sept 1, 2020 - Technologist: JPB - Document: HartlandBuildout36.indd

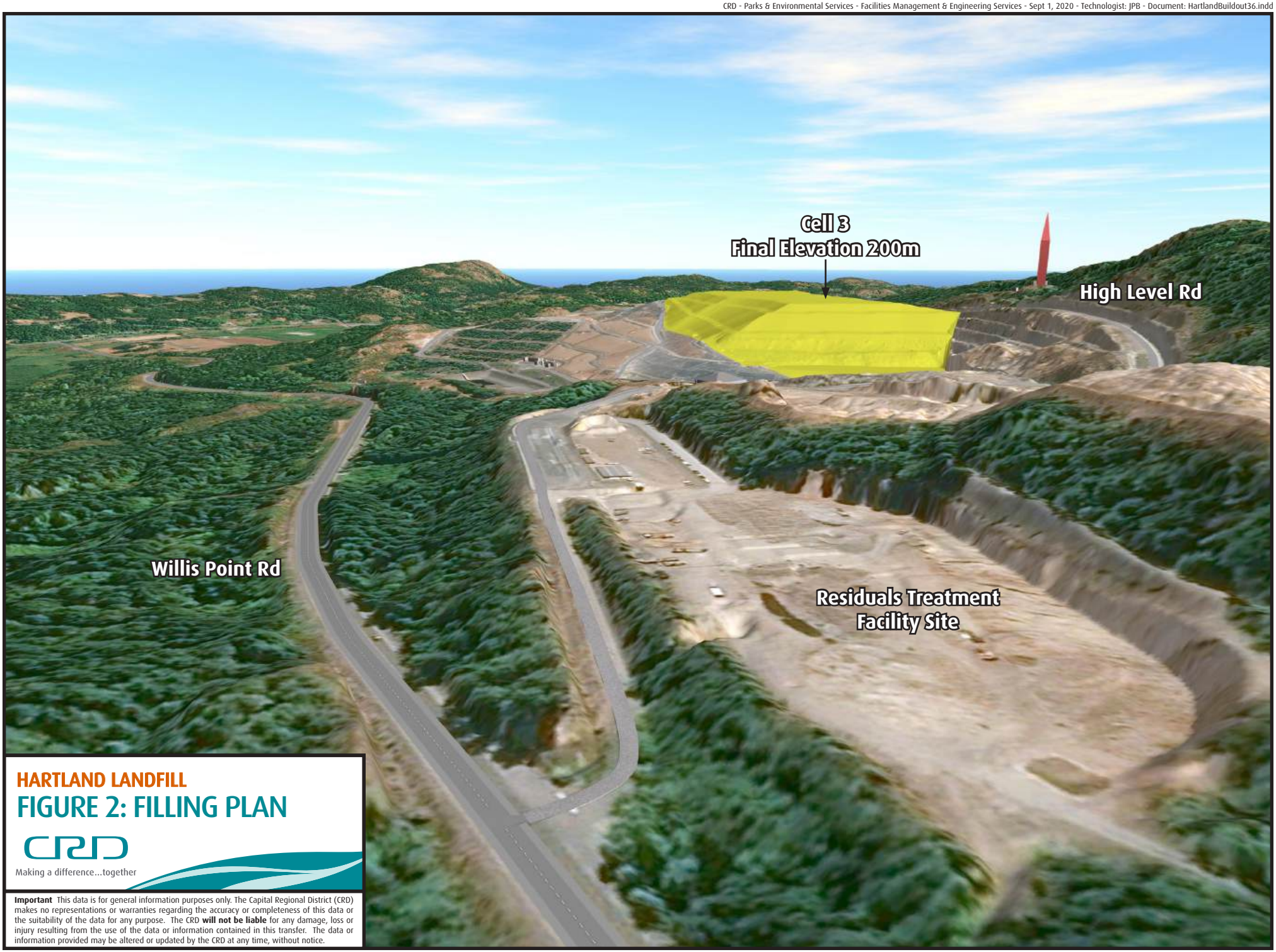


HARTLAND LANDFILL

FIGURE 1: CURRENT LANDFILL

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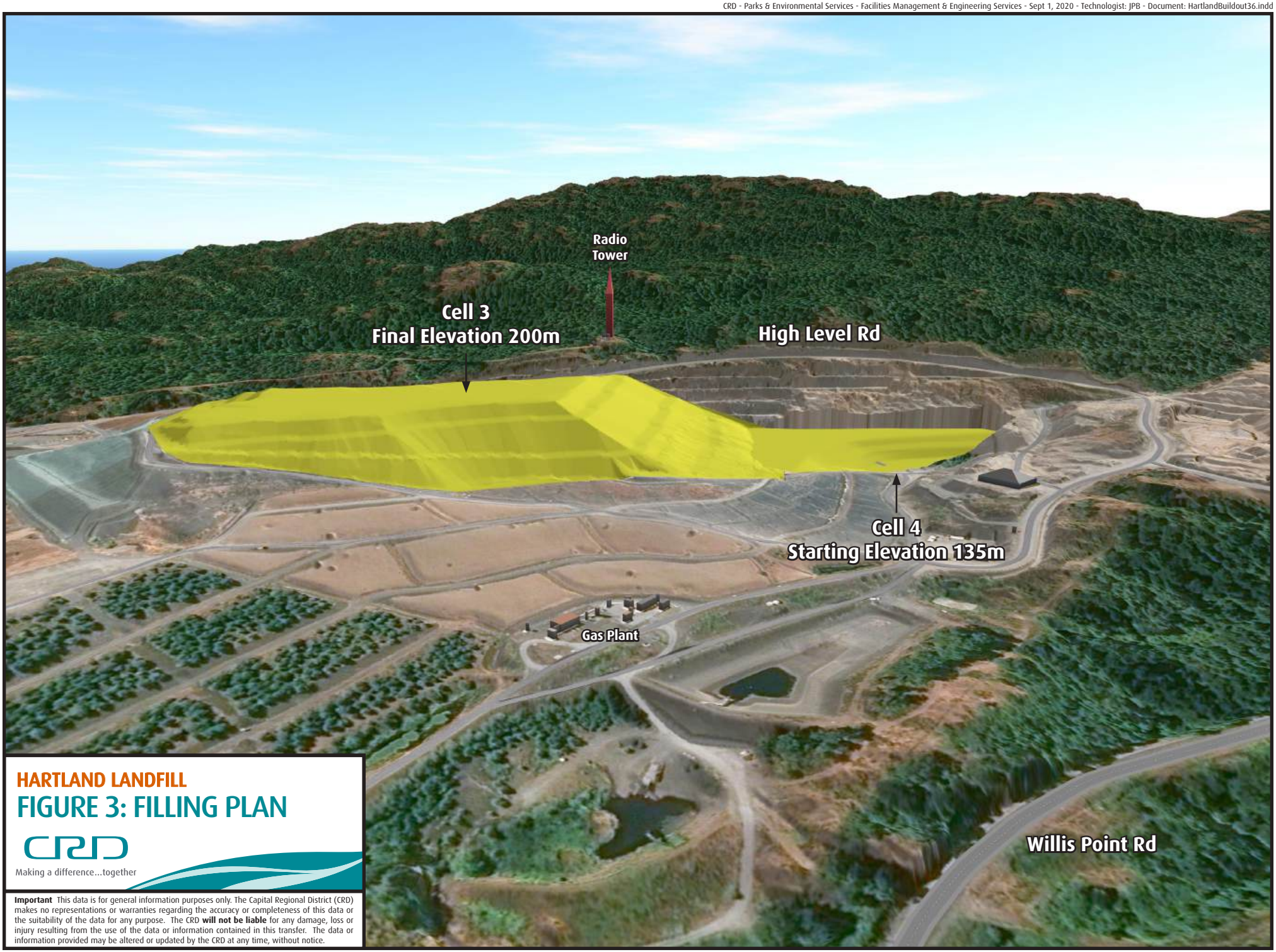


HARTLAND LANDFILL

FIGURE 2: FILLING PLAN

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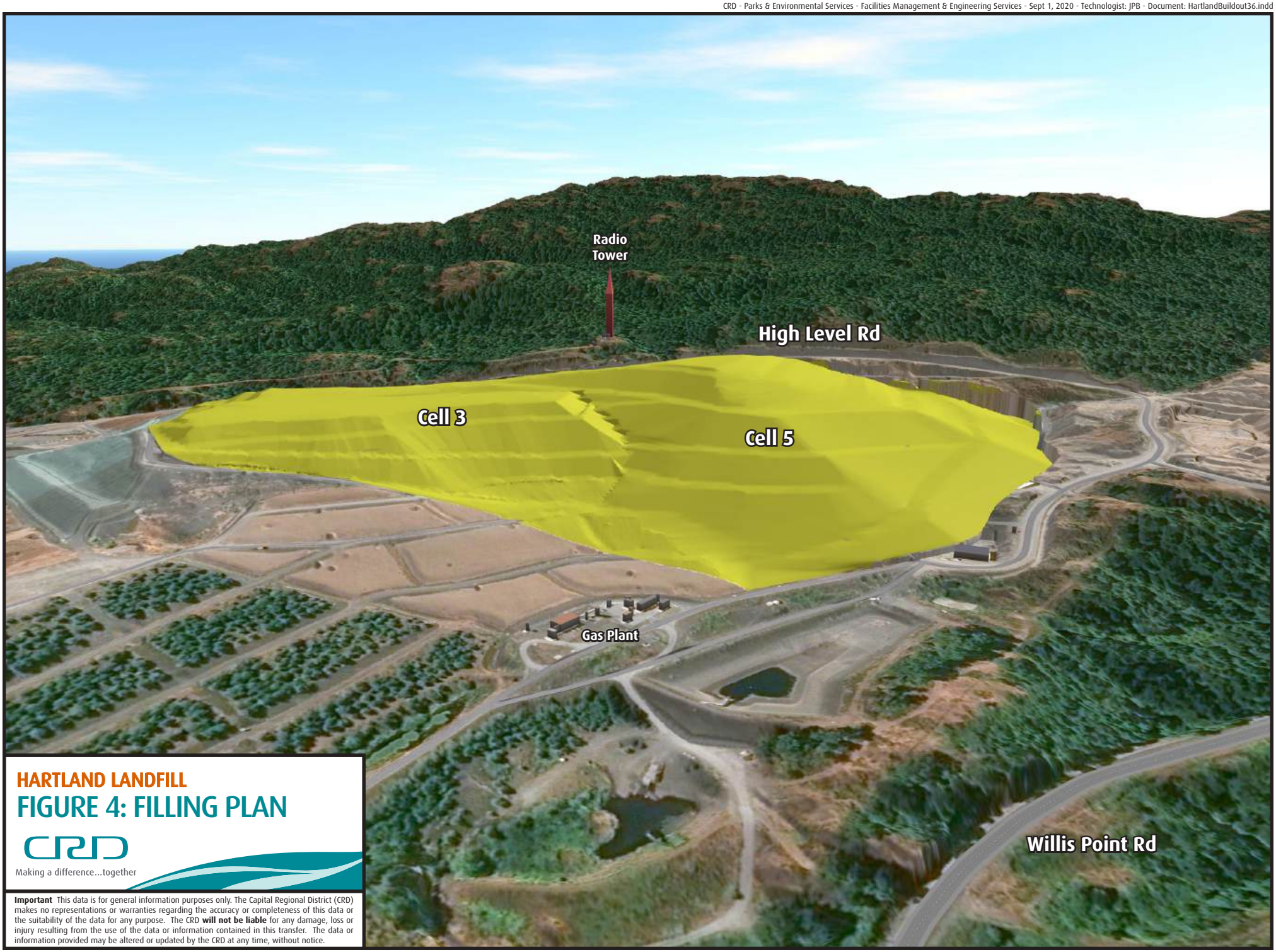


HARTLAND LANDFILL

FIGURE 3: FILLING PLAN

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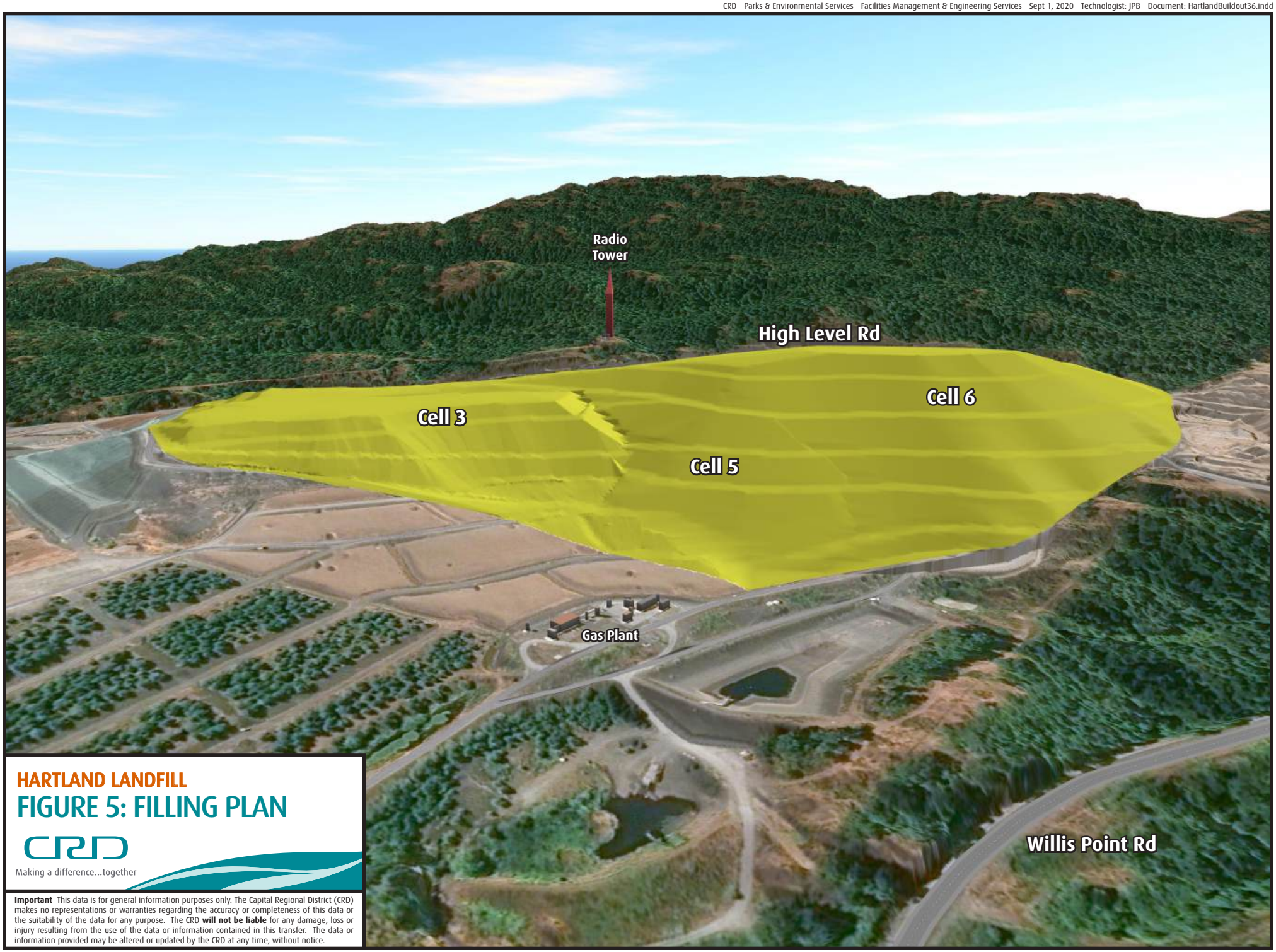


HARTLAND LANDFILL

FIGURE 4: FILLING PLAN

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HARTLAND LANDFILL

FIGURE 5: FILLING PLAN

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CAPITAL REGIONAL DISTRICT

Hartland Landfill Alternate Access Transportation Impact Analysis

CRD Contract No. 30.20.03-01

FINAL REPORT

PREPARED BY:

Bunt & Associates Engineering Ltd.

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September 2, 2020

September 2, 2020
04-20-0118

Genevieve Tokgoz, P.Eng., M.Eng.
Project Engineer
Capital Reginal District
625 Fisgard Street
Victoria, BC V8W 1R7

Re: Hartland Landfill Alternate Access Transportation Impact Analysis
Final Report

Bunt is pleased to provide the attached Transportation Impact Analysis which assesses the impacts of changing Hartland landfill's vehicle access. We completed a multiple-account evaluation of vehicle access options of moving either only commercial vehicles or all vehicles from the existing Hartland Avenue access to the Willis Point Road access point.

We found that moving the vehicle access location would not cause any significant impacts. We identified a few street infrastructure improvements for consideration; however, no improvements are required to accommodate changing the landfill's vehicle accesses.

This report version addresses questions raised during the July Environmental Services Committee meeting with most of report updates contained in Sections 3.5-3.9, 4.4, 4.7, 4.9, and 4.10.

Please let us know if we can be of any further assistance.

Yours truly,
Bunt & Associates

Simon Button, P.Eng., M.Eng., PMP
Transportation Engineer

cc: Joshua Frederick, Capital Regional District

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Date: 2020-09-02
Project No. 04-20-0118
Status: Final



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EXECUTIVE SUMMARY

Study Purpose
The Capital Regional District is developing its new Solid Waste Management Plan and is considering relocating vehicle access to the Hartland Landfill from Hartland Avenue to Willis Point Road as it may be the only viable route for trucks to access the future filling areas. This study evaluates this potential vehicle access change.

Context
The landfill is in a rural area on Hartland Avenue. The District of Saanich has jurisdiction over Hartland Avenue and Willis Point Road. The landfill is surrounded by the communities of Prospect Lake, Willis Point, and nearby residents along Hartland Avenue.

Landfill Operations
Additional measures planned by the CRD will maintain annual deposits at similar or lower levels for the next few decades. Approximately 350 vehicles deposit material at the landfill each day causing 350 vehicles to enter and exit the landfill daily. Roughly one-third of this is commercial vehicles and the remainder is residential vehicles. The proportion of commercial vehicles is lower on Saturdays.

Scenarios

Three scenarios were developed to assess the positive and negative impacts of changing vehicle access from Hartland Avenue to Willis Point Road:

1. No change in vehicle access from the current arrangement with Hartland Avenue functioning as the primary access point for commercial vehicles and resident waste/recycling drop-off.
2. Move only the commercial vehicle access to Willis Point Road.
3. Move the primary vehicle access to Willis Point Road.

Multiple-Account Evaluation
Moving a portion or all 350 vehicles per day accessing the landfill from Hartland Avenue to Willis Point Road results in vehicles using intersections and streets that are more appropriate for higher vehicle use, particularly heavy commercial vehicles. This includes moving vehicles turning at the West Saanich Road & Hartland Avenue intersection with poor visibility to the West Saanich Road & Wallace Drive intersection with good visibility and the more appropriate horizontal and vertical design of Willis Point Road compared to Hartland Avenue which also has frequent driveways.

None of the scenarios require any street improvements to accommodate vehicle pattern change. Specifically, there is no need for an additional lane on Willis Point Road. Willis Point Road only meets one of three criteria identified by TAC for adding a truck climbing lane. Most notably, the street grade does not cause heavy trucks to travel below the speed limit and adding a lane on Willis Point Road would increase the number of speeding vehicles as street width (especially when vacant) is directly correlated to vehicle speed. Two additional lane concepts were reviewed are were found to improve travel times by less than 15 seconds.

Recommendation
Moving the vehicle access causes minor impacts and there are more positive than negative impacts of moving either only commercial vehicles or all vehicles to access the site from Willis Point Road. Willis Point Road is designed for higher vehicle use than Hartland Avenue.

Improvements
Regardless of if vehicle access is changed, faded pavement markings on Willis Point Road should be reinstalled following nearby construction of the Residual Treatment Facility. The District of Saanich should also review opportunities to reduce the speed of vehicles turning right from Wallace Drive onto West Saanich Road. Potential improvements could also include an improved connection to the Interurban Trail which terminates nearby.

1. INTRODUCTION

1.1 Study Purpose

As part of the continual evolution of the Hartland Landfill, the Capital Regional District (CRD) has identified the opportunity to relocate access from Hartland Avenue to Willis Point Road to improve safety and for Engineering and Operations requirements. In addition, in the CRD's new Solid Waste Management Plan, it is integral to know where the primary access should be located in terms of public impact and landfill operations.

Bunt & Associates Engineering Ltd. has been engaged by the CRD to conduct a thorough investigation regarding the preferred location and routing for vehicle access.

1.2 Potential Access Changes

Figure 1.1 illustrates Hartland Landfill's location in the northwest portion of the District of Saanich as well as the existing two vehicle access routes. The Hartland Avenue access is currently the primary access, providing access for residential and commercial haulers as well as access to the landfill office and the Hartland Learning Centre. The Willis Point Road access currently provides access to the Residual Treatment Facility which is currently under construction. The access previously provided access to a composting facility which is no longer in operation.

1.3 Study Scope

This study evaluates the impacts (both positive and negative) of relocating the commercial hauling access to Willis Point Road or both the commercial and residential hauling access to Willis Point Road.

This study will evaluate the current access arrangement against the two potential alternatives described above by comparing their impacts on safety, vehicle operations, vehicle emissions and on-site landfill operations.

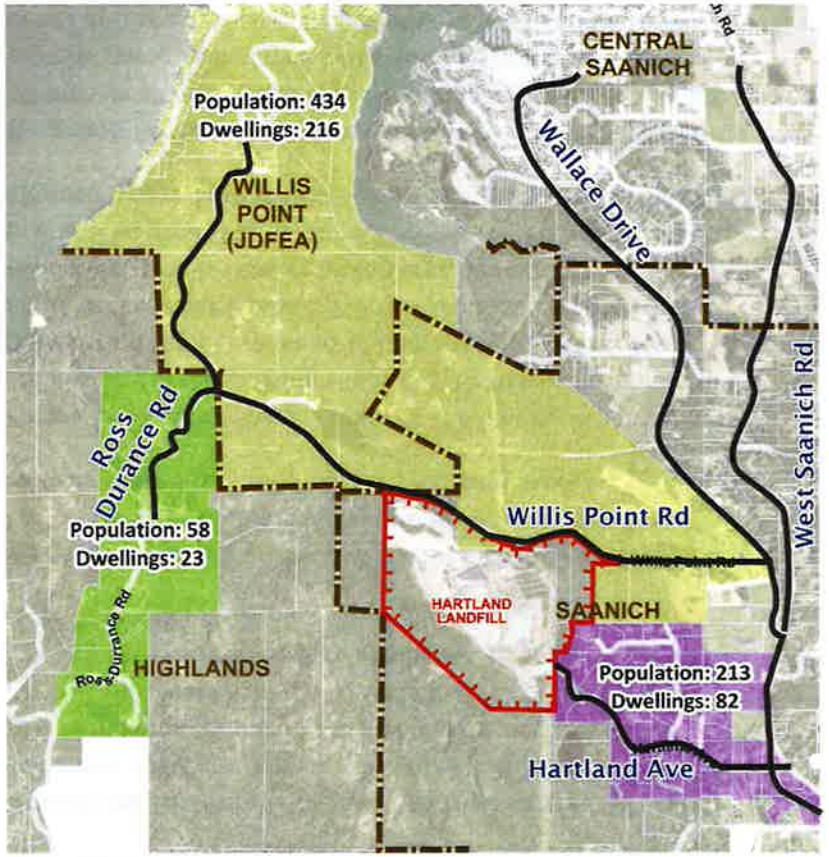


Figure 1.1: Site Context

1.4 Reasons to Relocating Vehicle Access

Within the next few years, the location where commercial haulers directly deposit waste will move towards the northwest of the landfill. CRD staff identified the following reasons for relocating vehicle access to Willis Point Road which primarily relate to the safe transportation of commercial hauling vehicles to the active filling area:

High Level Road Restraints: The steep grades on High level Road are not suitable for loaded trucks. The existing road would pose severe safety risks if a truck's brakes were to fail. A similar impact is currently present on Hartland Avenue. Willis Point Road and Residuals Way are significantly flatter. The High Level Road area is designated for blasting resulting in commercial traffic being paused for a couple of hours or re-routed during blasts.

East Perimeter Road Restraints: Two-way traffic on East Perimeter Road is not feasible as other critical underground gas, leachate, and water infrastructure will be compromised and present other issues if the road is widened. The road has a steep downward grade at North Toe Road and turns abruptly at the base of the steep grade. It is adjacent to a steep embankment making rollovers a serious risk. In addition, the BC Hydro Right-of-Way may limit the possibility of upgrading the road and the RNG project will be affecting North Toe Road. This may cause traffic to be re-routed onto Lagoon Road which will add more turns and does not have the sufficient width or grade.

High-risk Activities: Maintaining vehicle access from Hartland Avenue maintains the longest routes through the landfill for commercial vehicles. This would increase the high-risk activities (blasting, hauling, construction, LFG, etc) that the public will be exposed to by traversing close to active landfill. These activities put the public, contractors, and CRD employee's health and safety at risk. There is no level of oversight that will prevent a safety incident from happening as all these activities occur in the same space.

Monitoring: East Perimeter Road and High Level Road have numerous areas that are out of sight, so CRD staff will not be able to monitor commercial customers as they move through the landfill. This could lead to incidents on CRD property (accidents, lost customers, U-turns, illegal dumping, trespassing onto other areas of landfill, etc.).

Weather: The steep grades and turns on High Level Road and East Perimeter Roads cause them to be more prone to weather impacts caused by snow, ice, rain, fog, and wind.

Future Expansion: Phase 3 and Phase 4 landfill expansion areas are upslope of the existing High Level Road which would require the existing High Level Road to be buried so Phase 3 could be piggy backed over Phase 2. Phase 4 requires that the current residential drop-off and recycling area be relocated. The only practical way that the Hartland 2100 Master Plan could be attained would be to relocate vehicle access to Willis Point Road.

Recycling Facility: The future relocation of the residential drop-off area would provide an opportunity to construct a purpose-built recycling facility near Willis Point Road that would provide better access and queue capacity than the existing location.

Mount Work Park Entrance: The future relocation of the residential drop-off area would remove all traffic from Hartland Avenue which would provide an opportunity to improve gateway and user experience for mountain bikers and hikers accessing the trail network on Mount Work.

2. LANDFILL OPERATIONS

2.1 Facilities

The Hartland Landfill is the only regional solid waste disposal facility in the Capital Region. It is a multi-purpose facility providing collection for recycling, household hazardous waste, salvageable items as well as yard and garden waste collection and processing, controlled waste disposal and landfill service to commercial and residential customers.

2.2 Hauling Trends

Figure 2.1 illustrates the historical and forecasted waste to be deposited at the Hartland Landfill. There was a sharp increase in waste from the 1950s to 1990; however, the annual weight of waste deposited has decreased since then. Additional measures in the CRD's Solid Waste Management Plan, currently being developed, are anticipated to maintain annual deposits at similar or lower levels for the next 20-30 years.

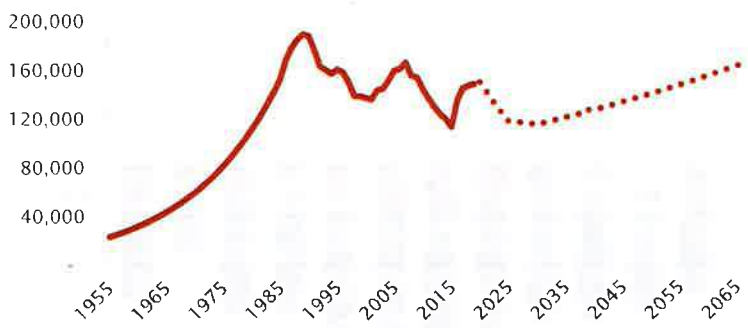


Figure 2.1: Historical and Forecasted Waste (Tonnes)

2.3 Users and Hours

Most users driving to the Hartland Landfill are municipal, commercial trucks (collectively called commercial haulers in this study) and residents arriving with household waste and/or recycling items. Commercial and municipal haulers with a registered account can use an automated scale that opens at 7 am on weekdays versus 9 am for non-registered users (typically residents). **Table 2.1** lists the facility's operating hours.

Table 2.1: Hartland Landfill Operating Hours

USER	MONDAY-FRIDAY	SATURDAY	SUNDAY
Commercial and Municipal Trucks	7 am - 5 pm	7 am - 2 pm	Closed
Residents	9am - 5pm	7am - 2pm	Closed

In addition to depositing solid waste, CRD staff, contractors and visitors also drive to the site.

2.4 Hauling Transactions

Bunt identified several important trends from the 2019 transaction data.

Figure 2.2 illustrates the monthly number of vehicles into three streams. The number of commercial vehicles remains relatively constant throughout the year with around 3,200 vehicles per month. There is more variation with the residential streams with an average of 6,200 vehicles per month, increasing up 8,000 during August.

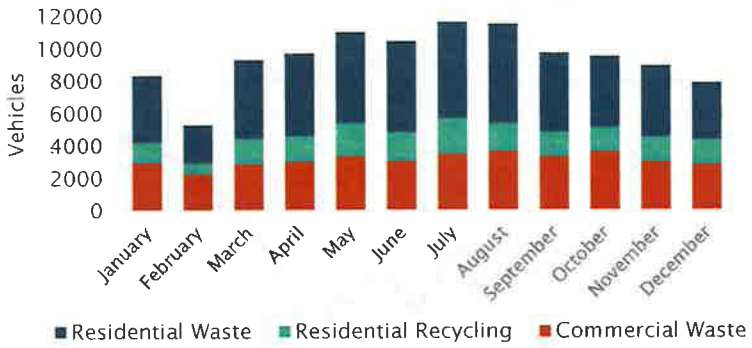


Figure 2.2: Monthly Number of Vehicles

Figure 2.3 illustrates the average daily number of vehicles which is consistently near 350. Most commercial vehicles arrive on weekdays whereas the peak day for residents is on Saturday.

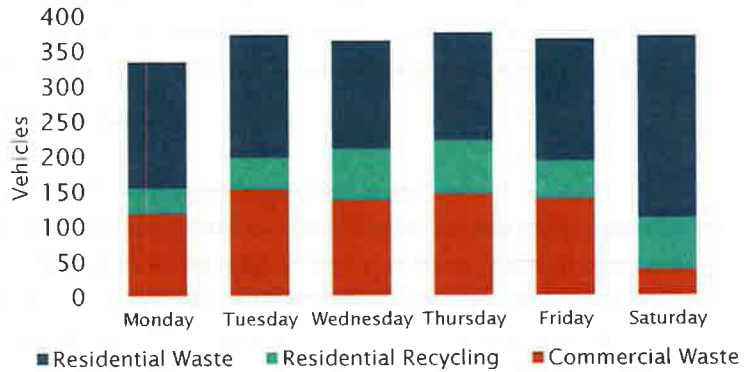


Figure 2.3: Daily Number of Vehicles

Figures 2.4 and 2.5 illustrate the hourly number of vehicles arriving on weekdays and Saturdays. The weekday number of vehicles is the average of Tuesday, Wednesday, and Thursday, i.e., the midweek period, which is typically used for weekday transportation systems analyses. Weekdays are consistently around 45 vehicles per hour from 9 am to 2 pm and Saturday's peak around 70 vehicles per hour between 1 and 2 pm. Generally speaking, the facility is generating on average about one inbound vehicle per minute during both the weekday and Saturday daytime periods.

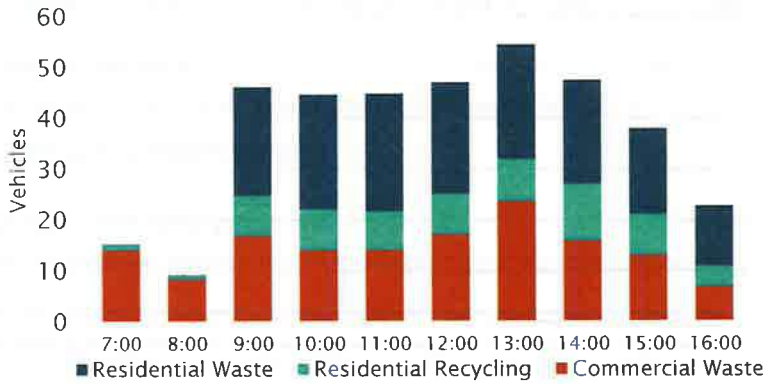


Figure 2.4: Number of Vehicles (Tuesday-Thursday)

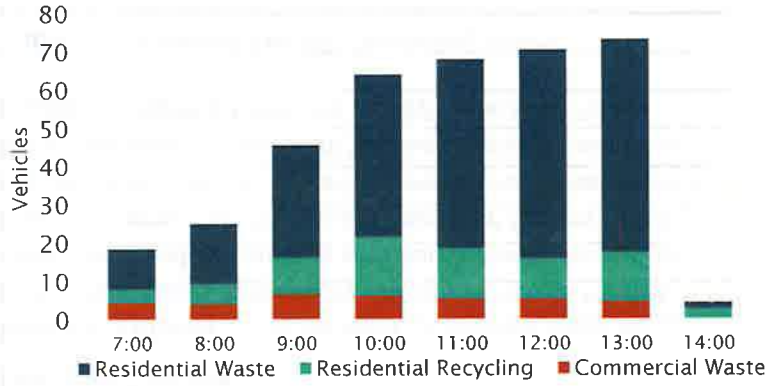


Figure 2.5: Hourly Number of Vehicles (Saturday)

3. SITE CONTEXT

3.1 Street Network

Exhibit 3.1 illustrates the nearby street network including the traffic laning at the study intersections:

- Willis Point Road & Hartland Landfill Access
- Willis Point Road & Wallace Drive
- West Saanich Road & Wallace Road
- West Saanich Road & Hartland Avenue

West Saanich Road is the primary north-south route through the area. Hartland Avenue is directly connected to West Saanich Road whereas Willis Point Road is connected to West Saanich Road via Wallace Drive. All roads one travel lane in each direction. West Saanich Road, Willis Point Road, and Hartland Avenue are designated truck routes. Wallace Drive is only a designated truck route between West Saanich Road and Willis Point Road.

3.2 Land use

Figure 3.1 illustrates the landfill's The Hartland Landfill is in a rural area, outside of Saanich's Urban Containment Boundary. Nearby land uses include single-family homes with a few non-residential destinations (such as Red Barn Market and First Unitarian Church) located on West Saanich Road. Additional destinations are located further south at the Prospect Lake Road Village including an elementary school and a community hall as it forms the hub of the surrounding community.

Over 200 residents access their homes off Hartland Avenue and approximately a hundred homes at the end of Willis Point Road approximately 6 kilometres to the northwest.

The Hartland Landfill is bounded by Mount Work Regional Park on three sides (north, west, and south). One of the park's primary trail head access points is located at the end of Hartland Avenue, adjacent to the landfill entrance. At the entrance near the trail head is a parking lot for the mountain biking community. It is a popular destination with almost 40,000 trail users during 2019. Additional secondary mountain bike trail access points are located on Willis Point Road.

3.3 Active Transportation

West Saanich Road has painted bicycle lanes through the study area. In addition, the Interurban Trail runs parallel to West Saanich Road from Hartland Avenue to Wallace Drive. Aside from the trail, there is no dedicated walking infrastructure which is not uncommon for rural settings.

As shown in the following list, West Saanich Road is the most frequently used street for cycling with over 500 cyclists per day or about 50 per hour during the peak hour (all data from April 2019). Few cyclists were observed on Hartland Avenue, likely due to the lack of road shoulders and the presence of large vehicles associated with the landfill.

- Willis Point Road: 150 bicycles/day
- Wallace Drive: 280 bicycles/day
- West Saanich Road: 550 bicycles/day
- Hartland Avenue: 15 bicycles/day

3.4 Transit Service

BC Transit operates bus route #83 on West Saanich Road with stops at Hartland Avenue and Wallace Drive being the closest locations to the landfill. The stops are 2 and 3 kilometres respectively from the landfill.

3.5 Transportation Data Sources

1. District of Saanich Transportation Data (up to 2019)
The District of Saanich (Saanich) provided historical multi-modal traffic data for various locations within the study area. This includes directional counts that provide three full days of data (Tuesday to Thursday) regarding the time, vehicle length, and vehicle speed on Willis Point Road, Wallace Drive, West Saanich Road, and Hartland Avenue from March and April of 2019.

Saanich also provided weekday intersection turning movement counts at the three intersections (from 2017 and 2019) which would have different vehicle travel patterns if Hartland Landfill's access shifted from Hartland Avenue to Willis Point Road:

- Wallace Drive & Willis Point Road
- West Saanich Road & Wallace Road
- West Saanich Road & Hartland Avenue

2. Turning Movement Data (Spring 2020)
Bunt collected supplemental traffic data on Thursday, April 30, 2020, and Saturday, May 2, 2020, at the three study intersections noted above. The COVID-19 pandemic was on-going during these dates which will have altered the typical travel patterns for the area, e.g., "work from home" advisories, closed schools and other destinations. Therefore, the data was adjusted to estimate 'normal' travel patterns for further use in this study. The raw data was not directly used in the study's analysis.

The weekday data collected in 2020 was compared to the weekday data collected in 2017 and 2019. From this dataset, vehicle volumes in April 2020 on West Saanich Road, Wallace Drive, and Willis Point Road were estimated to be 70% of normal. There was no significant difference between the weekday vehicle volume on Hartland Avenue which is aligned with data provided by the CRD which illustrates a slight increase in transactions at the Hartland Landfill on Thursday, April 30, 2020, compared to April 2019. The number of transactions at the Hartland Landfill on Saturday, May 2, 2020, was 80% of the same period last year.

The percentages noted above were used to adjust all transportation data from the Spring of 2020 to typical (i.e. if the COVID-19 pandemic was not occurring).

3. Directional Data (Summer 2020)
Additional data was collected from July 19 to 27, 2020, to identify any seasonality changes. Transportation planning is typically completed using data from September to June, however, due to the presence of multiple nearby recreational areas, supplementary data was collected during July as the use of the nearby parks would be higher during the summer.

Vehicle volume, length, and speed was collected on Willis Point Road and Hartland Avenue. On Willis Point Road data was collected 250 metres west of Wallace Drive where the street is straight and flat as well as 900 metres west of Wallace Drive where the street is straight but at its steepest grade of 8%.

3.6 Vehicle Speeds

Willis Point Road: The average vehicle speed on Willis Point Road 250 metres west of Wallace Drive (which is straight and flat) was 70 km/h eastbound and 68 km/h westbound compared to the posted 60 km/h speed limit. 650 metres west, the effect of the 8% grade increases eastbound (downhill) speeds to 73 km/h (+3km/h) and decreases westbound speeds to 65 km/h (-3km/h).

Wallace Drive: The average vehicle speed on Wallace Drive was 60 km/h compared to the posted speed 50 km/h limit.

West Saanich Road: Average speeds in the high 60's were observed at multiple locations on West Saanich Road and compared to the posted 60 km/h speed limit.

Hartland Avenue: Although Hartland Avenue has a speed limit of 40 km/h, the average vehicle speed at the Tod Creek bridge was around 60 km/h, likely because Hartland Avenue dips down to the bridge for traffic arriving in both directions.

3.7 Historical Vehicle Growth

Over the past 10 years, there has been modest (1-2%) annual vehicle growth on Hartland Avenue, West Saanich Road, and Wallace Road during peak hours.

Vehicle growth on Willis Point Road has been higher with up to 10% annual increases eastbound during the weekday morning peak hour and westbound during the weekday afternoon peak hour. Average annual vehicle growth considering both travel directions is approximately 5%. One possible rationale provided by an area resident at a previous CRD engagement event is that Willis Point Road is increasingly being used for commuters from West Shore to reach the Saanich Peninsula. This could be particularly true during the construction of the McKenzie Interchange which has impacted vehicle travel times. Following construction completion, drivers are anticipated to return to travelling on Highway 1 and McKenzie Avenue due to the reduced travel times. 10% annual growth (or even 5%) is typically never actualized over the long-term.

3.8 Seasonality and COVID-19

Figures 3.1 and 3.2 illustrate the hourly vehicle profiles for Willis Point Road and Hartland Avenue during the summer of 2020 (during the COVID-19 pandemic) and the estimated volumes for the spring of 2020 if the COVID-19 pandemic had not occurred. Mobility data collected by Google indicates that across BC the COVID-19 pandemic has significantly reduced the number of trips to work, transit stations, and retail destinations, but has more than doubled the number of trips to parks which would include locations such as the nearby regional parks.

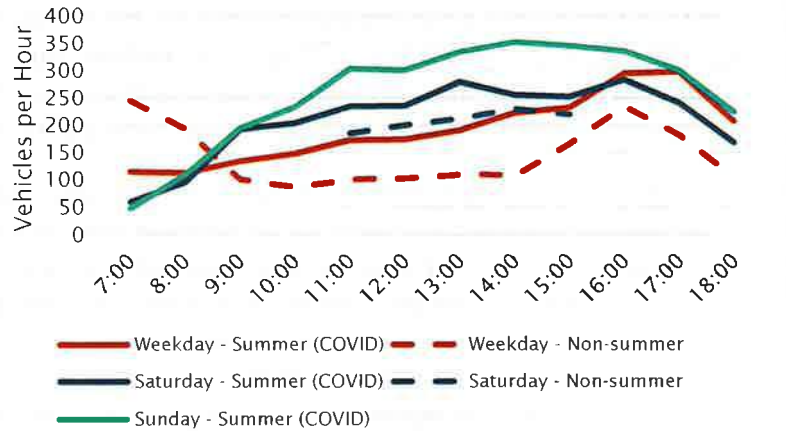


Figure 3.1: Willis Point Road Vehicle Profiles

The combined effect of summer travel patterns (versus the rest of the year) and COVID-19 are particularly evident for the two weekday datasets on Willis Point Road. The data collected in the summer (during COVID-19) illustrates substantially fewer people driving during the morning peak hour which is typically primarily for travelling to work and school, however, the number of midday

trips which tend to be more for recreational and leisure purposes is substantially higher.

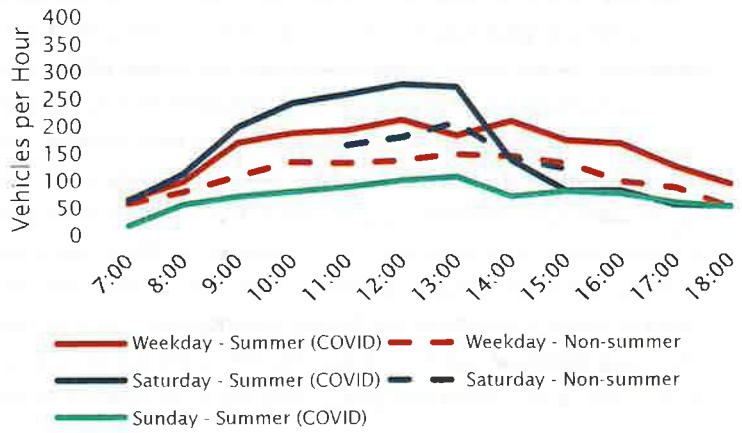


Figure 3.2: Hartland Avenue Vehicle Profiles

The total number of vehicles using Hartland Avenue was 40% higher in July 2020 compared to March 2019 primarily due to increased use midday. This can be attributed to higher use of the Hartland Landfill and Mount Work during the summer. The increase was less significant during typical peak hours

The spring weekday data collected in 2020 was compared to the weekday data collected in 2017 and 2019. From this dataset, vehicle volumes in April 2020 on West Saanich Road, Wallace Drive, and Willis Point Road were estimated to be 70% of normal at that time. There was no significant difference between the weekday vehicle volume on Hartland Avenue which is aligned with data provided by the CRD which illustrates a slight increase in transactions at the Hartland Landfill on Thursday, April 30, 2020, compared to April 2019. The number of transactions at the Hartland Landfill on Saturday, May 2, 2020, was 80% of the same period last year.

3.9 Study Peak Hours

It is recommended that the impact analysis of relocating the landfill's vehicle access be based on the non-summer period as this represents 10 out of the 12 months of the year and is consistent with transportation planning best practices. In addition, the only summer data available was collected during the COVID-19 pandemic, and such it would be difficult to accurately estimate 'normal' summer vehicle volumes. The study will reference the higher 2020 summer vehicle volumes where appropriate, however, we do not have any evidence to identify if this data was impacted by the COVID-19 pandemic resulting in either higher or lower vehicle volumes compared to normal.

Figure 3.3 illustrates the weekday temporal profiles of vehicle use on West Saanich Road (both directions) and at the Hartland Landfill (inbound and outbound). The Hartland Landfill is typically busiest during the middle of the day which is different from the nearby streets which are typically busiest during the morning and afternoon commuting periods.

8:30 - 9:30 am and 3:30 - 4:30 pm were chosen as the study's weekday peak hours as they represent the best overlap between vehicle trips generated and not generated by the Hartland Landfill. 1:00 - 2:00 pm was chosen as the Saturday peak hour as this is the busiest time period for the Hartland Landfill. Although hourly traffic data was not available for West Saanich Road, the Saturday peak hour for many streets is between 12:00 and 3:00 pm which aligns with the landfill's peak hour.

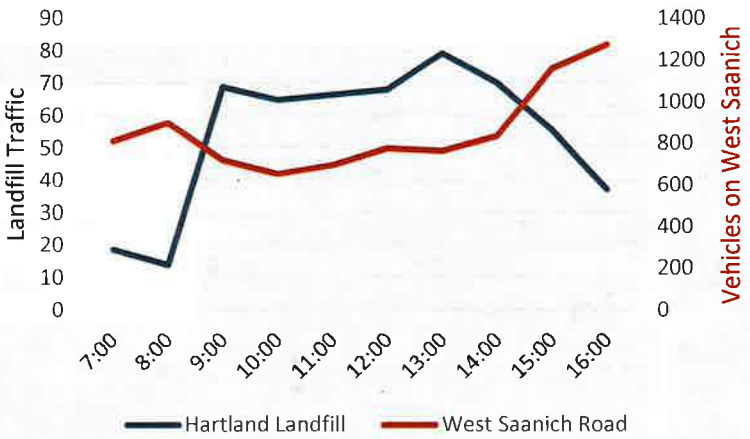


Figure 3.3: Weekday Vehicle Profiles

3.10 Peak Hour Vehicle Volumes

Exhibit 3.2 illustrates the estimated 2020 vehicle volumes for the three time periods considered in this study. The weekday morning and afternoon volumes were obtained from the data collected in 2017 and 2019 with a 1% annual increase applied to movements on West Saanich Road, Wallace Drive, and Willis Point Road which is a common average long-term vehicle growth rate for non-downtown locations. Although a 10% annual increase was previously observed on Willis Point Road in the peak commuting direction, this level of vehicle growth can typically never be sustained over the long-term. In addition, once the McKenzie Interchange is complete, driving from the West Shore to the Saanich Peninsula via the highway system is expected to become quicker, reducing the desire for people to commute on Willis Point Road. No increase was applied to Hartland Avenue as no vehicle growth has occurred on this street in recent years.

3.11 Vehicle Operations

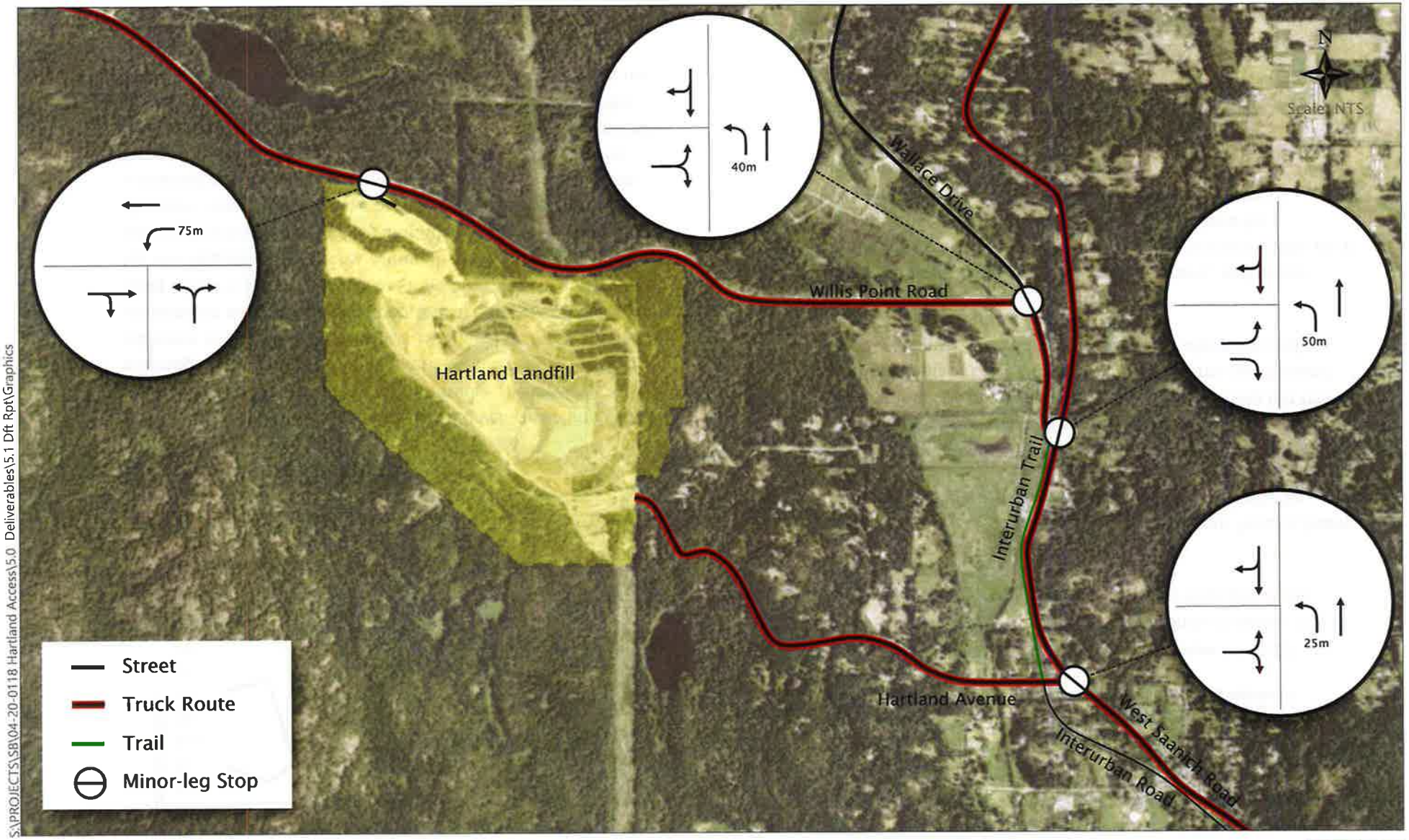
Exhibit 3.3 illustrates the Levels of Service (LOS) which were obtained from Synchro software. LOS measures the average number of seconds vehicles wait to travel through an intersection. Existing operations were assessed at the study intersections except for the Willis Point Road access which is currently only used for construction vehicles and workers.

For unsignalized intersections, LOS ranges from 'A' (0-10 seconds of delay) to 'F' (more than 50 seconds of delay). LOS D, E, and F can be common for critical turning throughout the region.

The analysis accounts for the observed peak hour factors, heavy vehicle percentage, and road grades. Key findings include:

- All movements operate at LOS D or better indicating there are no intersections with significant delay.
- The most critical movements are vehicles turning left from either Wallace Drive or Hartland Avenue onto northbound West Saanich Road during the weekday afternoon and Saturday peak traffic periods.

In addition to LOS, the volume to capacity ratio, and queue lengths were also assessed, however, for all scenarios they were low, indicating that there are no existing concerns for intersections operating near their theoretical capacity or substantial vehicle queues developing.

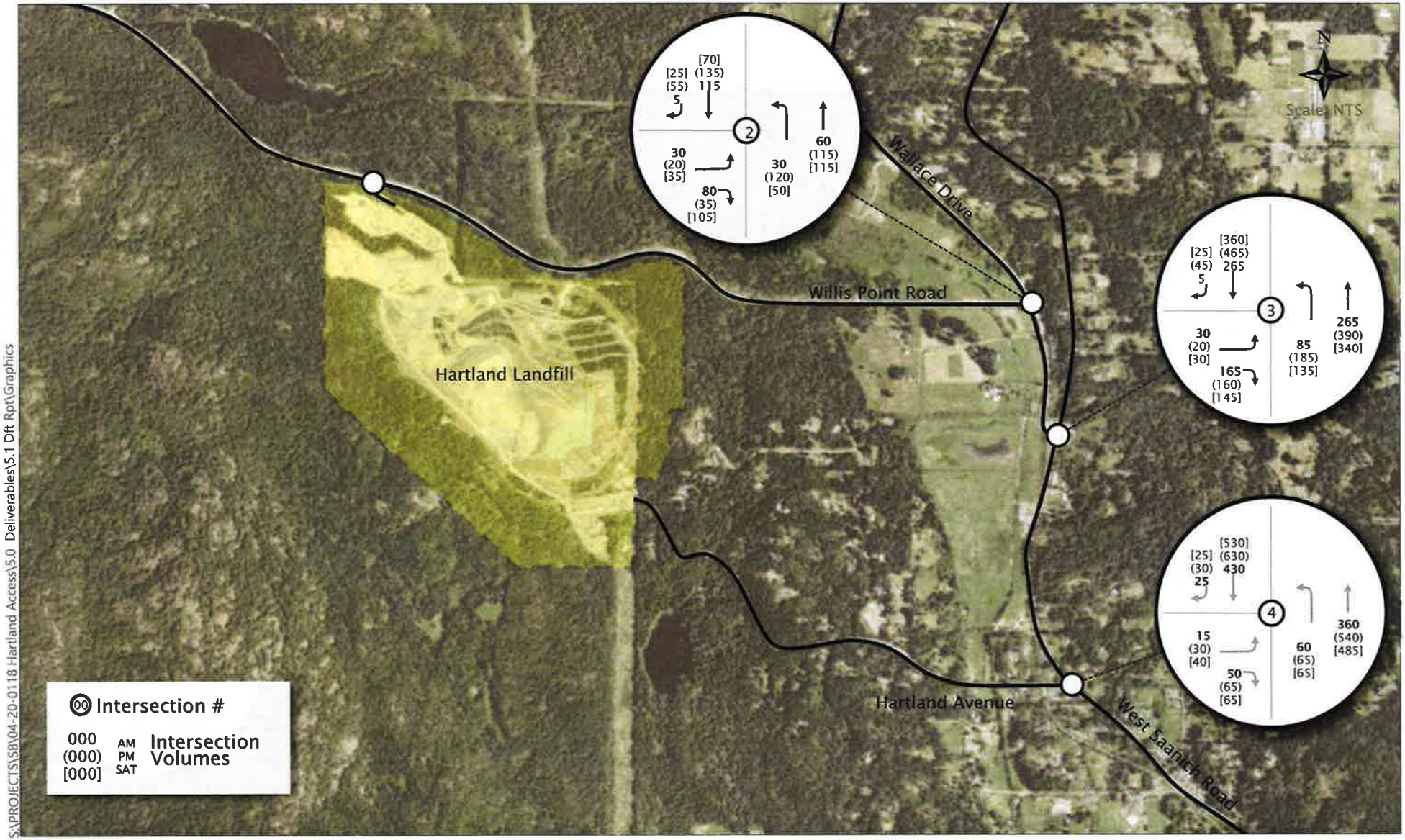


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Exhibit 3.1
Transportation Network

Hartland Landfill Alternate Access Transportation Impact Study
04-20-0118 May 2020

bunt & associates

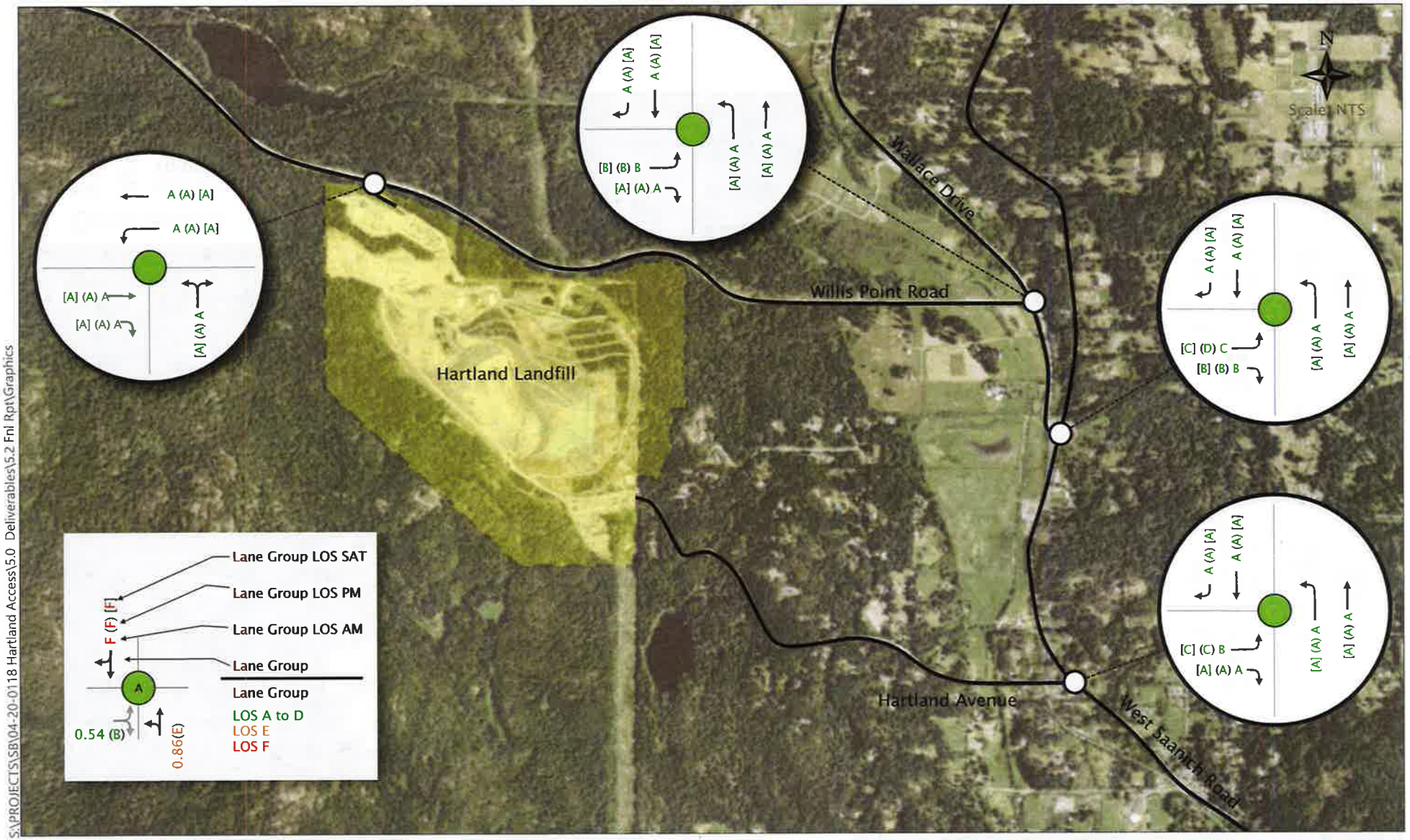


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Exhibit 3.2
Existing Vehicle Volumes

Hartland Landfill Alternate Access Transportation Impact Study
04-20-0118 June 2020

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Exhibit 3.3
Existing Vehicle Levels of Service

Hartland Landfill Alternate Access Transportation Impact Study
04-20-0118 June 2020

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4. ANALYSIS

4.1 Scenarios

Three future scenarios were developed to assess the positive and negative impacts of changing the vehicle access routing for the Hartland Landfill from the current condition with Hartland Avenue as the primary access to Willis Point Road becoming the primary access:

1. **No change in vehicle access**
   a. The vehicle access arrangement remains as-is with no changes to how vehicles enter or exit the site
2. **Move commercial vehicle access to Willis Point Road**
   a. The automated scale is moved to near Willis Point Road which is where all registered haulers (commercial and municipal trucks) would enter and exit the site.
3. **Move the primary vehicle access to Willis Point Road**
   a. The large majority of vehicles accessing the site would do so via Willis Point Road including all residential traffic and the commercial haulers. The site office would also be relocated to near Willis Point Road. The Hartland Avenue access would remain for emergency use or landfill operations only.

4.2 Vehicle Volumes

Exhibit 4.1 illustrates the 2030 vehicle volumes if there is no change in vehicle access. They were estimated by applying a 1% annual increase to movements on West Saanich Road, Wallace Drive, and Willis Point Road. No increase was applied to Hartland Avenue as no vehicle growth has occurred on this street in recent years.

For the additional two scenarios, the existing number of vehicles and their route through the study area was estimated so that they could be re-assigned to use the Willis Point Road access.

Table 4.1 summarizes the average number of vehicles accessing the landfill between March and October of 2019. The vehicle trip estimates are based on the landfill's transaction data. Data from the winter (November to February) was excluded since there are fewer vehicles accessing the landfill during this period (see Figure 2.2).

Table 4.1: Existing Landfill Vehicle Trip Generation

TRIP GENERATOR	WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR			SATURDAY PEAK HOUR		
	Total	In	Out	Total	In	Out	Total	In	Out
Commercial Customers	28	14	14	23	11	12	10	5	5
Residential Customers	34	18	14	52	25	27	150	74	76
Staff/Contractors	12	10	2	15	5	10	4	2	2
TOTALS	74	42	30	90	41	49	164	81	83

Residential customers represent approximately two-thirds of the vehicles accessing the landfill during the weekday peak hours and almost all of the vehicles during the Saturday peak hour. The Saturday peak hour has the highest vehicle trip generation at approximately 80 vehicles both entering and exiting the landfill.

For analysis purposes, the landfill's vehicle trip generation was assumed to remain the same over the medium-term since the weight of deposited waste is forecasted to remain at a similar or lower level over the next 30 years (see Figure 2.1).

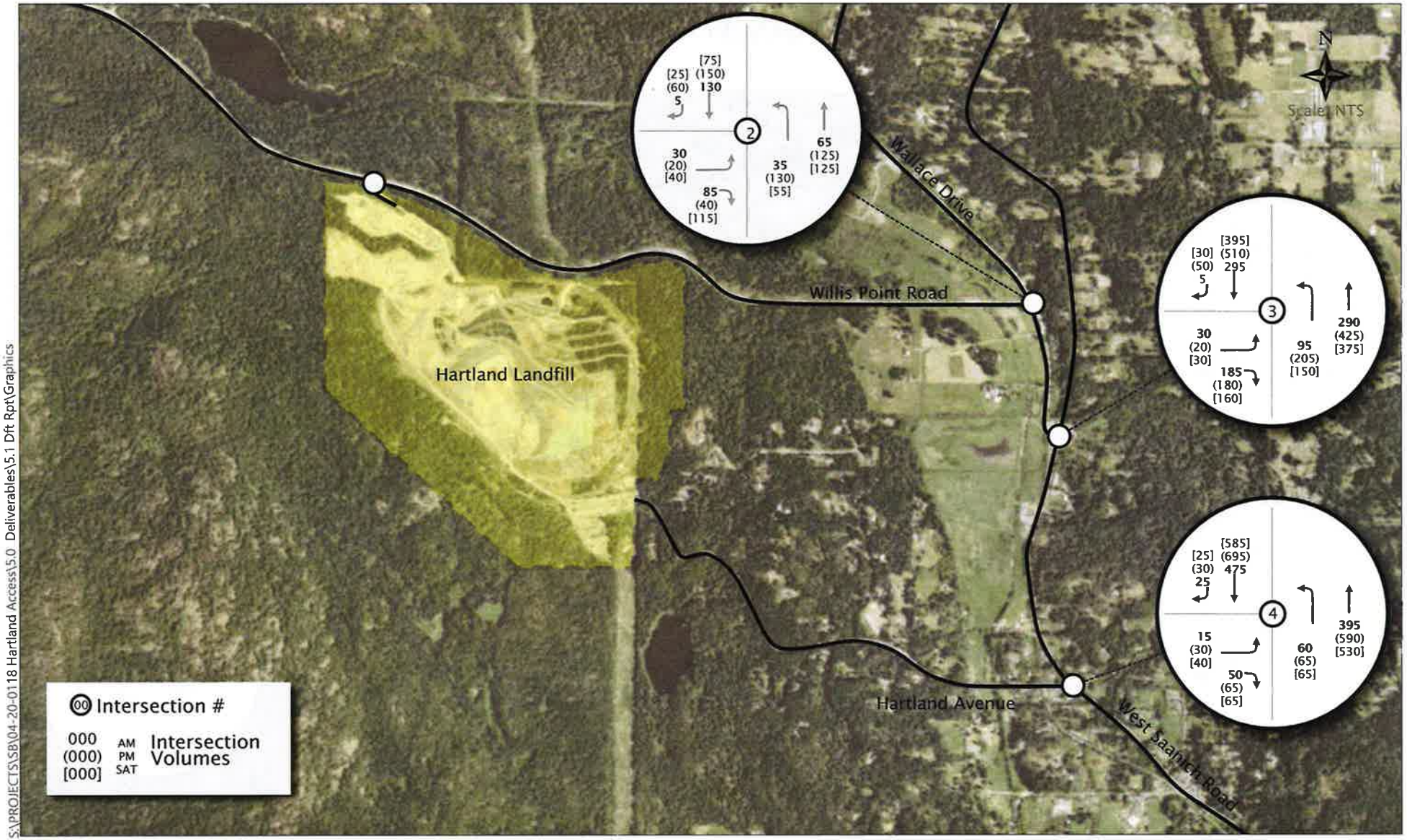
There is a potential for additional vehicle trips caused by aggregate production at the landfill. There is a potential for up to

12 additional round trips per hour on weekdays (12 trucks inbound and outbound) during select time periods to remove aggregate from the landfill. Due to uncertainty regarding the vehicle trip generation during this study's weekday peak hours (8:30 - 9:30 am and 3:30 – 4:30 pm), the impacts of additional vehicle trips due to aggregate production (or other causes) is considered within **Section 4.4 and 4.5** which illustrates the excess vehicle capacity on the study streets and intersections.

Based on observed travel patterns for existing landfill traffic, it was assumed that 70% of vehicles accessing the site were coming to/from the south (via West Saanich Road) and 30% were coming to/from the north (20% via West Saanich Road and 10% via Wallace Drive).

Exhibit 4.2 illustrates the estimated change in vehicle volumes for changing the commercial vehicle access to Willis Point Road. For this scenario, 15 commercial vehicles (one vehicle each way every four minutes) are relocated from Hartland Avenue to Willis Point Road during the weekday morning peak hour with a lower amount during other hours. **Exhibit 4.3** presents the resulting 2030 vehicle volumes if the commercial vehicle access is changed to Willis Point Road.

Exhibit 4.4 illustrates the estimated change in vehicle volumes for the primary vehicle access to Willis Point Road. In this scenario, up to 80 vehicles (inbound and outbound) are relocated from Hartland Avenue to Willis Point Road during the Saturday peak hour which is the busiest period for residential hauling. **Exhibit 4.5** presents the resulting 2030 vehicle volumes if the primary vehicle access is changed to Willis Point Road.



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Exhibit 4.1

2030 Vehicle Volumes - No Change in Vehicle Access

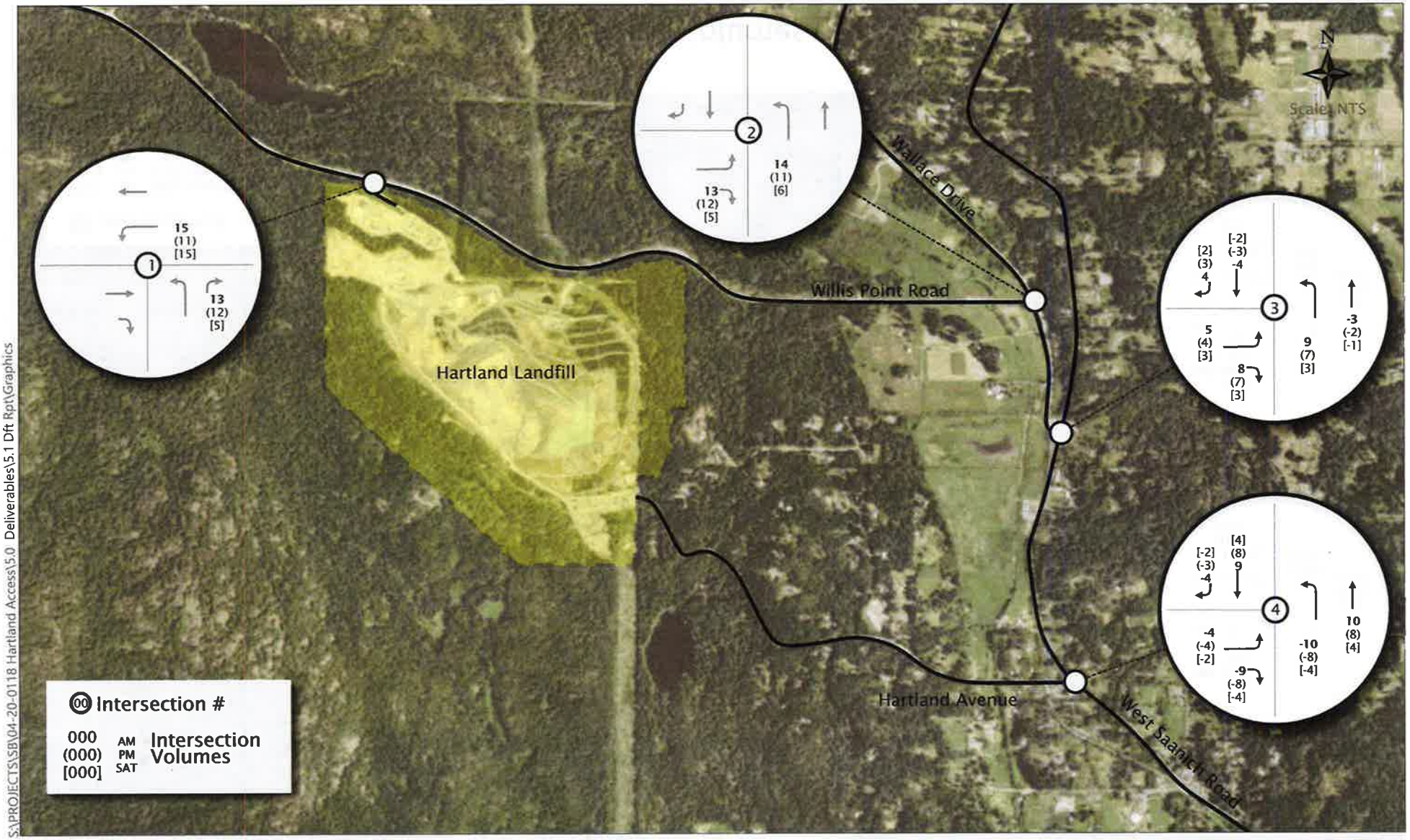
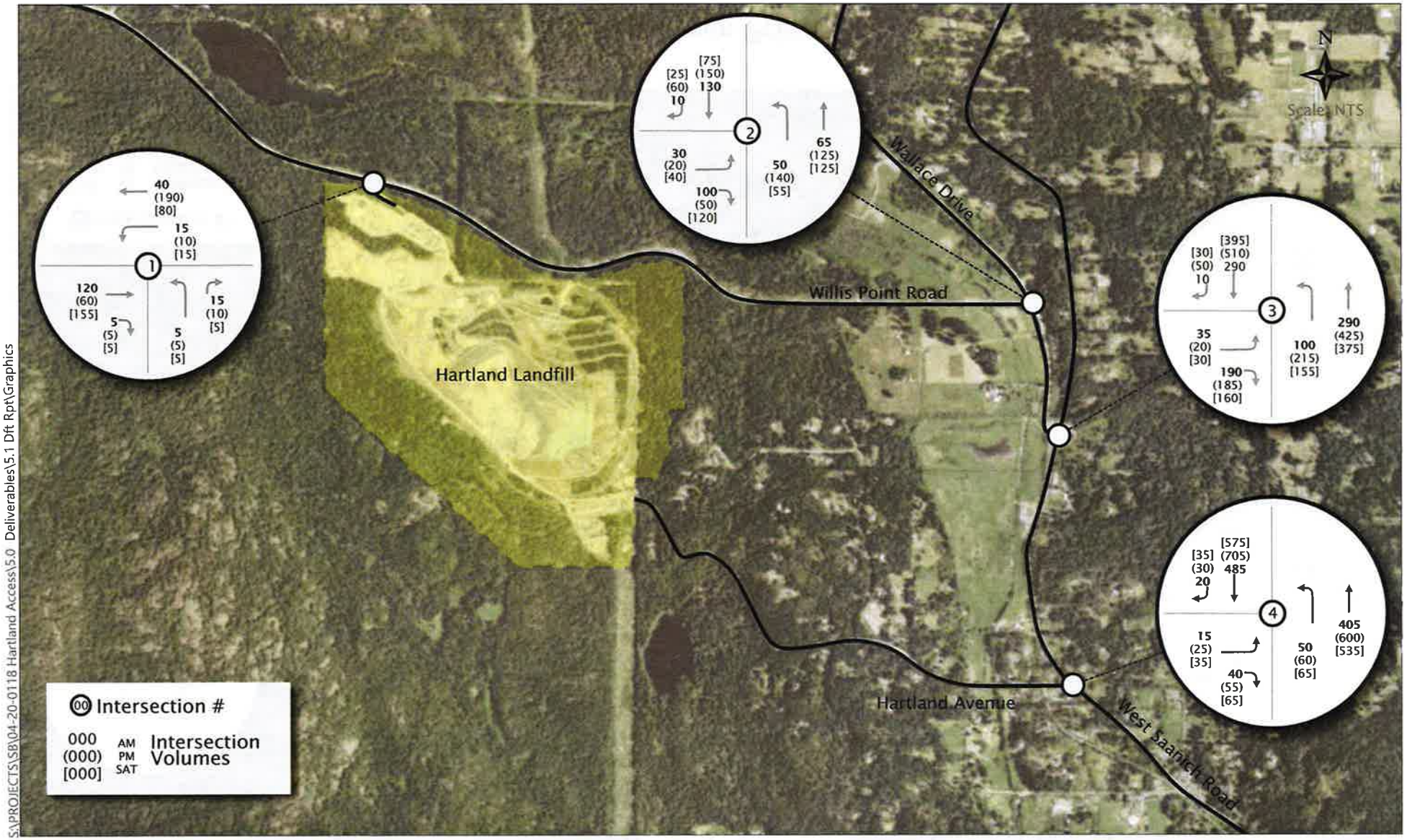


Exhibit 4.2

Change in Vehicle Volumes - Move Commercial Vehicle Access to Willis Point Road

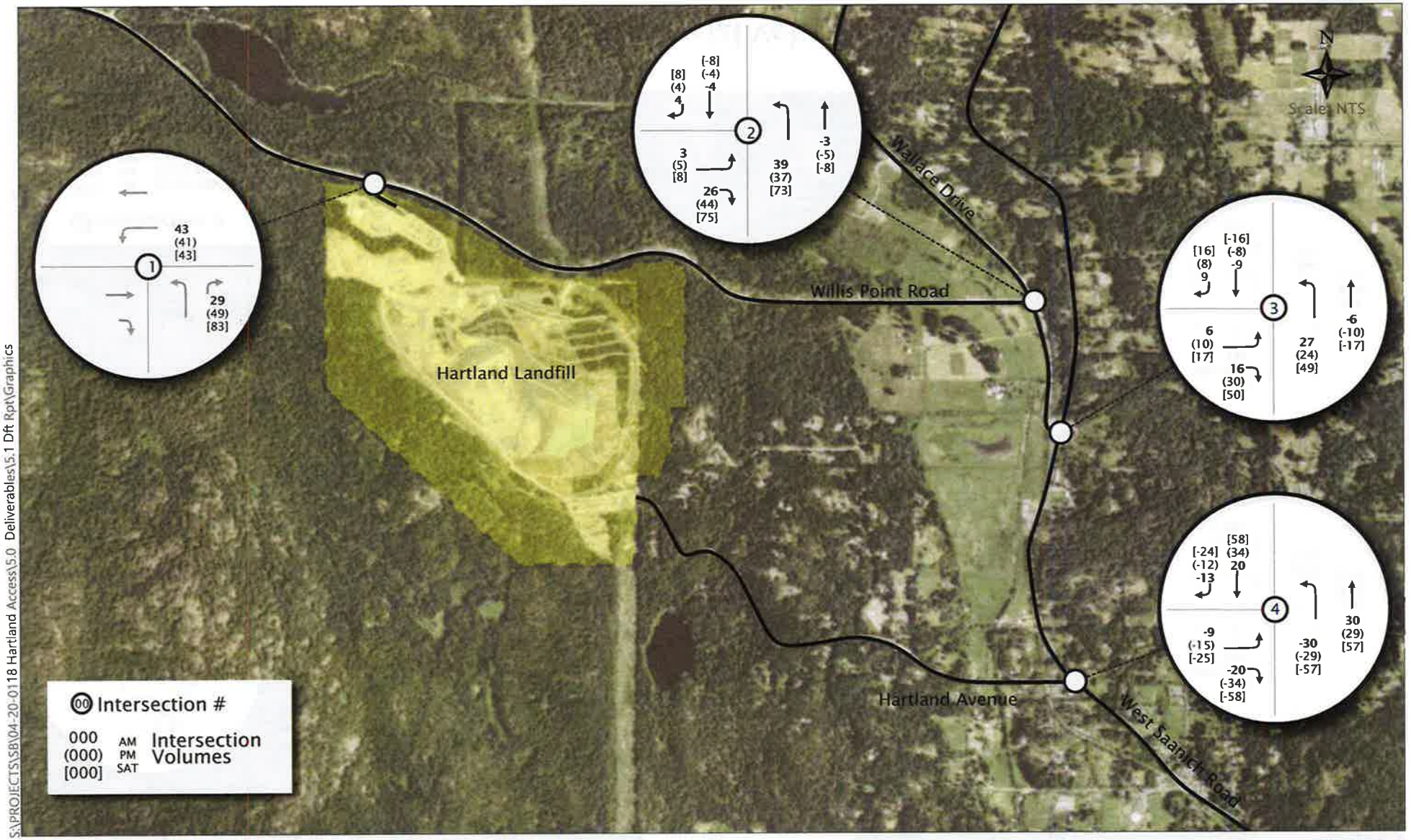
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Exhibit 4.3

2030 Vehicle Volumes - Move Commercial Vehicle Access to Willis Point Road

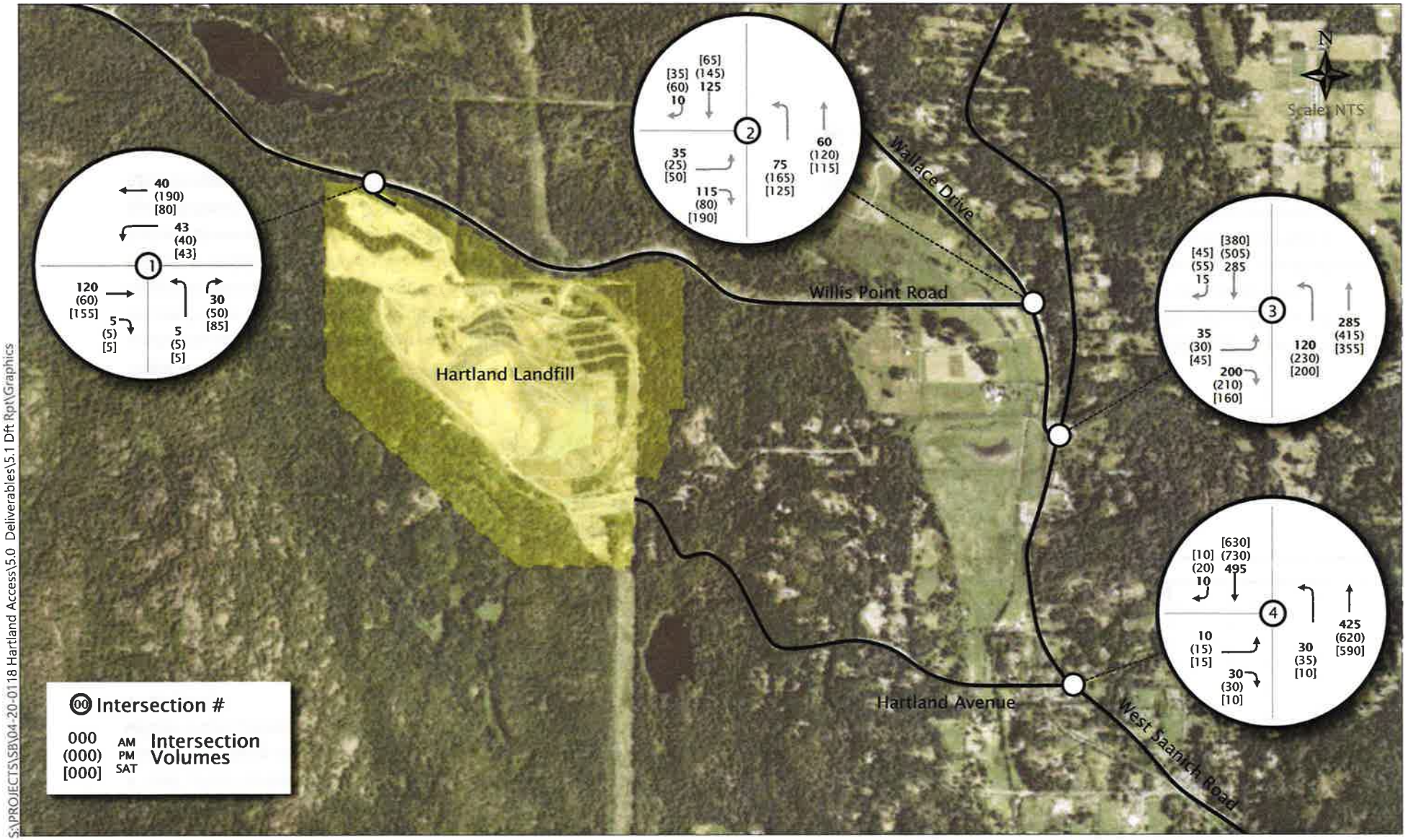


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Exhibit 4.4

Change in Vehicle Volumes - Move Primary Access to Willis Point Road

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Exhibit 4.5

2030 Vehicle Volumes - Move Primary Access to Willis Point Road

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4.3 Safety

4.3.1 Safety Review Process

A road safety review of the study area was completed with the goal of assessing the road safety impacts of changing local vehicle travel patterns by changing the landfill's vehicle access arrangement.

Collision data was obtained from ICBC's public website for the 5-year period from 2014 to 2018, for the different roads within the study area. Detailed collision data describing each reported collision was not available at the time of writing this report.

A site visit was completed during the daytime on April 30, 2020. Although the landfill typically does not operate when it is dark outside, for completeness, a nighttime review was completed on May 6, 2020, to identify visibility issues.

4.3.2 Collision Data

Table 4.2 summarizes the available collision data within the study area which is based on insurance claims submitted to ICBC for the 5-year period from 2014 to 2018 inclusive. There were no reported fatalities within this period. Overall, the majority of the collisions within the study area occur at the intersections of Wallace Drive with (i) Willis Point Road (four per year) and (ii) West Saanich Road (12 per year). Discussion regarding the safety of each section is provided in the following section.

Table 4.2: 2014 - 2018 Collisions in the Study Area

LOCATION	TOTAL	INJURY	PDO	CYCLIST	PEDESTRIAN
Willis Point Road & Hartland Access	0	0	0	0	0
Willis Point Road	0	0	0	0	0
Wallace Drive & Willis Point Road	19	5	10	0	0
Wallace Drive	0	0	0	0	0
West Saanich Road & Wallace Drive	69	18	45	3	3
West Saanich Road	4	2	2	0	0
West Saanich Road & Hartland Avenue	3	1	2	0	0
Hartland Avenue	4	1	3	0	0

Source: ICBC

PDO - Property Damage Only

4.3.3 Audit Findings

Tables 4.3 and 4.4 summarize the audit findings for the study intersections and street segments, respectively. Pictures are provided following the audit finding tables.

The available Intersection Sight Distance (ISD) was measured and compared to the suggested distances in the Geometric Design Guide for Canadian Roads. The suggested distances were established by TAC with the goal of minimizing the speed drivers in the opposing direction must slow down to accommodate a vehicle turning in front of them. The critical sight direction is typically not the direction a driver is turning (i.e. the critical direction for a driver turning right onto the main road is looking left on the main road for oncoming vehicles).

Table 4.3: Safety Audit Findings - Intersections

INTERSECTION	INTERSECTION SIGHT DISTANCE		INFRASTRUCTURE OBSERVATIONS	BEHAVIOUR OBSERVATIONS
	Available	Suggested		
Willis Point Road & Hartland Access	NBL: 200 m NBR:300 m EBL: 330 m	NBL: 150 m NBR: 130 m EBL: 110 m (70 km/h design speed)	Pavement markings are faded and need to be replaced. [Picture 1]	No unusual or unsafe behaviour observed.
Wallace Drive & Willis Point Road	NBL: 150 m EBL: 175 m EBR: 125 m [Picture 2]	NBL: 95 m EBL: 130 m EBR: 110 m (60 km/h design speed)	Damage to channelization island from car tires. [Picture 3]	No unusual or unsafe behaviour observed.
West Saanich Road & Wallace Drive	NBL: 190 m EBL: 250 m EBR: 160 m [Picture 4]	NBL: 110 m EBL: 150 m EBR: 130 m (70 km/h design speed)	Multi-use trail terminates 20 m from the intersection which could cause conflicts for trail users. [Picture 5] Northbound bus stop located at the intersection could cause conflicts from the bus stopping in the intersection.	Vehicles were observed turning right very quickly from Wallace Drive to West Saanich Road.
West Saanich Road & Hartland Avenue	NBL: 70 m EBL: 150 m EBR: 60 m	NBL: 110 m EBL: 150 m EBR: 130 m (70 km/h design speed)	Very poor sight distance for drivers looking north on West Saanich Road due to topography. [Pictures 6 and 7] Northbound and southbound bus stops located at the intersection could cause conflicts from the bus stopping in the intersection.	Drivers turning from Hartland Avenue to West Saanich Road were observed creeping forward from the stop bar to gain additional sight distance and accelerate quickly indicating their concern of not knowing if there is an oncoming vehicle.

NB - Northbound, EB - Eastbound, SB - Southbound, L - Left, R - Right

Table 4.4: Safety Audit Findings – Street Segments

STREET	LAND USES	DRIVEWAY & INTERSECTION FREQUENCY	WIDTH	CHARACTERISTICS	INFRASTRUCTURE OBSERVATIONS
Willis Point Road	Hartland Landfill & Department of National Defence.	Minimal	Travel Lane: 3.5 m Shoulder: 1.2 – 1.4 m	Typical rural road.	The white line on the westbound shoulder needs to be repainted.
Wallace Drive	Rural	Infrequent	Travel Lane: 3.5 m Shoulder: 1.2 – 1.6 m	Typical rural road.	None
West Saanich Road	Rural residential and commercial	Moderate	Travel Lane: 3.5 m Shoulder: 1.3 – 1.8 m	Moderate horizontal and vertical curves.	None
Hartland Avenue	Rural residential	Frequent	Travel Lane: 3.6 m Shoulder: 0 – 0.2 m	Frequent horizontal and vertical curves. Unforgiving roadside due to vegetation, rocks, and vertical changes. [Picture 8]	The white line on the westbound shoulder needs to be painted.



1: Willis Point Road & Hartland Access - Worn pavement markings



2: Willis Point Road - Looking north on Wallace Drive (reasonable visibility but could be improved by trimming vegetation)



5: Willis Point Road & Wallace Drive - Damaged traffic island



4: Wallace Drive - Looking north on West Saanich Road (good visibility)



5: Interurban Trail trailhead located near West Saanich Road & Wallace Drive intersection



6: Hartland Avenue – Looking north on West Saanich Road from the stop bar (very poor visibility)



7: Hartland Avenue – Looking north on West Saanich Road from in front of the stop bar (only the roof of the oncoming vehicle is visible)



8: Hartland Avenue – Frequent horizontal and vertical profile changes. No shoulders.

4.3.4 Key Issues and Recommendations

Key issues and recommendations to improve safety include:

- The pavement markings at the Hartland Landfill access on Willis Point Road should be repainted following construction completion of the adjacent Residual Treatment Facility.
- The westbound white edge line on Willis Point Road should be repainted.
- Vegetation should be trimmed on a regular basis surrounding the Wallace Drive & Willis Point Road intersection to improve sight distances.
- The multi-use trail terminates at Wallace Drive, 20 metres from West Saanich Road. Two collisions involving people walking and cycling were reported to ICBC during the 5-year collision history which may be due to people accessing the trail without any connecting active transportation infrastructure. Saanich should investigate opportunities to allow people to cross Wallace Drive safely either at the West Saanich Road intersection or further away from the intersection. Saanich could also investigate the feasibility of widening Wallace Drive to provide bicycle lanes or extending the multi-use trail.
- The West Saanich Road & Wallace Drive intersection had the highest occurrence of collisions in the study area. Drivers make the eastbound right turn from Wallace Drive to West Saanich Road very quickly. This could cause collisions either when vehicles merge onto West Saanich Road or if drivers need to stop abruptly and cause a rear-end collision with the vehicle behind them. This is potentially the reason for the high number of collisions reported to ICBC at this intersection. Saanich should consider options to reduce vehicle turning speed by reducing the turning radius while still providing sufficient space for large vehicles. This would be a fairly simple improvement to improve the intersection and should be reviewed in more detail by Saanich.
- There is very poor visibility of southbound vehicles on West Saanich Road approaching Hartland Avenue. Saanich should consider opportunities to reduce southbound vehicle speeds. Note, relocating the landfill's access to Willis Point Road will significantly reduce the number of vehicles turning at this intersection.
- A white edge line should be painted on Hartland Avenue in the westbound direction to improve nighttime visibility. The lack of shoulder on Hartland Avenue and unforgiving roadside containing many obstacles will increase the severity of collisions if vehicles depart from the travel lane

4.3.5 Comparison

Overall, the route to the Willis Point Road access is more suitable for larger volumes of vehicles and heavy vehicles since the West Saanich Road & Wallace Drive intersection provides improved turning opportunities (less oncoming traffic) than the West Saanich Road & Hartland Avenue, and vehicle sight-distance is better at both the Willis Point Road intersection with Wallace Road and at the Wallace Road intersection with West Saanich Road.

In addition, compared to Hartland Avenue, Willis Point Road has a more consistent horizontal and vertical road profile as well as providing road shoulders.

4.4 Street Capacity

The Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads notes that Rural Local Streets (the most applicable category for Hartland Avenue) typically have fewer than 1,000 vehicles per day and Rural Collector Streets (the most applicable category for Willis Point Road) typically have fewer than 5,000 vehicles per day. The difference between the categorization is due to Hartland Avenue primarily providing local access to locations on the street (i.e. frequent driveways), whereas Willis Point Road primarily provides vehicle travel through the street segment being evaluated (i.e. infrequent driveways).

Figures 4.1 and 4.2 summarizes the average Saturday summer vehicle volume on these streets compared to the typical maximum volumes noted by TAC (1,000 and 5,000 vehicles per day, respectively). Note that summer data was collected during the COVID-19 pandemic and is higher than the 'normal' vehicle volumes during the rest of the year.

Hartland Avenue currently has more vehicles than a typical Rural Local Street (1,000 vehicles per day) and will continue operating above the threshold if the landfill's primary access is relocated to Willis Point Road (Scenario 3). On weekdays, the volume of vehicles would be under the threshold for Scenario 3.

Willis Point Road currently has two thirds of the vehicles of a typical Rural Collector Street (5,000 vehicles per day) even during a summer Saturday (during COVID-19) when nearby parks were heavily used. It is forecasted to remain at least 20% below the typical threshold even if all landfill access is relocated to Willis Point Road (Scenario 3).

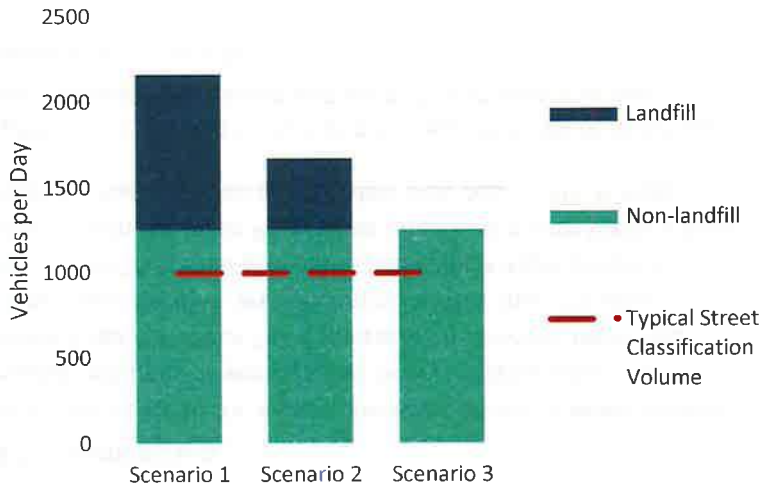


Figure 4.1: Hartland Avenue Vehicle Volume – Summer Saturday

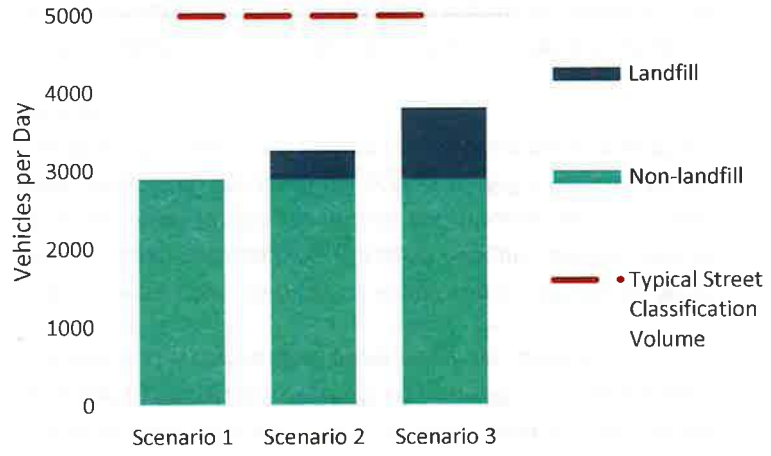


Figure 4.2: Willis Point Road Vehicle Volume – Summer Saturday

4.5 Intersection Level of Service

Table 4.5 summarizes the vehicle operations for the three scenarios being analyzed. The LOS and volume/capacity (V/C) ratio is shown for each movement. A V/C ratio greater than 1.0 indicates that the movement is above its theoretical capacity. V/C ratios of 0.8-0.9 are common in urban settings. All movements are estimated to remain under 0.4 for all scenarios, indicating that they are forecasted to operate well within capacity.

The LOS does not vary between scenarios indicating that changing the landfill's vehicle access will not significantly impact the time it takes to travel through an intersection.

Table 4.5: 2030 Vehicle Level of Service

INTERSECTION	MOVEMENT	WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR			SATURDAY PEAK HOUR		
		Scenario 1	Scenario 2	Scenario 3	Scenario 1	Scenario 2	Scenario 3	Scenario 1	Scenario 2	Scenario 3
Willis Point Road & Hartland Access	EBT/R	-	-	-	-	-	-	-	-	-
	WBL	A, -	A, 0.01	A, 0.04	A, -	A, 0.01	A, 0.03	A, -	A, 0.00	A, 0.07
	WBT	-	-	-	-	-	-	-	-	-
	NBL/R	A, -	A, 0.02	A, 0.04	A, -	A, 0.01	A, 0.05	A, -	A, 0.01	A, 0.11
Wallace Drive & Willis Point Road	EBL	B, 0.05	B, 0.06	B, 0.07	B, 0.05	B, 0.05	C, 0.07	B, 0.08	B, 0.08	B, 0.12
	EBR	A, 0.11	A, 0.13	A, 0.15	A, 0.05	A, 0.06	A, 0.10	A, 0.14	A, 0.15	A, 0.23
	NBL	A, 0.03	A, 0.04	A, 0.06	A, 0.11	A, 0.11	A, 0.14	A, 0.04	A, 0.04	A, 0.10
	NBT	-	-	-	-	-	-	-	-	-
	SBT/R	-	-	-	-	-	-	-	-	-
West Saanich Road & Wallace Drive	EBL	C, 0.10	C, 0.11	C, 0.13	E, 0.15	E, 0.18	E, 0.25	D, 0.17	D, 0.18	D, 0.30
	EBR	B, 0.28	B, 0.29	B, 0.30	C, 0.35	C, 0.36	C, 0.40	B, 0.28	B, 0.28	B, 0.36
	NBL	A, 0.08	A, 0.09	A, 0.11	A, 0.22	A, 0.23	A, 0.25	A, 0.15	A, 0.15	A, 0.2
	NBT	-	-	-	-	-	-	-	-	-
	SBT/R	-	-	-	-	-	-	-	-	-
West Saanich Road & Hartland Avenue	EBL/R	B, 0.15	B, 0.012	B, 0.08	C, 0.32	C, 0.28	C, 0.16	C, 0.33	C, 0.32	C, 0.08
	NBL	A, 0.06	A, 0.05	A, 0.03	A, 0.08	A, 0.07	A, 0.05	A, 0.08	A, 0.07	A, 0.01
	NBT	-	-	-	-	-	-	-	-	-
	SBL/T	-	-	-	-	-	-	-	-	-

Notes:

- NB – Northbound, EB – Eastbound, SB – Southbound, L – Left, T – Through, R - Right
- Scenario 1 – No change in vehicle access
- Scenario 2 – Move commercial vehicle access to Willis Point Road, residential access to remain via Hartland Avenue
- Scenario 3 – Move the primary vehicle access to Willis Point Road for all vehicle streams arriving/departing the landfill
- The eastbound left-turn movements from Wallace Drive and Hartland Avenue are highlighted in grey since they are the movements most impacted by relocating the vehicle access to Willis Point Road. As shown, the impact is insignificant.

4.6 Street Grade

The steepness of a street can affect how fast vehicles travel as well as safety, particularly for larger vehicles, such as the commercial vehicles accessing the landfill. Within the study area, Willis Point Road and Hartland Avenue both have significant elevation changes of approximately 100 metres.

Willis Point Road has a single large hill with a maximum grade of 8% whereas Hartland Avenue has a number of rolling hills with grades up to 15%. TAC suggests a maximum grade of approximately 10% for these environments, indicating that the grades on Willis Point Road are more appropriate for the street's use, particularly for large vehicles.

4.7 Truck Climbing Lanes

4.7.1 The Need for a Truck Climbing Lane

On two-lane roads, short segments of a third lane can assist with overtaking and reduce the amount of time vehicles trail other vehicles. When this is caused by trucks travelling slower than usual due to elevation gain, the preferred treatment is a truck climbing as opposed to a general passing lane.

Both routes to the landfill (Willis Point Road and Hartland Avenue) have a significant elevation gain from West Saanich Road. Depending on specific circumstances, this could cause heavy vehicles accessing the landfill to travel below typical speeds which could cause vehicles to queue behind the slower moving trucks.

The pavement markings on Willis Point Road indicate that passing is allowed in the opposing lane on the 800 metres closest to Wallace Drive. The remainder of Willis Point Road and all of Hartland Avenue do not provide safe passing opportunities in the opposing lane.

TAC suggests that a climbing lane should be considered when all of the following three conditions are met:

1. Total upgrade vehicle flow in excess of 200 vehicles per hour.
2. Upgrade truck flow in excess of 20 vehicles per hour.
3. One of the following:
    a. A 15 km/h or greater speed reduction is expected for a typical heavy truck.
    b. Level of Service E or F on the grade.
    c. A reduction of two or more levels of service is experienced when moving from the approach road.

The second criterion is currently met on both Willis Point Road and Hartland Avenue with upgrade truck flows exceeding 20 vehicles per hour during select hours of the day.

The first criterion is only met if commercial and residential access is relocated to Willis Point Road and only during the weekday afternoon peak hour. It is not met in any other conditions.

The third criterion is not met for either Willis Point Road or Hartland Avenue for any of the three analysis scenarios, nor is it met if surplus rock removal trucks are included. This is seen as the most important of the three criteria as the purpose of an additional lane would be to provide slower moving trucks with separate space such that faster moving vehicles can continue to travel at their preferred speed. However, there was not a noticeable reduction in truck speeds caused by the elevation gain

on Willis Point Road. Trucks were observed travelling around the 60 km/h speed limit on the uphill and flat sections of Willis Point Road. Therefore, vehicle drivers would still be able to drive the speed limit without an additional lane.

The landfill currently generates up to 28 commercial vehicle trips per peak hour (14 in and out), or approximately one commercial vehicle every four minutes in each direction. Therefore, there is only a small probability of drivers encountering a commercial vehicle in front of them on weekdays and a minuscule probability on weekends. Therefore, the impact on other drivers on Willis Point Road and Hartland Avenue is minimal.

In addition to the financial and environmental implications of constructing a climbing lane, it would also cause drivers to increase their speed due to the street appearing wider. There is a direct relationship between the width of a street and the speed in which drivers choose to travel. Adding a lane on Willis Point Road is anticipated to increase vehicle speeds higher than the existing design where the average speed is already above the speed limit.

Potential Willis Point Road Truck Climbing Lane

Although TAC does not suggest a climbing lane should be considered, two options were prepared by Stantec Consulting Ltd. for consideration:

1. 500 metre road widening beginning 700 metres west of Wallace Drive at the base of the westbound hill and terminating at the first horizontal curve.
2. Extend the existing left-turn lane into the landfill by 450 metres.

The first option is positioned at the steepest part of Willis Point Road where the grade reaches up to 8%. At this location, 76% of westbound (uphill) vehicles were observed exceeding the 60 km/h speed limit. Assuming that heavy trucks travel at 60 km/h (which was observed) and passenger vehicles travel at 70 km/h, up to two passenger vehicles could pass one heavy truck if they are immediately trailing the truck entering the 500 metre truck climbing lane. These assumptions result in the passenger vehicles being able to pass the landfill 15 seconds quicker if they are able to pass a slower vehicle than if they had to follow a slower vehicle all the way to the landfill's entrance.

The second option allows landfill bound vehicles to exit the westbound through lane on Willis Point Road 450 metres sooner compared to the existing left-turn lane. Using the same assumptions as above, this would result in reducing travel times of westbound through vehicles by up to 4 seconds if they are immediately trailing a slower vehicle.

4.8 Active Transportation

The Interurban Trail is the primary walking facility through the study area with its trailhead at Wallace Drive. It also provides an off-road cycling connection. A significant number of cyclists (500 per day, 50 per hour) were recorded on West Saanich Road; Wallace Drive and Willis Point Road were recorded as having considerably less bike traffic, and Hartland Avenue even less.

Retaining Hartland Avenue as the primary access route to the landfill would retain a higher level of vehicles crossing the Interurban Trail and quite possibly discouraging people from cycling on Hartland Avenue due to the frequent passing vehicles.

Moving the vehicle access to Willis Point Road would reduce the number of vehicles crossing the Interurban Trail and would enable people to feel comfortable cycling on Hartland Avenue.

However, it would also increase the number of vehicles on Wallace Drive and Willis Point Road which would reduce the comfort of cycling on those streets.

4.9 Vehicle Emissions

The particles that vehicles emit from engine exhaust and as well from vehicle braking generate air pollution which has health impacts immediately surrounding the source. Engine exhaust also emits carbon dioxide which is a greenhouse gas that contributes to climate change.

The difference in vehicle emissions was estimated using the SimTraffic traffic analysis model which considers vehicle volume, vehicle speed, driving distances, and street grades, including all public streets in the immediate surrounding area and the internal landfill roads. The analysis was based on the future active face location near the northwest end of the site where commercial vehicles will deposit waste within a few years.

The vehicle emissions analysis in the previously issued report did not include emissions associated with travel within the landfill property. When these emissions are included, the results indicate that the Willis Point Road access scenarios have marginally lower greenhouse gas emission profiles than keeping the Hartland Avenue access.

During landfill operating hours, moving the commercial vehicle access only to Willis Point Road is anticipated to reduce vehicle emissions in the study area by 5% during peak hours. With the relocation of all landfill vehicle traffic to Willis Point Road, the emissions are estimated to decrease by 3%. The reduction is primarily caused by commercial vehicles being able to access the landfill's active face using flatter higher speed roads (Wallace Drive and Willis Point Road) compared to steeper lower speed roads (Hartland Avenue and internal landfill roads).

The Hartland Landfill is a regional destination which people commonly drive 10 to 15 kilometres to reach. The scope of the vehicle emissions analysis is limited to the incremental change in emissions within the immediate surrounding area. The portion of emissions changes previously stated are a small fraction of the total emissions from vehicles traveling from their origin to the landfill.

There are no residential properties along the section of Willis Point Road where landfill bound traffic will pass and there are over 200 residents living on or near Hartland Avenue. Therefore, the proximity-based health effects of air pollution would be lower if vehicle access was relocated to Willis Point Road.

4.10 On-site Circulation

Exhibit 4.6 illustrates the access routes between the two vehicle access points for the landfill with the active filling area which is planned to progress to the northwest within the next few years. Only commercial and landfill trucks are used within the site.

Table 4.6 summarizes the three internal roads that could be utilized to access the active filling area. All routes would require some degree of road widening to facilitate two-way truck traffic which would require at least 7.0 m of road width.

Table 4.6: Internal Road Attributes

ROUTE	HIGH LEVEL ROAD	PERIMITER ROAD	REISDUALS WAY
Distance On-site	1,400 m	2,100 m	700 m
Vertical Profile	Max 20% grade Steady Uphill	Max 15% grade Up and downhill	Max 11% Steady Uphill
Horizontal Profile	Minimal turns	Multiple turns including	A couple of wide turns
Road Width	6.0 - 7.5 m	3.5 - 7.0 m	8.0 m

Perimeter Road on the east side of the landfill would be a poor access route as it would present the highest risk out of the three roads caused by being the longest route and containing the most turns. Some turns have a radius as sharp as 21 metres which is minimum suggested radius TAC for low-speed (30 km/h design speed) environments. Tractor trailer vehicles are required to access the active filling area and would not be able to make these turns. Improving the road such that it has appropriate grades, width, and turn radii would require a significant amount of effort and may not be feasible given the proximity to existing landfill infrastructure.

High Level Road on the west side of the landfill would also be a poor access route. The road would need to widened and re-graded to reduce the grades to within 10% for regular use by commercial vehicles. There would be feasibility challenges to improving the road. The current filling area is directly to the east of the road, creating a 25 metre elevation drop and widening the road to the west would require blasting and rock removal. In addition, there is a 400 millimetre buried landfill gas header on the east side of the road which would have to be carefully monitored throughout nearby construction.

Residuals Way is the most appropriate access route as it is shorter and less steep than High Level Road and Perimeter Road. These two attributes would reduce the potential for risks occurring on-site and would provide feasible driving route to commercial drivers.

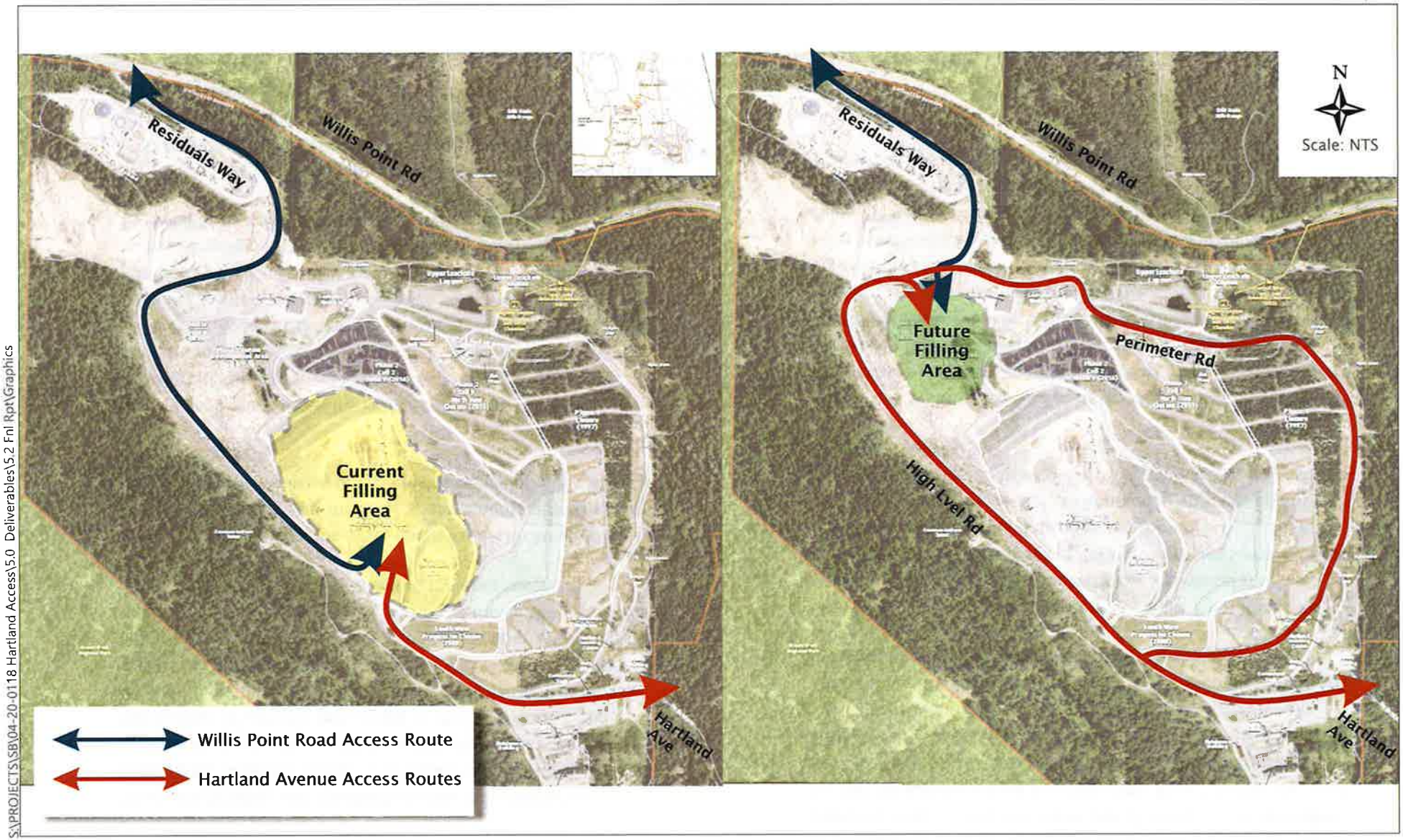
By only moving the commercial access to Willis Point Road, there would be fewer on-site conflicts between commercial and residential vehicles where they merge/diverge into their respective streams.

Another consideration is the Mount Work Regional Park mountain bike trailhead/parking lot located immediately before the existing Hartland Avenue landfill access. The current design causes landfill-bound vehicles to pass through the parking lot which can interrupt the ease of park users accessing the trails and restroom facilities. Relocating the landfill's vehicle access to Willis Point Road would allow for a trailhead/parking lot that is more inviting to trail users and reduces safety risks.

4.11 Infrastructure Condition

There is a short bridge on Hartland Avenue over Tod Creek 260 metres west of West Saanich Road. Although a bridge inspection was not completed, it appeared to be in a well-worn state. High use by heavy vehicles (such as commercial hauling trucks) significantly impacts a bridge's lifespan.

Maintaining vehicle access to the landfill on Hartland Avenue will cause the bridge to deteriorate at a faster rate than if vehicle access was on Willis Point Road. In addition, as the only entrance to the local area, if the bridge were damaged it would affect access to residents' homes, Mount Work Regional Park, and the landfill.



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Exhibit 4.6
On-site Commercial Vehicle Circulation

Hartland Landfill Alternate Access Transportation Impact Study

04-20-0118 August 2020

bunt & associates

5. SUMMARY

There are benefits and drawbacks to the three scenarios considered, however, overall, the impacts of re-routing vehicles to/from the Hartland Landfill are relatively modest compared to the number of vehicles not related to the landfill travelling through the study area, and the entire distance vehicles must travel to reach the landfill. In addition, CRD staff identified Willis Point Road as the only feasible route for commercial haulers to deposit waste in the northwest portion of the landfill which will become the active filling area within the next few years.

Table 5.1 summarizes the assessment for each category analyzed indicating that there are some benefits of moving either only commercial vehicles or all vehicles to the landfill's Willis Point Road access.

The route to reach the Willis Point Road access is more appropriate for higher vehicle use than the Hartland Avenue access due to the street and intersection designs. Most notably, Willis Point Road is designed for through vehicle traffic whereas Hartland Avenue has many driveways and minor intersections. In addition, the West Saanich Road & Willis Point Road intersection is more appropriate for accommodating higher vehicle use than the West Saanich Road & Hartland Avenue intersection.

We do not view any significant concerns that would restrain the CRD from moving vehicle access to Willis Point Road, nor did we identify any additional off-site infrastructure improvements that are triggered by changing the vehicle access.

There is no need for an additional lane on either Willis Point Road or Hartland Avenue for any of the three vehicle access scenarios analyzed. Both streets only meet one of three criteria identified by TAC for adding a truck climbing lane. Most notably, the street designs do not cause heavy trucks to travel below the speed limit. We analyzed two truck climbing lane options and found that their maximum impact would be reducing travel times westbound on Willis Point Road by 15 and 4 seconds respectively, by allowing drivers to exceed the 60 km/h speed limit.

Even if all vehicle access is relocated to Willis Point Road, the street would operate at least 20% below the typical threshold for a two-lane rural collector street during the busier summer season (existing summer traffic data collected during COVID-19). In addition to the financial and environmental impacts, adding a lane on Willis Point Road would also increase the number of speeding vehicles.

Regardless of if the vehicle access arrangement is changed, deteriorated pavement markings on Willis Point Road should be reinstalled following nearby construction of the Residual Treatment Facility. Saanich should also consider reviewing traffic safety at the West Saanich Road & Wallace Drive intersection and consider improvements to reduce the speed of vehicles turning right from Wallace Drive onto West Saanich Road which appears to be the cause of some collisions. Potential improvements should also include an improved connection to the Interurban Trail which has a trailhead near the intersection.

Table 5.1: Scenario Comparison Summary

CATEGORY	NO CHANGE TO THE EXISTING ACCESS CONFIGURATION	MOVE COMMERCIAL VEHICLE ACCESS TO WILLIS POINT ROAD	MOVE PRIMARY VEHICLE ACCESS TO WILLIS POINT ROAD
Vehicles	The landfill accounts for 700 vehicles per day (350 vehicles each direction) on Hartland Avenue, 50% of current daily traffic	Daily traffic on Willis Road increases by 15% from 2,000 to 2,300 Daily traffic on Hartland Avenue decreases by 20% from 1,400 to 1,100	Daily traffic on Willis Road increases by 35% from 2,000 to 2,700 Daily traffic on Hartland Avenue decreases by 50% from 1,400 to 700
Safety	West Saanich Road & Hartland Avenue has poor visibility for passenger vehicle drivers, increasing the risk and severity of collisions	West Saanich Road & Hartland Avenue has poor visibility for passenger vehicle drivers, increasing the risk and severity of collisions	History of collisions at West Saanich Road & Wallace Drive manageable with modest improvements
Street Vehicle Volume Compared to Street Classification	Hartland Avenue - Higher than appropriate Willis Point Road – Appropriate (all seasons)	Hartland Avenue - Higher than appropriate Willis Point Road – Appropriate (all seasons)	Hartland Avenue – Appropriate volume during normal conditions - Slightly higher than appropriate during the summer (COVID-19 data) – Willis Point Road – Appropriate (all seasons)
Intersection Level of Service	No significant differences		
Street Grade	Poor	Better	Best
Truck Climbing Lane	Not warranted on Willis Point road or Hartland Avenue and would increase the number of speeding vehicles		
Active Transportation	Maintains vehicles crossing the Interurban Trail Minimizes vehicles on Willis Point Road	Elements of the other two scenarios	Reduces vehicles on Hartland Avenue including crossing the Interurban Trail Increases vehicles on Wallace Drive and Willis Point Road
Vehicle Emissions		A modest reduction in air pollution affecting the health of Hartland Avenue residents A slight decrease in greenhouse gas emissions affecting climate change	Most reduction in air pollution affecting the health of Hartland Avenue residents A slight decrease in greenhouse gas emissions affecting climate change
On-site Circulation	Poor access to the future fill area Highest vehicle volume travelling through the Mount Work mountain bike trailhead	Fewer on-site conflicts between vehicles Good access to the future fill area Moderate vehicle volume travelling through the Mount Work mountain bike trailhead	Good access to the future fill area No vehicles travelling through the Mount Work mountain bike trailhead
Infrastructure Condition	Increased risk of deterioration to the Hartland Avenue bridge	Reduced risk of deterioration to the Hartland Avenue bridge	Landfill traffic does not deteriorate the Hartland Avenue bridge

Black – No significant differences between scenarios
Green – Noticeable improvement compared to other scenarios
Red – Noticeable decrease compared to other scenarios

Making a difference...together

ERM 20-40

REPORT TO ENVIRONMENTAL SERVICES COMMITTEE
MEETING OF WEDNESDAY, SEPTEMBER 16, 2020

SUBJECT **Solid Waste Management Plan – Next Steps**

ISSUE SUMMARY

To seek direction on next steps for the Solid Waste Management Plan.

BACKGROUND

The Capital Regional District's (CRD) current solid waste management plan was last revised in 1995. Per the Province of BC's *Guide to Solid Waste Management Planning*, Regional Districts should complete a full plan renewal every 10-year plan cycle. There have been many changes to the solid waste system since 2005, and the current plan is out of date.

In February 2011, the CRD substantially initiated planning on Revision 3 of the Solid Waste Management Plan, and completed Steps 1 and 2 of the *Guide to Solid Waste Management Planning* (Table 1). At the direction of the Environmental Services Committee (ESC) and CRD Board, work was put on hold between 2014 and 2018 to investigate opportunities for integrated resource management. Between 2018 and present, work has proceeded and the CRD is now in Step 4 of preparing the draft Solid Waste Management Plan. A detailed chronology of work completed on solid waste management planning between 2011 and 2020 is included in Appendix A.

Table 1: Status of Solid Waste Management Planning (2018 to present)

Guide to Solid Waste Management Planning Steps (Province of BC)	Status
Step 1: Initiate the Process: • Initiate the update • Establish planning teams and committees • Design the consultation process • Develop the budget	complete
Step 2: Set the Plan Direction • Identify principles, goals and targets • Prepare background Information • Assess the current solid waste management system • Consider trends affecting solid waste management • Consult the public	complete
Step 3: Evaluate Options • Develop potential strategies • Assess the financial and administrative implications • Consult the public and interested parties on the options	complete
Step 4: Prepare and Adopt the Plan • Prepare draft plan* • Consult the public on the draft plan • Prepare final draft for submission • Ministry of Environment and Climate Change Strategy review and approval • Final adoption	*we are here

The Solid Waste Advisory Committee (SWAC) was established by the ESC to provide input on solid waste management matters and meet the requirements of the *Guide to Solid Waste Management Planning* for an advisory committee on the development and implementation of the Solid Waste Management Plan.

In 2018, through SWAC recommendation, the ESC and CRD Board endorsed proposed guiding principles, objectives, goals and a consultation plan for Revision 3 of the Solid Waste Management Plan (Step 2). Between November 2018 and May 2019, SWAC worked with a consultant, Tetra Tech, to develop options, strategies, actions and targets to meet these guiding principles, objectives and goals, and refer these for inclusion in the draft plan. In September 2019, based on this work, the ESC and CRD Board endorsed 15 strategies and actions and a waste reduction target of 250 kg/capita/year by 2030, and directed staff to proceed to public consultation (Step 3).

Public consultation was undertaken, and results were reviewed through SWAC and presented to the ESC and CRD Board in August 2020. The consultation included 21 open houses and meetings, a social media reach of over 19,000, and received more than 1,000 feedback forms. Participants were asked to indicate their level of support and provide feedback on three plan elements: target and timelines; guiding principles, goals and objectives; and strategies and actions. Respondents were also able to provide general feedback. Overall, there was a high level of support for all plan elements, and 82% of respondents either strongly agreed (60%) or agreed (22%) with the proposed waste reduction target of 250 kg/capita/year by 2030 (a 1/3 reduction from present levels), 4% disagreed, and 3% strongly disagreed. Specific stakeholder topics were identified as potentially requiring further consideration during the draft plan stage of consultation. These include:

- impacts on mountain bike trails within the landfill property
- rerouting traffic to the north end of the Hartland site (Willis Point Road entrance), including potential environmental and recreational impacts of landfill footprint expansion to extend the life of Hartland to 2100
- cruise ship waste
- human/wildlife conflicts

The guiding principles, objectives, goals, targets, strategies and consultation results (Steps 1-3 of the planning process) have been compiled into a draft Solid Waste Management Plan (Appendix B) (Step 4). At its July and August meetings, SWAC considered the draft plan and, through a round table process, identified proposed additions to the draft plan. A summary of the feedback received through the roundtable process can be found in Appendix C, and the presentation in Appendix D. SWAC passed the following motion:

> *That the additions to the draft plan under the four headings* Municipal Waste Management, Illegal Dumping, Household Hazardous Waste, Finance*, be incorporated into the draft plan including the background information on how the targets were developed.*

SWAC also identified a desire to strengthen the target that was set by SWAC and endorsed by the ESC and Board in 2019. This would require going back to Step 2 in the planning framework and invalidate the current draft plan and above motion. The following motion was passed:

That a new target of 2/3 waste reduction by 2030 (relative to 2019/2020) be approved to guide the development of the new Solid Waste Management Plan, and that staff undertake work, with feedback from the Solid Waste Advisory Committee, to update the draft plan which includes strategies as required to meet the new target.

The CRD is currently in Step 4 of the four-step *Guide to Solid Waste Management Planning* framework. Per the framework, next steps include additional consultation on the draft plan, preparing a final draft for submission, Ministry of Environment and Climate Change Strategy (ENV) review and approval, and final adoption. This report identifies next steps for solid waste management planning following the provincial planning framework, as well as preliminary implications associated with setting a new target at Step 4 in the planning process, as proposed by SWAC.

ALTERNATIVES

Alternative 1

The Environmental Services Committee recommends to the Capital Regional District Board:

1. That the waste reduction target remain at 250 kg/capita/year by 2030 but goal 1 be changed to read "To surpass the provincial per capita waste disposal target and achieve 125 kg/capita/year";
2. That the Solid Waste Advisory Committee's recommended additions be added to the draft Solid Waste Management Plan; and
3. That staff proceed with community and local government consultation on the draft Solid Waste Management Plan, including targeted stakeholder consultation with residents in the areas of Hartland Landfill, Prospect Lake, Willis Point and Highlands.

Alternative 2

The Environmental Services Committee recommends to the Capital Regional District Board:

That staff proceed with analysis to understand strategies, including waste flow management, waste stream bans, and costs and funding sources, to meet an enhanced target of 2/3 waste reduction from current levels (125 kg/capita/year) by 2030, and review these strategies through the Solid Waste Advisory Committee before returning to the Environmental Services Committee for direction.

Alternative 3

That this report be referred back to staff for additional information.

IMPLICATIONS

Technical

Between 1989 and 2019, the CRD's per capita waste disposal went down from approximately 671 kg/capita to 382 kg/capita/year (43%). This reduction was the result of a variety of CRD initiatives, including the blue box program, recycling depots, as well as the introduction of Extended Producer Responsibility programs regulated by the provincial government, and landfill bans on materials when viable alternatives exist (processing systems and end markets).

The draft Solid Waste Management Plan has been developed following the process included within the *Guide to Solid Waste Management Planning*. This plan includes a waste reduction target of 250 kg/capita/year by 2030, approximately a 1/3 reduction from current levels. This ambitious target significantly exceeds the provincial target of 350 kg/capita/year, and was set based on a comprehensive technical analysis of what could be achieved, given the role of the Regional District under the current regulatory and policy framework, and considering the 15 strategies developed by SWAC, and endorsed by the ESC and CRD Board.

Increasing the target to a 2/3 reduction by 2030 (Alternative 2) would seek to bring the per capita disposal rate down to 125 kg/capita. Table 2 identifies potential strategies that could achieve further reductions. Additional technical analysis would be necessary to determine how much waste reduction each strategy could achieve and if the target is achievable. Many of the 'low hanging fruit' actions the CRD has authority over have already been completed and achieving further reductions will be incrementally more difficult. It is likely the CRD would need to implement a waste flow management policy, as provided for in the *Environmental Management Act*, along with bans on flows of material types to the landfill and consider new funding sources for waste management, such as tax requisition. The term "flow control" refers to the CRD's authority to control the movement and disposal of solid waste within the region. It is an important regulatory tool to support the implementation of solid waste management plans and to help ensure the long-term financial sustainability of the waste system by stopping waste and associated tipping fees from leaving the region. In June 2014, the issue of waste flow management was discussed by the ESC and CRD Board members at a workshop on the Solid Waste Management Plan. Workshop participants did not endorse the assumption that waste flow management should be considered as part of the new Solid Waste Management Plan. The policy option was reviewed for a second time by the Integrated Resource Management Advisory Committee and CRD Board in 2017.

Table 2

	Short-term (3 years)	**Medium-term (5 years)**	**Long-term (10+ years)**
Endorsed Disposal Target (kg/capita/year)	340[1]	285	250[2]
Targeted Sectors/ Materials	• Construction, renovation and demolition materials • Organics material from: - Single-family - Multi-family - Industrial, Commercial and Institutional	• Recyclables and organic waste from: - Single-family - Multi-family - Industrial, Commercial and Institutional	• Extended Producer Responsibility for textiles and Industrial, Commercial and Institutional generated paper and packaging • Refine programs to increase performance for all sectors
SWAC Proposed New Disposal Target (kg/capita/year)	**125 kg/capita/year (2030)**		

Potential additional actions required to achieve 2/3 waste reduction by 2030	**Ministry/Private Sector** • Extended Producer Responsibility for large plastics, furniture, mattresses and building materials (e.g., wood, carpet, composite products) • Improvements in processing technology and end markets for multi-family and Industrial, Commercial and Institutional recyclables • Innovative technologies for managing plastics • Ban on distribution and sale of single use items (cups, diapers, etc.) **CRD** • Waste flow management • Implementing landfill ban enforcement at source • Local processing facility and increasing subsidy for food waste processing regional materials sorting facility • Region-wide residential organics collection **Municipal** • Increase number of collection facilities (e.g., eco depots) • Streetscape collection of recyclables and compostables • Mandate recycling and organics collection programs at multi-family and Industrial, Commercial and Institutional properties

Note: 1. Assumes that disposal bans for construction, renovation and demolition materials would be implemented.
2. Assumes new Extended Producer Responsibility program will be implemented by Ministry of Environment and Climate Change Strategy.

Goal 1 of the draft Solid Waste Management Plan currently reads "To surpass the provincial per capita waste disposal targets." Under the *Guide for Solid Waste Management Planning*, it is possible to set aspirational goals. One approach to capture the intent of the SWAC recommendation regarding a much lower target without necessitating years of new planning work is to modify Goal 1 to read "To surpass the provincial per capita waste disposal target and achieve 125 kg/capita/year." By modifying this overarching goal to include an aspirational target while keeping the 2030 target intact at 250 kg/capita/year, the strategies and technical work supporting the draft Solid Waste Management Plan as written do not need to be redone. Furthermore, the CRD Board could submit a plan amendment to update and strengthen the strategies and targets in the Plan at a future date, once the Plan is implemented and performance is measured.

Through the public consultation process, the rerouting of traffic to the north end of the Hartland site (Willis Point Road entrance), and potential environmental and recreational impacts of landfill footprint expansion to extend the life of Hartland to 2100 were identified as specific topic areas of interest. In its round table review of the draft plan and recommended draft plan amendments, SWAC did not identify or recommend any changes to the draft plan relating to these topic areas; however, at other SWAC meetings, these were topics discussed as requiring further consultation.

Service Delivery Implications

Per the *Guide for Solid Waste Management Planning* framework, next steps include additional consultation on the draft plan (Alternative 1), preparing a final draft for submission, ENV review and approval, and final adoption.

Establishing new targets (Alternative 2) would require the CRD to go back to Step 2 of the Solid Waste Management Planning Process. This will require further technical evaluation, assessment of financial and administrative implications, consultation with the public and interested parties on

options and target, and obtaining necessary referral, endorsement and decisions by SWAC, ESC and CRD Board. This work is expected to take 2-3 years.

Financial Implications

The CRD has spent approximately $170,000 plus staff time on completing technical analysis and consultation associated with the current targets to date. Establishing new targets (Alternative 2) would require the CRD to go back to Step 2 of the Solid Waste Management Process and redo this work at an equivalent cost. Further analysis is required to understand the full cost implications and funding strategies for achieving the waste reduction target in Alternative 2; however, it is anticipated that a new tax requisition would likely be required.

CONCLUSION

The CRD is currently in Step 4 of the four-step *Guide for Solid Waste Management Planning* framework to develop a new Solid Waste Management Plan. Public consultation found overall a high level of support for all plan elements, and 82% of respondents either strongly agreed (60%) or agreed (22%) with the proposed waste reduction target of 250 kg/capita/year by 2030 (equivalent to a 1/3 reduction from present levels). SWAC recommends strengthening plan targets to 2/3 reduction by 2030. This change in target is anticipated to delay plan approval by 2-3 years, cost $170,000 plus staff time, and require the CRD to reconsider its stance on implementing a waste flow management policy and would likely require funding through tax requisition.

RECOMMENDATION

The Environmental Services Committee recommends to the Capital Regional District Board:

1. That the waste reduction target remain at 250 kg/capita/year by 2030 but goal 1 be changed to read “To surpass the provincial per capita waste disposal target and achieve 125 kg/capita/year”;
2. That the Solid Waste Advisory Committee’s recommended additions be added to the draft Solid Waste Management Plan; and
3. That staff proceed with community and local government consultation on the draft Solid Waste Management Plan, including targeted stakeholder consultation with residents in the areas of Hartland Landfill, Prospect Lake, Willis Point and Highlands.

Submitted by:	Russ Smith, Senior Manager, Environmental Resource Management
Concurrence:	Larisa Hutcheson, P. Eng., General Manager, Parks & Environmental Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENTS

Appendix A: Chronology – Solid Waste Management Planning – 2011-2020
Appendix B: Draft Solid Waste Management Plan – June 2020
Appendix C: Solid Waste Advisory Committee Roundtable Feedback – July 2020
Appendix D: Solid Waste Advisory Committee – Presentation – August 7, 2020

APPENDIX A

SOLID WASTE MANAGEMENT PLANNING CHRONOLOGY 2011-2020

Date	Content
February 23, 2011	Environmental Services Committee (ESC) directs staff to: • proceed with Revision 3 of the Capital Regional District (CRD) Solid Waste Management Plan (SWMP) • report to committee in May 2011 with a strategy to scope public feedback on current programs and identify options
January 25, 2012	ESC is advised that it will act as the Steering Committee for the new plan. ESC is advised that Revision 3 will be called the Integrated Solid Waste and Resource Management Plan. ESC recommends to the CRD Board that: • the Terms of Reference for the Public and Technical Advisory Committee (PTAC) be approved • staff be directed to advertise for members for the new PTAC to develop the SWMP and bring appointment recommendations to the ESC in March 2012 • the Solid Waste Advisory Committee (SWAC) be maintained to continue its current role of providing input on operational issues
April 25, 2012	Closed Meeting and Rise and Report ESC appoints the recommended candidates to the PTAC for the development of the SWMP
May to September 2012	PTAC is formed and meets 4 times
October 24, 2012	Staff report presents: • Stage 1 Summary Report, which concludes that the CRD has a complex and mature solid waste management system • Public Survey Results with 755 respondents who identified a demand for increased organics collection services and education • Issues Memorandum, which identified 36 issues to be addressed during Stage 2 ESC: • receives Stage 1 Summary Report for information • recommends to CRD Board that the Stage 1 Summary Report be received for information
July 24, 2013	Staff report presents technical memos 1, 2 & 3: 1. Reduce, Reuse and Electronic Producer Responsibility (EPR) (including education) 2. Recycling (including garbage, recycling and compost) 3. Construction & Demolition Materials ESC receives the staff report for information.

Date	Content
March 26, 2014	Staff report presents technical memos 4, 5 & 6: 4. Resource Recovery 5. Residual Management 6. Regulatory & Community Issues ESC receives the staff report for information.
April 23, 2014	Staff report presents technical memo 7: 7. Financial Management ESC recommends to CRD Board that: • the staff report be received for information • staff be directed to organize a workshop for all Board members in May or June 2014 to review the seven technical memorandums and provide direction on drafting the new SWMP • staff distribute a summary of all technical memos to Board members prior to the workshop
June 24, 2014	Workshop content consists of Stage 1 report, survey results, list of 36 issues/challenges, and summary of 7 technical memorandums. Workshop participants discuss 11 assumptions: • There is general support for education and EPR programs • The CRD will not get involved in garbage collection in the region • There is a general shift of recycling programs to EPR • A long-term kitchen scraps processing strategy will be in place by 2015 • The private sector will continue to play a major role in construction, renovation and demolition materials diversion • Waste to Energy will only be considered conceptually in this Integrated Solid Waste Resource Management Plan (ISWRMP) • The new proposed diversion goal is 70% by 2020 • The goal is never to have another landfill in the region • There is support in principle to expand Hartland landfill, as required • Waste flow management will be considered as part of the ISWRMP • The solid waste function requires new funding mechanisms Workshop participants supported the above assumptions with the following two exceptions: • Workshop participants asked to revise “support to expand Hartland landfill” to “support greatest use” or “support change in design” of Hartland landfill • Workshop participants did not endorse waste flow management to be considered as part of the SWMP and felt that they needed more information and room for more conversation.

Date	Content
October 23, 2014	Last PTAC Meeting: Members reviewed a technical memorandum called "Gap Analysis – What's left to do" and discussed next steps. PTAC supported maintaining/enhancing existing programs and exploring additional diversion programs in the context of costs and diversion potential. Next steps were for staff to prepare a short list of strategies from the long list in the various technical memorandums in the context of their potential for diversion and associated cost.
February 11, 2015	**Staff Report to Core Area Liquid Waste Management Committee:** • Motion to engage a sole source consultant to complete a comprehensive market sounding of emerging technologies and best practices for wastewater treatment, including an evaluation of the possibility of integration with other waste streams • Committee members/Board were advised that the SWMP process would be put on hold, pending the outcome of the market sounding study
February 25, 2015	Staff Report with update on SWMP: • Provided summary of all work to date • Pointed out that workshop participants wanted more information on flow management and advised that Minister of Environment did not approve Metro Vancouver's proposed flow management bylaw in October 2014. • Advised committee that Province has switched to per capita disposal rate as the new solid waste metric • Advised that work on SWMP may be delayed to allow for liquid and solid waste integration opportunities to the explored in the market sounding study ESC recommends to Board that the staff report be received for information.
Sept. 30, 2015	Staff Report to inform of proposed changes to the provincial solid waste management planning process with Intentions Paper appended. ESC recommends to Board to receive the staff report for information.
October 7, 2015	Integrated Resource Management Workshop – Committee of the Whole

Date	Content
November 4, 2015	Staff Report on follow up to Workshop ESC recommends that the Board receive the Workshop Report for information and that the Board appoint a task force to prepare recommendations for governance roles and responsibilities for Integrated Resource Management (IRM), making recommendations to the Board by February 2016. https://www.crd.bc.ca/project/management-plan/developing-the-new-plan Link to webpage includes all 2012 to 2014 memos, plus June 2014 workshop, plus 2018 Existing System Report
November 23, 2015	Last staff e-mail update to PTAC members
September 2016	Province of BC publishes the new *Guide to Solid Waste Management Planning*
Jan. 2018	Board decides to conclude the IRM procurement process and pursue individual resource recovery
March 2018	Board appoints new SWAC members
May 2018	SWAC: Maura Walker & Associates present 2018 Existing System Report
June 2018	SWAC: Maura Walker & Associates present Guiding Principles, Objectives, Goals K. Hamilton presents Consultation Plan Outline
October 2018	Board approves 2018 Existing System Report and Guiding Principles, Objectives, Goals and Consultation Plan
November 2018 to May 2019	SWAC Works with Tetra Tech to develop long and short list of options
July 2019	SWAC Judith Cullington & Associates present Consultation Plan Outline
September 2019	ESC/Board Approve 15 Strategies & Actions and waste reduction target Direct staff to proceed to public consultation https://www.crd.bc.ca/docs/default-source/crd-document-library/committeedocuments/capitalregionaldistrictboard/20190911/2019-09-11agendapkgrb.pdf?sfvrsn=6a218eca_4 Link to staff report that includes all Tetra Tech memos
October 18 to December 1, 2019	Public Consultation https://www.crd.bc.ca/project/management-plan Link to webpage includes all New Plan Resources (4 documents) and 2 videos
June 5, 2020	Phase One Public consultation results were presented to SWAC

Capital Regional District

Solid Waste Management Plan

Making a difference...together

Draft for Discussion

Prepared by:
MWA Environmental Consultants Ltd.

Draft Report Date: June 28, 2020
Final Report Date:
Date approved by Ministry of Environment:

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Glossary

Advisory Committee	The Solid Waste Advisory Committee (see description below)
Disposal	Landfilling
Diversion	Activities that divert waste materials away from disposal as garbage to alternatives such as recycling or composting. Does not include combustion of garbage to produce energy.
Circular economy	An economic system aimed at eliminating waste and the continual use of resources. Circular systems employ reuse, sharing, repair, refurbishment, remanufacturing and recycling to create a close-loop system, minimizing the use of resource inputs and the creation of waste, pollution and carbon emissions
Controlled waste	Materials that are not suitable for disposal on the active face of the landfill because of specific health and safety or environmental concerns associated with the physical or chemical properties of the waste. Items that are considered controlled waste include animal feces, sewage contaminated grit, catch basin waste and dead animals.
CRD	Capital Regional District
CR&D	Construction, demolition and renovation
EPR	Extended producer responsibility
(Waste) generation	The sum of all materials discarded that require management as solid waste, including garbage, recycling and composting. Does not include organic waste composted at home.
ICI	Industrial, commercial and institutional (does not include heavy industry)
Ministry of Environment	BC Ministry of Environment and Climate Change Strategy
MSW	Based on BC's Environmental Management Act, municipal solid waste is refuse that originates from residential, commercial, institutional, demolition, land clearing or construction sources, or refuse specified by a director to be included in a waste management plan
Organic waste / organics	Generally refers to kitchen scraps, food waste, yard and garden waste.
Plan	CRD's Solid Waste Management Plan
Producer Responsibility Organization	A "producer responsibility organization" (PRO), is usually a not-for-profit organization or an industry association, that is designated by a producer or producers to act on their behalf to administer an extended producer responsibility or product stewardship program (e.g. Encorp, Product Care, Recycle BC)
Recycle BC	Formerly MMBC (Multi-Material BC), the producer responsibility organization established to manage the residential printed papers and packaging EPR program
Residuals / Residual waste	Residual waste refers to discarded materials that are not diverted to reuse, recycling or composting and therefore require landfilling
SWMP	Solid Waste Management Plan
Solid Waste Advisory Committee	A multi-stakeholder committee established to advise the CRD, and to provide input on matters related to solid waste management, including the development and implementation of the Solid Waste Management Plan.
Transfer station	A site at which municipal solid waste or recyclable material is received from the general public and is sorted, compacted or rearranged and stored for subsequent transfer off-site for further processing or final disposal.

1 Introduction

In British Columbia, regional districts develop solid waste management plans under the provincial Environmental Management Act that are long term visions of how the regional district would like to manage its solid wastes in accordance with the pollution prevention hierarchy. This plan will be renewed approximately every ten years to ensure that it reflects the current needs of the regional district, as well as current market conditions, technologies and regulations.

The Capital Regional District (CRD) initiated a process to update its 1995 Solid Waste Management Plan (SWMP) to identify goals and strategies for the next ten years. The SWMP update process considered existing solid waste management policies and programs; identified and evaluated options for reduction, diversion and residual management; and addressed system financing.

This draft document represents an update of the CRD's 1995 solid waste management plan and once approved by the Province (along with any approval conditions), becomes a regulatory document for solid waste management in the CRD, and serves to guide solid waste management related activities and policy development in the CRD. In conjunction with regulations and operational certificates that may apply, this plan regulates the operation of sites and facilities that make up the region's waste management system.

1.1 Guiding Principles

The principles guiding the development and implementation of this plan are a slightly modified version of those recommended in the BC Guide to Solid Waste Management Plans and were prepared by the CRD's Solid Waste Advisory Committee (SWAC) in June 2018 to enhance their clarity and were subsequently by the CRD Board in October 2018. They are:

1. Promote zero waste approaches and influence others in support of a circular economy;
2. Promote the first 3Rs (Reduce, Reuse and Recycle);
3. Maximize beneficial use of waste materials and manage residuals appropriately;
4. Support polluter-pay and user-pay approaches and manage incentives to maximize positive behaviour outcomes;
5. Prevent organics, recyclables and hazardous household waste from going into the garbage wherever practical;
6. Collaborate with other jurisdictions wherever practical;
7. Develop collaborative partnerships with interested parties both within and outside of the CRD to achieve regional targets set in plans; and
8. Level the playing field within regions for private and public solid waste management facilities.

1.2 Plan Goals

The goals for this SWMP were established by the SWAC in 2018 based on a review of the Existing System Report and a discussion of the challenges and opportunities presented by the current system. The goals for this plan are:

1. To surpass the provincial per capita waste disposal targets.
2. To extend the life of Hartland Landfill to the year 2100 plus.
3. To have informed citizens that participate effectively in proper waste management practices.
4. To ensure that the CRD's solid waste services are financially sustainable.

1.3 Pollution Prevention Hierarchy

This plan adopts the 5 R pollution prevention hierarchy (see Figure 1-1). Strategies to address each tier in the hierarchy are laid out in Section 5. Implementation of these strategies over the plan's 10-year timeframe is expected to contribute to the provincial disposal rate target of 350 kg per person, and result in achievement of the following regional targets. These targets are discussed further in Section 6.

1. By the end of the 3rd year of this plan, the CRD's per capital disposal rate will be 340 kg or less.
2. By the end of the 5th year of this plan, the CRD's per capital disposal rate will be 285 kg or less

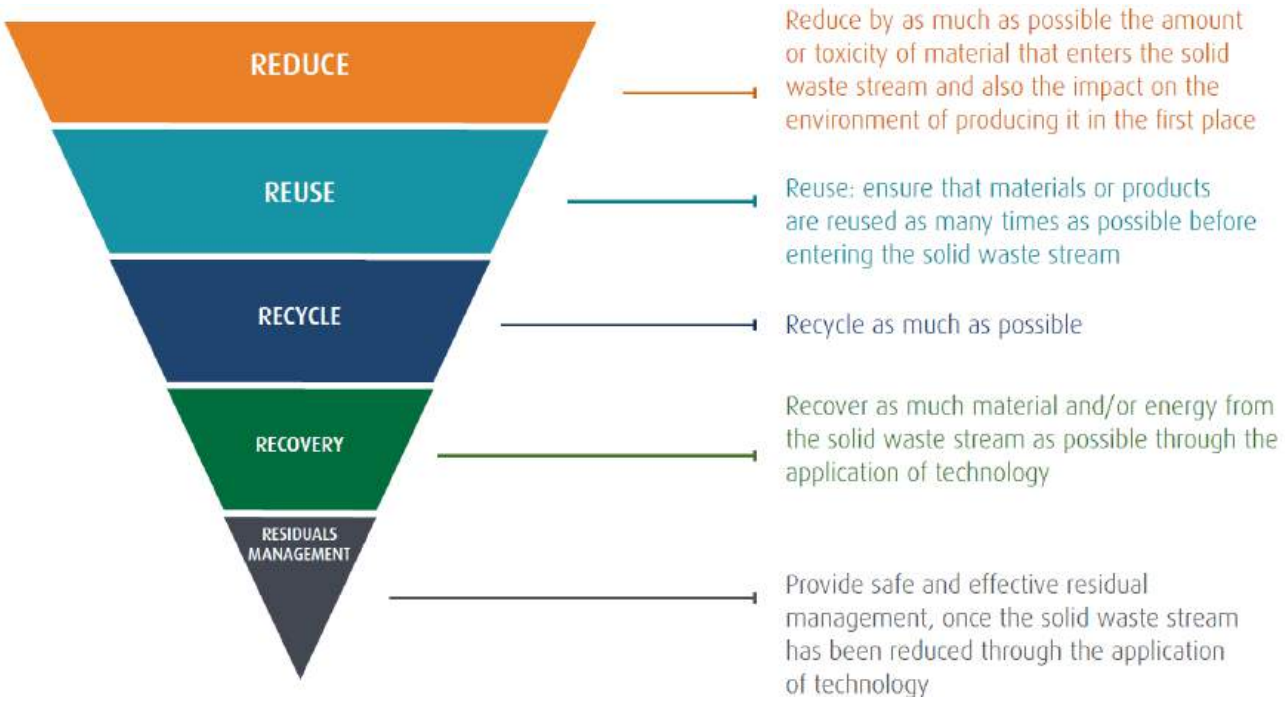


Figure 1-1: 5R Pollution Prevention Hierarchy

1.4 Climate Change and the Solid Waste Management Plan

When organic matter decomposes within the landfill it produces landfill gas which is mainly made up of carbon dioxide and methane, a very potent greenhouse gas. Landfills are one of the largest contributors of greenhouse gas emissions in the community and the Hartland Landfill generates approximately 9% of the greenhouse gas emissions in the region[1]. The CRD has a responsibility to ensure we have done everything we can to reduce the greenhouse gas emissions generated by the landfill and to channel them into something that benefits the community.

In 2019 the CRD Board identified Climate Action & Environmental Stewardship as a priority for the region and approved a motion to declare a climate emergency. CRD's regional climate action strategy sets a climate action goal to minimize waste generation and transform remaining waste into a resource. By reducing waste, we reduce the GHG emissions produced by the landfill. The Solid Waste Management Plan has been developed in alignment with this goal.

1.5 Alignment with Other CRD Strategies and Plans

The SWMP is aligned with several other CRD strategies and plans. Figure 1-2 shows each of these strategies and plans and how they are linked with this plan.

1.6 Alignment with Provincial Targets

The Province has two solid waste performance targets:

1. Lower the provincial MSW disposal rate to 350 kg per capita, and
2. 75% of BC's population covered by organic waste disposal restrictions.

The CRD supports these two Provincial goals through its current solid waste management system which prohibits the disposal of both kitchen scraps and yard waste at Hartland landfill, and through this SWMP which presents strategies that aim to reduce the per capita disposal rate to even less than 350 kg per capita.

[1] Source: Regional Climate Action Strategy

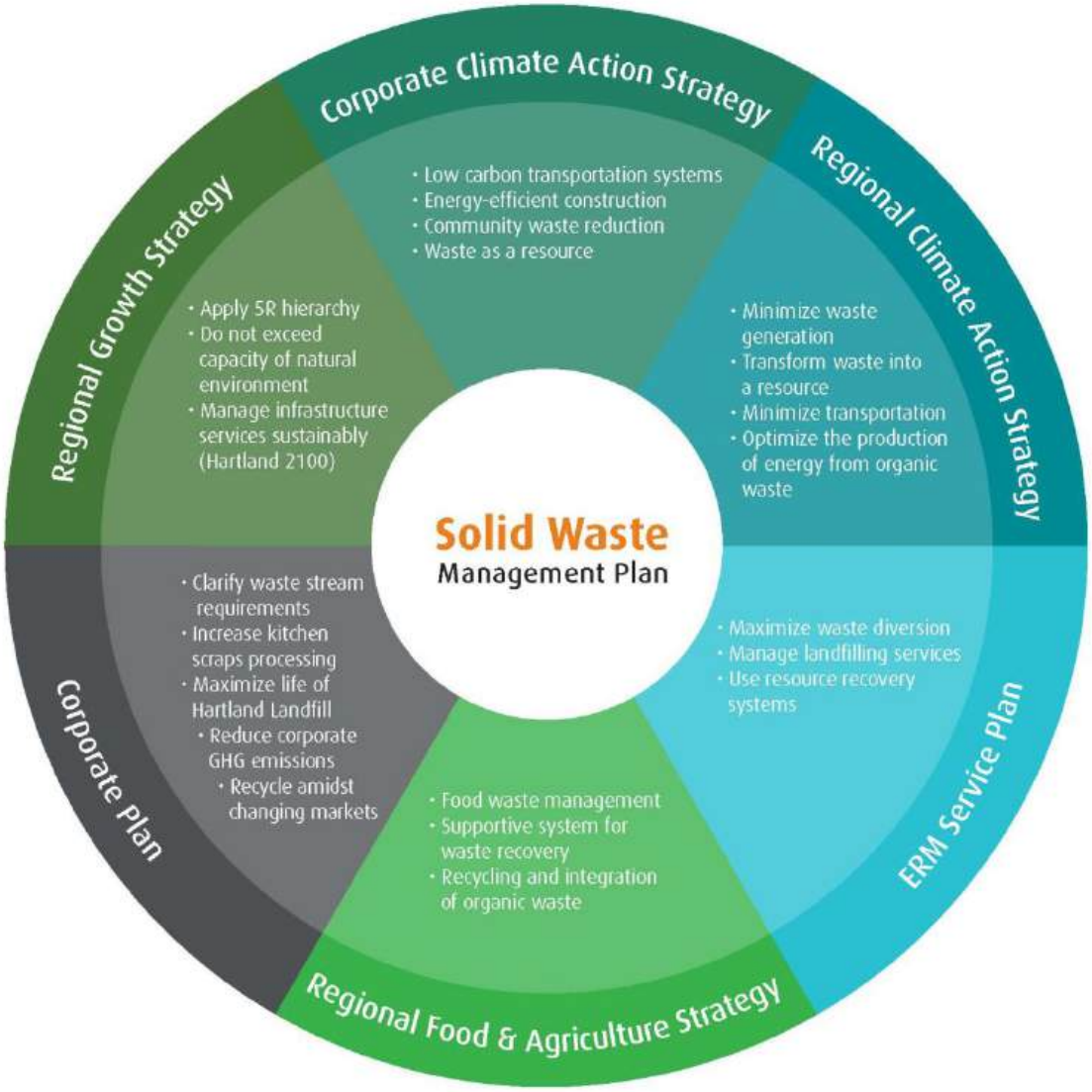


Figure 1-2 Alignment with CRD Strategies and Plans

2 Plan History and Development

The CRD's first SWMP was approved by the Province in 1989. It was updated in 1991 and again in 1995. Since 1995, eight amendments have been added to the Plan and most of the original goals have been achieved. The eight amendments are listed in Table 2-1.

Table 2-1: Plan Amendments

Amendment 1 (2005)	Implementation Status
To allow the Capital Regional District (CRD) to regulate composting in the CRD through the adoption of a regulatory bylaw under Section 25 (3) of the *Environmental Management Act.*	Bylaw implemented
Amendment 2 (2001)	**Implementation Status**
To allow the Capital Regional District (CRD) to regulate transfer stations on Salt Spring Island through the adoption of a regulatory bylaw.	Bylaw implemented
Amendment 3 (2004)	**Implementation Status**
To modify the legal description of Hartland Landfill to include additional land that was acquired as a buffer strip.	Implemented
Amendment 4 (2004)	**Implementation Status**
Add a new Section 16.0 that outlines the CRD's public review process for solid waste related matters.	Implemented
Amendment 5 (2004)	**Implementation Status**
Establishes procedures for resolving conflicts associated with the Hartland Landfill.	Implemented
Amendment 6 (2007)	**Implementation Status**
Include the Highwest Waste Management Facility in the SWMP and set operating requirements (replaces Section 10.1.28 in the Plan). This section includes cessation of burning at the site by the end of 2009.	Implemented
Amendment 7 (2007)	**Implementation Status**
Replace Section 15.1 of the Plan with "Funding for all Hartland Capital Works will be borrowed through loan authorization bylaws or cash flow generated from solid waste operations in accordance with the CRD *Solid Waste Disposal Local Services Establishment Bylaws."*	Implemented
Amendment 8 (2013)	**Implementation Status**
To allow the siting, construction and operation of a biosolids treatment and resource recovery facility at Hartland Landfill for treatment, processing, storage and beneficial utilization of screenings and waste sludge.	In development

2.1 Process to Update the Plan

In March 2011, the CRD Board passed a motion to undertake a process to update the CRD's 1995 SWMP. In 2012, the CRD embarked on the process to create a new plan that would reflect the changes that have been made since 1995, including the eight plan amendments and changes to the solid waste management system, such as the significant expansion of Extended Producer Responsibility as a means of managing solid waste. Updating the Plan would also allow for

consideration of future options for solid waste management in the CRD within the current context and to create an updated vision.

In 2012, a Public and Technical Advisory Committee was formed to provide input into the development of an updated plan. This committee reviewed a number of reports prepared by consultants, including a 2012 Existing System Report and technical memoranda outlining options for consideration in the new plan. The planning process, however, was put on hold in 2015 to investigate integrated resource management opportunities. In November 2017, the Board approved restarting the process to update the SWMP.

The process to update the SWMP was restarted in 2018 with the preparation of an updated Existing System report and the establishment of new multi-stakeholder committee with a mandate of being an advisory committee to the CRD Environmental Services Committee (ESC) for the SWMP update process. This new committee is called the Solid Waste Advisory Committee (SWAC) and it also serves as an advisory body on current solid waste management initiatives in the CRD referred to it by ESC. This committee will also be the Plan Monitoring Advisory Committee upon completion of the SWMP update process. Terms of Reference for SWAC are included as Appendix A.

The members of SWAC represent a diversity of backgrounds, interests and geographical locations and includes technical and non-technical members. The composition of SWAC is provided in Table 2-2.

Table 2-2: Composition of the Solid Waste Advisory Committee

Representation	Number of Members
Regional district director (member of Environmental Services Committee)	1
Municipal engineering staff who are involved in solid waste collection	2
Electoral Area representative	1
First Nations	2
Environmental organizations	1
Business groups	1
Non-profit group with an interest in solid waste (e.g. reuse organization)	1
Large waste generators (industrial, commercial, institutional)	2
Owners/operators of private waste management facilities	2
Private sector industry collection service providers	2
Composting industry representative	1
Product stewardship agency	1
Community representative (representing Prospect Lake/Hartland area)	1
Public representatives, at large	3
Willis Point representative	1
District of Highlands representative	1

In October 2018, the Board approved the guiding principles, objectives and goals developed by SWAC for the new plan. In September 2019, the Board reviewed SWAC's proposed strategies, actions and targets for the updated SWMP and directed that these be taken out for public consultation.

The public consultation process took place between October 18, 2019 and December 1, 2019, and included a media launch event, public open houses, stakeholder meetings and extensive social media outreach. Staff created a dedicated web page where people could sign up for project updates, review background information, and fill out a feedback form. In general, public feedback for the proposed strategies and actions was positive. The results of the consultation were presented to SWAC in June 2020, with no resulting changes to any of the Plan's strategies and actions.

3 Plan Area

The Capital Regional District (CRD) is the regional government for 13 municipalities and three electoral areas, covering an area of 2,341 sq. km on the southern tip of Vancouver Island. A map showing the administrative boundaries of the CRD is provided in Figure 3-1.

Member municipalities include:

- Central Saanich
- Colwood
- Esquimalt
- Highlands
- Langford
- Metchosin
- North Saanich
- Oak Bay
- Saanich
- Sidney
- Sooke
- Victoria
- View Royal

Unincorporated areas are organized into electoral areas. The three electoral areas in the CRD are:

- Salt Spring Island Electoral Area;
- Southern Gulf Islands Electoral Area, which includes Galiano Island, North Pender Island, South Pender Island, Saturna Island, Mayne Island, and smaller islands in the vicinity; and
- Juan de Fuca Electoral Area, which includes East Sooke, Malahat, Otter Point, Port Renfrew, Shirley, Willis Point, and inland rural areas.

First Nations communities located within the region include: Beecher Bay, Esquimalt, Malahat, Pacheedaht, Pauquachin, Penelakut, Songhees, Tsartlip, Tsawout, Tseycum and T'Sou-ke Bands. Each of these Bands has reserve lands within the boundaries of the CRD as shown in Figure 3-2.

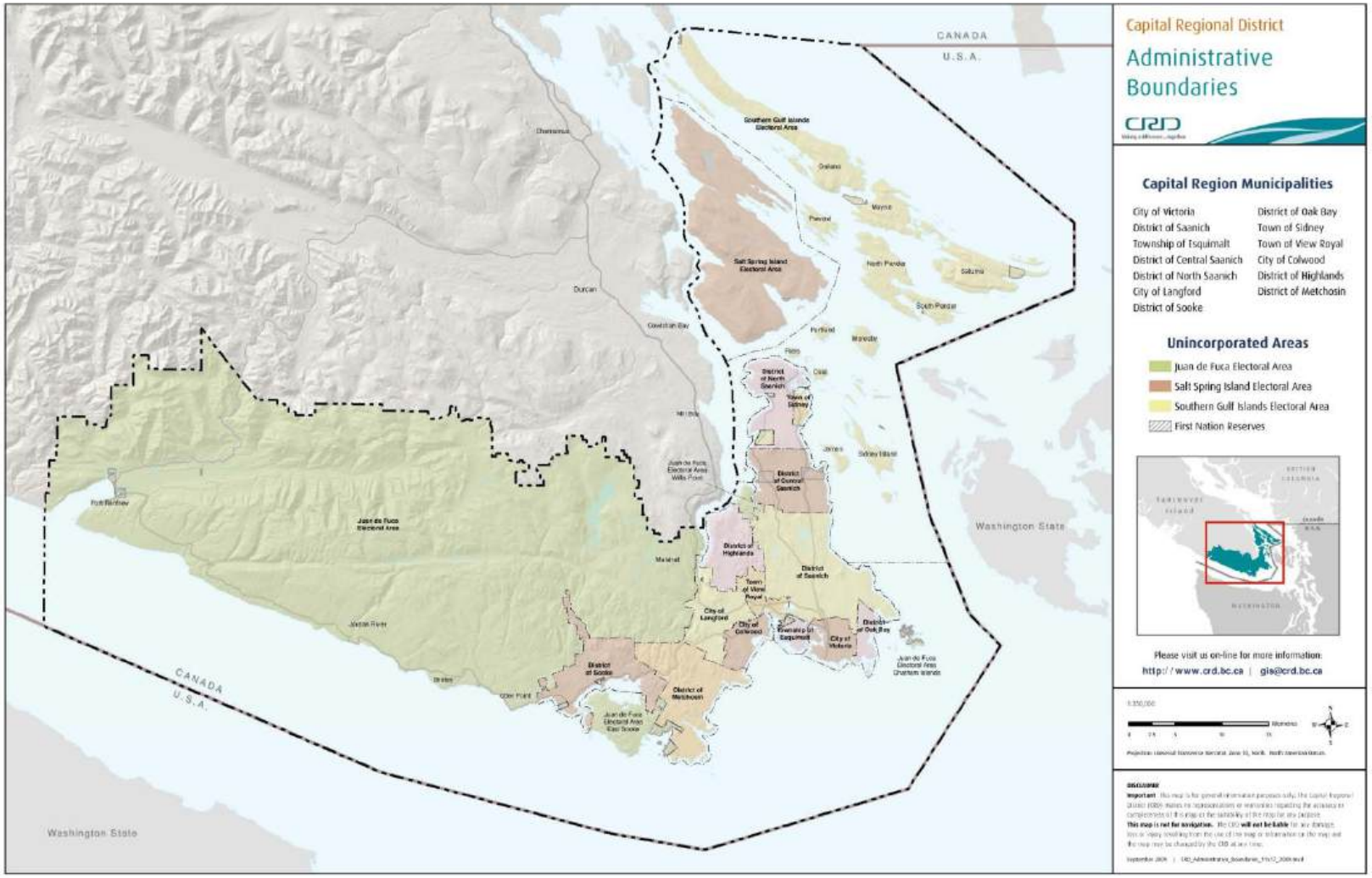


Figure 3-1: Map of Capital Regional District

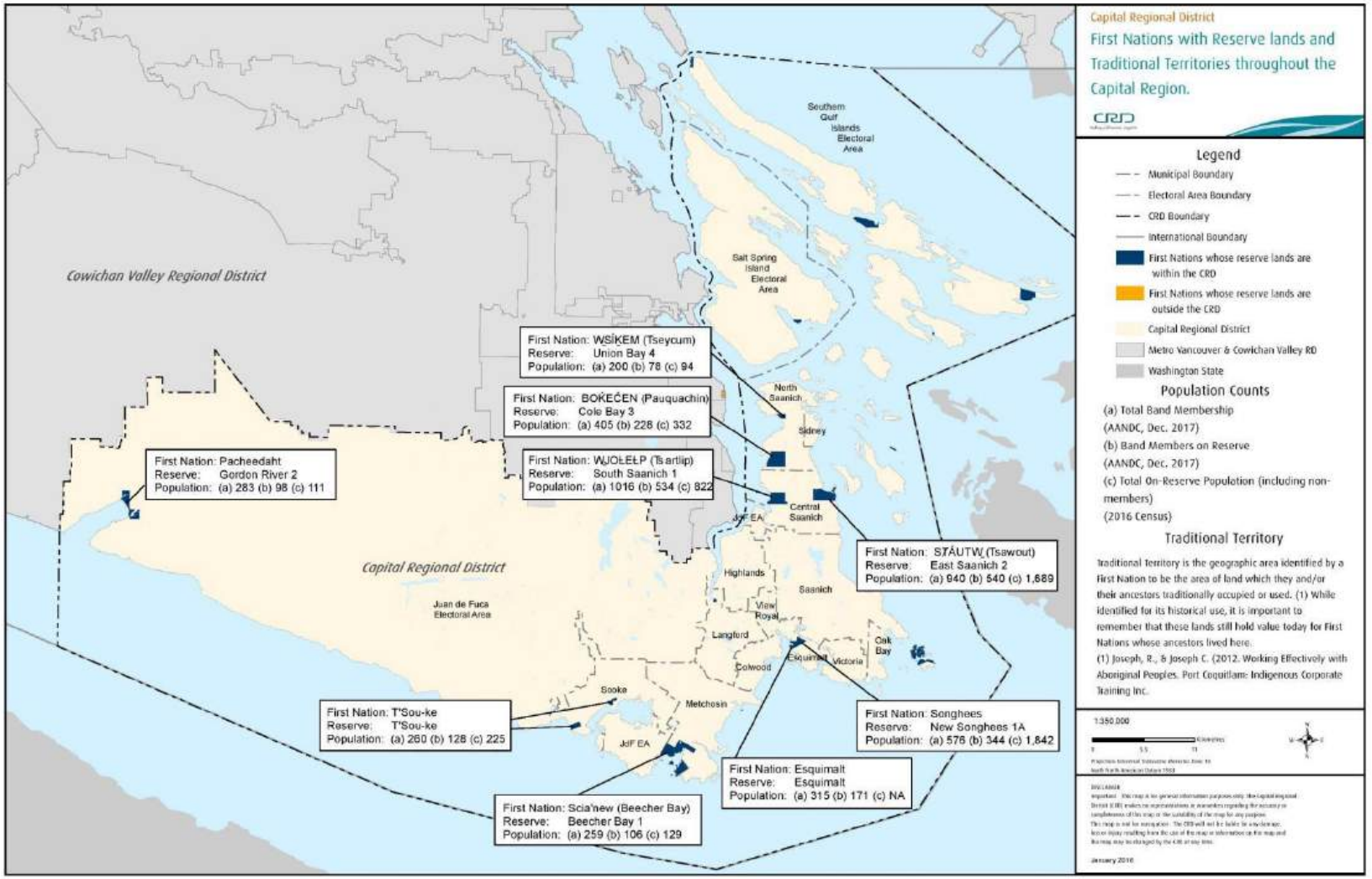


Figure 3-2: First Nations Reserves in the Region

3.1 Population

As shown in Table 3-1, the population of the CRD in 2019 was estimated at 418,414, including persons living on First Nations Reserves. Table 3-2 provides population projections to 2030, as supplied by BC Stats. Based on these estimates, the population of the region is expected to grow by 10% over the next decade

Table 3-1: Population, By Area (2019 estimate)[2]

Area	2017 Population	% of CRD total
CAPITAL	**418,414**	
Central Saanich	18,089	4%
Colwood	18,867	5%
Esquimalt	18,716	4%
Highlands	2,481	1%
Langford	42,653	10%
Metchosin	5,168	1%
North Saanich	11,876	3%
Oak Bay	18,568	4%
Saanich	122,173	29%
Sidney	12,235	3%
Sooke	14,657	4%
Victoria	94,005	22%
View Royal	11,567	3%
Unincorporated Areas		
Juan De Fuca Electoral Area	5,427	1%
Salt Spring Island Electoral Area	11,247	3%
Southern Gulf Islands Electoral Area	5,072	1%
First Nation Reserves	5,613	1%

[2] CRD website: https://www.crd.bc.ca/docs/default-source/regional-planning-pdf/population/population-pdfs/2019_populationestimate.pdf?674c4fcc_2

Table 3-2: CRD Population Projections[3]

Year	Population Projection
2020	421,613
2021	426,029
2022	430,530
2023	435,114
2024	439,761
2025	444,330
2026	448,825
2027	453,249
2028	457,563
2029	461,765
2030	465,850

3.2 Housing

Table 3-3 provides a breakdown of the housing types in the region, based on 2016 Census data and building permits for residential structures.

Table 3-3: Housing in the Capital Region[4]

	#	%
Single Detached Houses	70,630	41.5%
Semi Detached Houses (includes flats, duplexes)	32,375	19.0%
Row Houses	10,380	6.1%
Apartments (all types)	54,775	32.2%
Mobile Homes	1,990	1.2%
Total	170,150	100.0

3.3 Economic Data

The CRD has a well-diversified economy. A large public sector comprised of the Provincial government offices, universities and colleges and military installations are the key drivers of this area's economy.

The area also has a growing technology and health services sector, along with a vibrant tourism industry. Retirement living and residential expansion continue to shape the demographics of this community.

[3] Source: https://www.bcstats.gov.bc.ca/apps/PopulationProjections.aspx

[4] Data provided by the CRD. Does not include housing on First Nation Reserves.

Based on the 2016 census, the main employment sectors in the region are health care (13% of employment), public administration (12%), retail (11%), accommodation and food services (9%), and professional, scientific and technical services (8%).[5]

4 Existing System Overview

The following is a high-level overview of the current system for solid waste management in the region. A more detailed description is provided in the report *Existing Solid Waste Management System (2018)* which can be found on the CRD's website (https://www.crd.bc.ca/docs/default-source/recycling-waste-pdf/2018existingsystemsreport.pdf).

4.1 Disposal Data and Trends

Figure 4-1 shows how per capita disposal in the CRD has changed over the past two decades, incorporating the quantities of waste disposed at Hartland Landfill and the privately owned Highwest Landfill. In 2019, the per capita disposal rate was 382 kg per capita, a reduction of 43% since 1989.

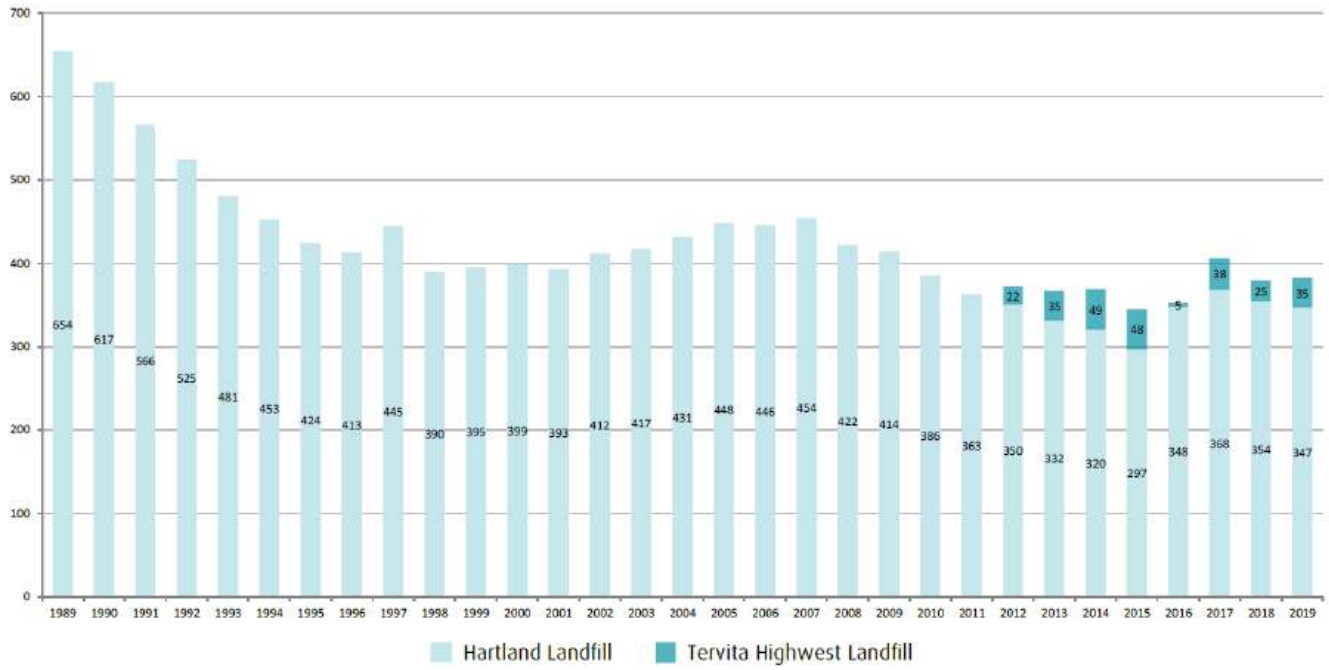


Figure 4-1: CRD Disposal (1989 – 2018)

[5] Source: 2016 Census Profile Statistics Canada

Figure 4-2 shows the estimated composition, by weight, of the waste landfilled at Hartland in 2016 (the last time a waste composition study was conducted at the site). The largest component of the garbage arriving at Hartland landfill was compostable organics (21.1%), followed by wood and wood products (17.0%), paper (15.4%), and plastic (14.3%).

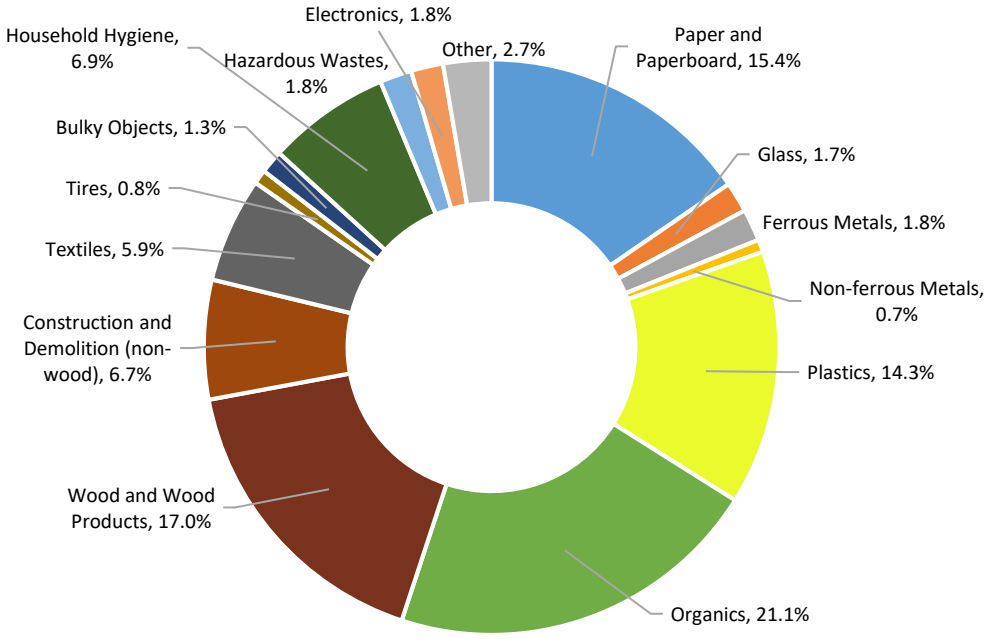


Figure 4-2: Estimated Composition of All Waste Landfilled at Hartland (By Weight), 2016

Figure 4-3 shows the proportion of waste sent to Hartland in 2019 from each sector. As shown, 41% comes from Industrial/Commercial/Institutional (ICI) activities, while 38% comes from residences (curbside residential plus multi-family).

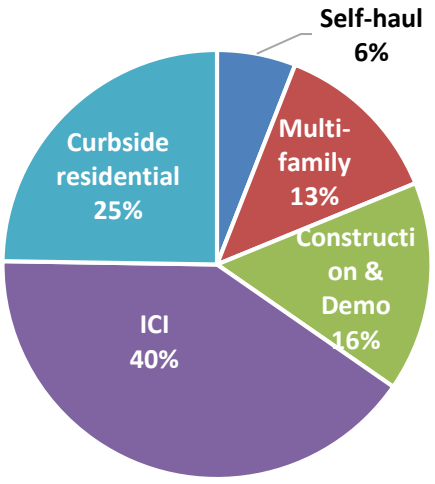


Figure 4-3: Sectors Contributing to Waste Disposed at Hartland (2019)

4.2 Existing System Description

This section provides an overview of the components that currently make up the system for managing solid waste in the region.

4.2.1 Solid Waste Management Facilities

Figure 4-4 is a map showing the location of solid waste management facilities operating in the region as of 2020; including CRD-operated sites (shown in yellow), private waste management operations such as recyclers, recycling depots and transfer stations (in red), non-profit second-hand stores (in green), municipal recycling and yard waste depots (in blue), and Gulf Island recycling depots (in purple).

The region is home to landfills authorized by the Province of BC: Hartland and Highwest. Both of these landfills have Operating Certificates issued by the Province that define the activities permitted at these sites. The Highwest Landfill is expected to permanently close in 2021 (see next section for additional details). Additional information on these two facilities can be found in Section 4.3.1.

Future Facilities

This plan anticipates the potential addition of an organic waste processing facility located at the Hartland Landfill. Additional information on this potential facility can be found in Sections 5.2 and 6.



Figure 4-4: Map of Solid Waste Facilities

4.2.2 Solid Waste Disposal

Hartland Landfill

The CRD became responsible for solid waste disposal for the region in 1973 when, at the request of the CRD Board, the Province of British Columbia established solid waste disposal as a regional function of the CRD.

In 1975, the CRD acquired Hartland Landfill, which had been operating as a private facility since the 1950s. The facility continued to be managed by a private contractor until 1985, when the CRD assumed direct operation of the site.

Hartland landfill is located 14 km northwest of Victoria and is the only sanitary landfill in the Capital region. The 125-hectare site, which includes 48 hectares of landfill area, is owned by the CRD and operated by a combination of CRD staff and contractors. The landfill is operated under Operational Certificate # PR12659 issued under the Environmental Management Act.

Figure 4-5 shows the property boundaries of Hartland Landfill. In 2013, the CRD acquired additional land to the east of the site to increase the buffer around the landfill. Additional land acquisition to further increase the buffer (not to expand the area for landfilling) is also under consideration and may be acquired during the lifespan of this SWMP. Both the 2013 land acquisition and the potential acquisition are shown in Figure 4-5.

The Hartland landfill site is a multi-purpose facility that includes the following waste management functions:

- Disposal and landfill service for residential and commercial customers;
- Disposal facility for controlled waste[6];
- Recycling depot;
- Collection of Product Stewardship materials
- Household hazardous waste collection
- Salvage area for reusable goods;
- Yard and garden waste drop-off; and
- Kitchen scraps transfer station.

Over the years, the CRD has sought to ensure the conservation of Hartland landfill space. The practice of banning the disposal of specific wastes at Hartland landfill when viable recycling alternatives are in place, has been used by the CRD since 1991. Current landfill bans include drywall (implemented in 1991), cardboard, directories, large appliances, tires (1993), scrap metal, fill, aggregate, concrete, asphalt, rubble and clean soil (1995), paper fibres (1998), yard and garden waste (2006), EPR materials (current and future) designated under BC's Recycling Regulation (2011), and kitchen scraps (2015).

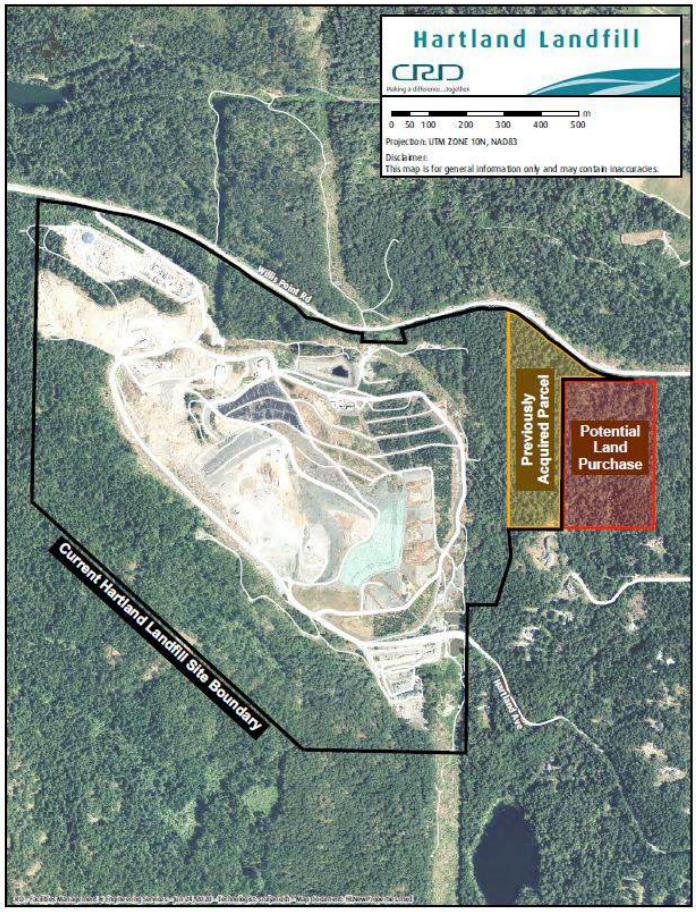


Figure 4-5: Hartland Landfill Boundaries

Highwest Landfill

In addition to the Hartland Landfill, there is the privately owned and operated Highwest Landfill located at 1943 Millstream Road in the District of Highlands. This landfill receives construction and demolition waste and non-hazardous/non-putrescible ICI waste for disposal. This facility is expected to permanently close in 2021 once it reaches capacity. It operates under an Operational Certificate #100193 issued by the Province of BC.

4.2.3 Solid Waste Collection

Collection of residential and commercial garbage and kitchen scraps is conducted by the private sector, with the exception of single family dwelling service offered by six of the region's municipalities.

The private sector also collects recycling from multi- family buildings, commercial buildings and institutions, and garbage and recycling from construction / demolition sites.

The CRD provides region-wide residential recycling service through a combination of single family dwelling curbside collection and depot collection programs under contract to Recycle BC.

4.2.4 Reduce and Reuse

There are a broad range of rental and repair services throughout the region plus many opportunities for reuse of goods through private and non-profit retailers, online platforms (e.g. Used Victoria, Kijiji) and informal activities (e.g. garage sales, rummage sales). The CRD supports reuse through two main mechanisms:

- **Diversion Funding for Non Profit Organizations**: Since 1992, the CRD has provided funding to non-profit organizations involved in recycling clothing and used household goods. The funding assists with their garbage disposal costs at Hartland, in recognition that some donated used goods are unusable and destined for the landfill. Ten organizations participated in the program in 2019.

- **Hartland Reusable Materials Program**: The CRD partners with five organizations for the management of donated items received in the Hartland depot. Goods such as textiles, household items and bicycles are redistributed through a variety of networks operated by these non-profit associations.

4.2.5 Communications, Outreach and Education Programs

Environmental education is of paramount importance to the CRD's waste reduction strategies. The CRD provides a number of communications, education and outreach programs to support the 5R hierarchy (reduce, reuse, recycle, recovery, residuals management) and promote resident awareness and participation in waste reduction and disposal services, including.

- **A school outreach program:** Curriculum-linked educational workshops and tours for students from Kindergarten to Grade 12

- **The Hartland Learning Centre**: Located at Hartland Landfill, this recycled building is the venue for school and community workshops, as well as the starting point for tours. Tours are provided to school groups, community groups, members of the public and technical groups

- **Community Outreach and Events:** Displays are set up at fairs, festivals, community gatherings and other community events or locations. The displays often focus on ways to reduce and divert waste, proper sorting techniques for recyclable materials or more specific topics such as how to prepare demolition waste and dispose of asbestos

- **MyRecyclopedia.ca:** A comprehensive online listing of items including local recycling listings and tips on how to reduce and reuse

- **Infoline**: This phone line and email address allows the CRD to respond to inquiries about waste reduction, waste management, recycling and Hartland Landfill

- **Ready, Set, Sort!:** An online waste sorting game where residents can test their knowledge about local recycling opportunities

- **CRD website**: The CRD's website has a range of information associated with the 5Rs and CRD's solid waste services

- **Compost Education Centre:** Through a contract with the CRD, the centre offers organic waste diversion presentations, workshops, and educational demonstrations at on-site gardens and throughout the community

- **Public Education Campaigns:** The CRD develops and implements a number of seasonal, multi-media public education campaigns to promote and provide information on a range of waste management subjects. In 2019, those subjects included:

  - end markets for recyclable materials
  - household hazardous waste handling
  - safe renovation waste disposal
  - avoidable food waste reduction
  - illegal dumping prevention
  - holiday season waste reduction
  - abandoned boat reporting and prevention

In addition to the above activities undertaken by the CRD, municipalities with waste management services, waste management companies, EPR organizations and many environment-oriented non-profit organizations provide their own communication and education services.

4.2.6 Recycling Depots

There are public and privately-operated depots located throughout the region accepting recyclables of many types, kitchen scraps, yard waste, EPR products, and household hazardous waste. Some of these depots also receive garbage.

The public drop-off depot at Hartland receives garbage, recyclables and household hazardous waste. This area is intended for residential quantities and limits vehicle size to 5,500 kg gross vehicle weight.

Residents on Salt Spring Island and the Southern Gulf Islands are provided recycling services through drop-off programs set up at depots in their communities. The CRD, under agreement with Recycle BC, partners with local on-island non- profit associations for recycling services for packaging and paper products at these depots. In addition to receiving packaging and paper products, most depots offer additional services such as scrap metal and electronics recycling.

4.2.7 Transfer Stations

The CRD owns and operates a transfer station in Port Renfrew where garbage is received from local residents and transferred to Hartland Landfill. Source separated recyclables and kitchen scraps are also accepted at the site for recycling.

Additionally, there are several private transfer stations in operation in the CRD. Many of these sites offer recycling services as well.

Transfer stations on Salt Spring Island are subject to *Capital Regional District Bylaw 2810, a Bylaw to Regulate the Operation of Transfer Stations on Salt Spring Island* which requires all transfer stations to hold a license. This bylaw was put in place to ensure that all transfer stations on Salt Spring Island are operated at a level that ensures the protection of environmental and community health.

4.2.8 Extended Producer Responsibility

British Columbia's industry-led product stewardship programs require producers of designated products to take extended producer responsibility for the life-cycle management of their products, including collection and recycling.

The BC Recycling Regulation, under authority of the Environmental Management Act, sets out the requirements for product stewardship in BC. The region is served by all of BC's EPR programs through a broad range of take-back programs and service providers, including depots and retailers. The CRD participates directly in EPR by acting as a collector for the following EPR programs at Hartland Landfill:

- Beverage Containers
- Electronics, Electrical Products, Batteries and Lighting Products
- Lead-Acid Batteries
- Paints, Solvents, Flammable Liquids, Gasoline and Pesticides
- Residential Packaging and Paper Products
- Tires
- Used Lubricating Oil, Filters and Containers and Antifreeze

4.2.9 Organics Management

Regional Kitchen Scraps Strategy

In January 2015, a landfill ban on kitchen scraps was implemented, saving a valuable resource, conserving landfill space and reducing greenhouse gas emissions from Hartland landfill. Collected kitchen scraps are currently processed at composting facilities in the Cowichan Valley Regional District and on the lower mainland.

Compost Facilities Bylaw

The CRD Board adopted the regional composting bylaw in December 2005. The bylaw regulates the operation of composting facilities in the region to protect public health and the environment. In 2019, there were no facilities licensed under the bylaw in the region.

Yard and Garden Material Landfill Restriction

In 2006, a yard and garden material landfill ban came into effect. A number of private facilities in the area accept the region's yard and garden material.

In 2019, 1,142 tonnes of source-separated yard and garden material was received at Hartland where it was ground and beneficially used on-site. The landfill ban excludes invasive, infectious and noxious plants which are received at Hartland as garbage at a discounted tipping fee in an effort to reduce their proliferation.

4.2.10 Participants in the Solid Waste Management System

There are many participants in the solid waste management system, as described in Table 4-1.

Table 4-1: Participants in the Solid Waste Management System

Who	Roles in Solid Waste Management
BC Ministry of Environment	• Regulates municipal solid waste management through the Environmental Management Act • Establishes provincial targets for management of solid waste in B.C. • Approves regional solid waste management plans • Authorizes discharges to the environment through permits and operational certificates • Enforces provincial regulations and the conditions set out in discharge permits and operational certificates • Mandates EPR in BC through the Recycling Regulation
Capital Regional District	• Operates the Hartland landfill site and the Port Renfrew transfer station • Provides residential recycling services through a combination of curbside and depot collection (through a contract with Recycle BC) • Prepares the regional solid waste management plan (SWMP) • Works with municipalities and First Nations to implement the SWMP • Regulates the operation of composting facilities through the Compost Facility Bylaw • Reports annual MSW disposal rate to ministry • Provides education and outreach • Monitors the implementation of the SWMP through the Solid Waste Advisory Committee
Municipalities	• May provide various curbside collection or drop-off services to residents • Provides education and outreach associated with local solid waste services • Liaises with the regional district with regards to solid waste services and issues • Participates in the development and implementation of the SWMP • May undertake local zero waste initiatives
First Nations	• May provide curbside collection of garbage and kitchen scraps to residents • Provides education and outreach associated with the local solid waste services • Liaises with the regional district on items of mutual interest • May participate in the development and implementation of the SWMP
Producer Responsibility Organizations	• Provides collection services for stewarded products • Provides education/promotion to increase product recovery • Provides deposit refunds to consumers (where applicable) • Monitors and reports on diversion/recovery rates to the Province • Participates in the development and implementation of the SWMP
Private sector involved in waste management (e.g., haulers, facility operators)	• Provides garbage and recycling collection services to municipalities, businesses, residents, institutions, and construction/ demolition projects • May operate private facilities such as bottle depots, recycling depots, transfer stations and composting facilities • May be regulated by Provincial government • Liaises with waste generators (customers) to minimize contamination of waste streams • Complies with CRD requirements for source separation of controlled waste • Participates in the development and implementation of the SWMP
Waste generators (residents and businesses)	• Participates in municipal and regional solid waste management programs and services • Is informed regarding source separation requirements, disposal restrictions and options to minimize waste sent to disposal
Non-profit organizations	• Provide recycling depot services on Salt Spring and the Southern Gulf Islands • Receive reusable good for sale in thrift stores and distribution in social support programs

4.2.11 Bylaws

The CRD has the following bylaws in place for the purposes of managing solid waste:

Bylaw 1903, Solid Waste Disposal Local Service Establishment Bylaw No. 1, 1991 establishes a local service to allow the CRD to acquire, construct, establish, maintain, operate and regulate; (a) transfer depots and facilities for receiving collected waste for packing, processing, loading and transporting the waste to disposal grounds, (b) facilities for collecting, processing, storing, marketing and disposing of recyclable waste, (c) facilities for composting waste, (d) facilities for collection, storage and disposal of hazardous, biomedical or special waste, (e) facilities for carrying out resource recovery from waste, and (f) waste disposal grounds and facilities.

The above bylaw has been amended twice since 1991:

- **Bylaw 2564 To Amend Bylaw No. 1903 "Solid Waste Disposal Local Service Establishment Bylaw No. 1, 1991"** to establish the service of the regulation, storage and management of municipal solid waste and recyclable material, including the regulation of facilities and commercial vehicles used in relation to these matters
- **Bylaw 3900 To Amend Bylaw 1903 "Solid Waste Disposal Local Service Establishment Bylaw No. 1, 1991**" to include facilities for carrying out resource recovery from recyclable material and the generation of energy from landfill gas.

Bylaw 3881, The Hartland Landfill Tipping Fee and Regulation Bylaw lists items that are banned from disposal at Hartland landfill and established tipping fees for garbage and recyclables.

Bylaw 2810, a Bylaw to Regulate the Operation of Transfer Stations on Salt Spring Island requires all transfer stations on Salt Spring Island to hold a license. This bylaw was put in place to ensure that all transfer stations on the island are operated at a level that ensures the protection of environmental and community health.

Bylaw 2736, a Bylaw to Regulate the Operation of Composting Facilities ensures that composting operations do not contaminate ground or surface water, or generate unacceptable levels of nuisance odour, vectors, litter or dust, and to protect the public from composting operations which violate the requirements of the bylaw. The bylaw supplements existing provincial regulations under the Organic Matter Recycling Regulation (OMRR), by specifying that restricted organic matter requires in-vessel composting; requiring leachate, nuisance odour, vector, litter and dust management plans, and establishing a regulatory system for enforcing the requirements. The bylaw also deals with issues related to inspection, enforcement, storage and abandonment of materials.

The bylaw sets out four classes of licenses, as follows:

- Class 1 – composting general organic matter on an impermeable surface or in-vessel (this type of facility is exempt from licensing unless the facility generates leachate or creates nuisance odours, vectors, litter or dust)
- Class 2 – composting biosolids with general organic matter on an impermeable surface or in-vessel
- Class 3 – composting restricted organic matter
- Provisional – operations not using proven technology to compost restricted organic matter

Bylaw 2290, **a Bylaw for the purpose of establishing regulations for the use of recycling containers and the collection of recyclable material** within the Capital Regional District.

In addition to the above, municipalities may have bylaw provisions associated with the waste management services they provide, in addition to littering, open burning, zero waste, and the location of waste management facilities.

5 Strategies and Actions

This section outlines the strategies to be implemented to achieve the Plan's goals and the specific actions to be undertaken as part of each strategy. Figure 5-1 provides a graphical summary of the four goals of this plan and the associated strategies.

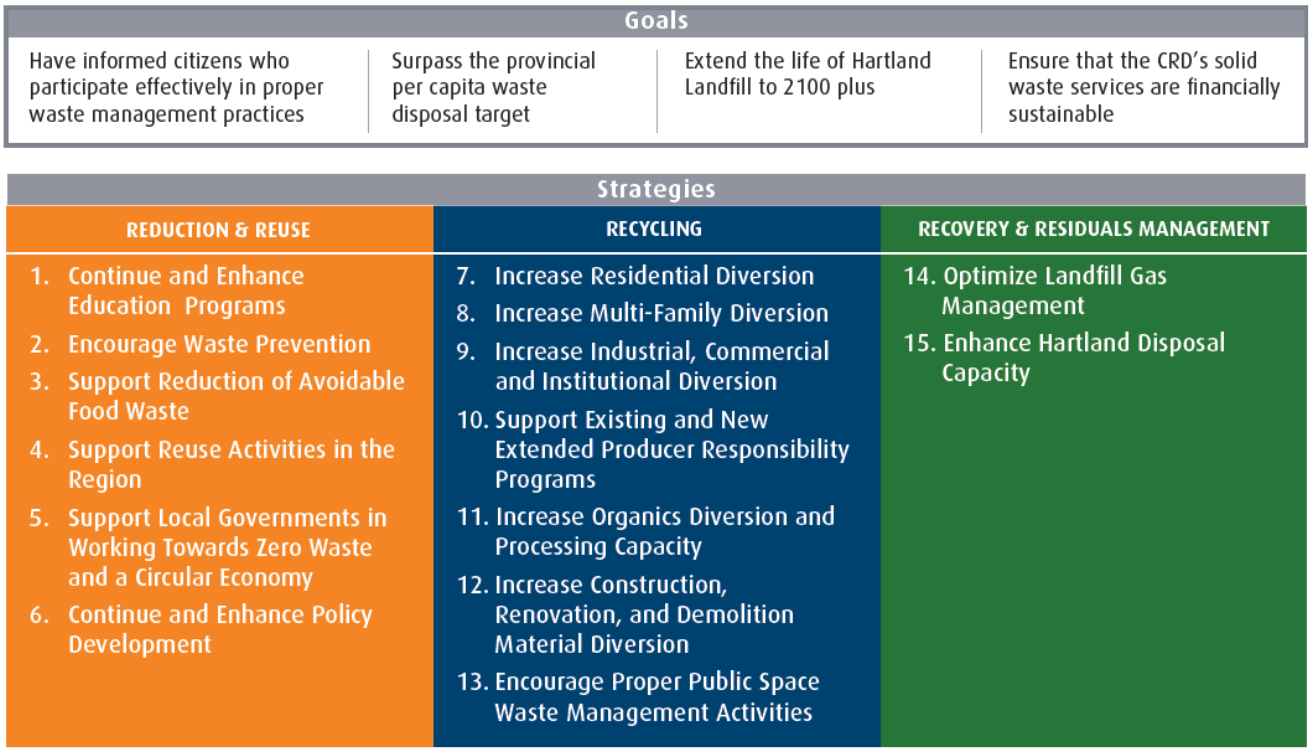


Figure 5-1: Plan Goals and Strategies

The selection of the plan's strategies and actions were based on feedback from the SWAC and an evaluation of each strategy for:

- Technical Feasibility and Effectiveness;
- Environmental Impact and Benefits;
- Social Impact;
- Effect on Waste Disposal, and
- Cost Considerations.

This evaluation is provided in Appendix B. Appendix B also provides additional details on each of the actions listed below.

All of the actions will be implemented by the CRD except where noted in italics. This does not preclude the option of member municipalities, local businesses, institutions or non-profit organizations of undertaking their own initiatives, which may be the same or similar to the actions listed below.

5.1 Reduction and Reuse

Strategy #1: Continue and Enhance Education Programs

Actions:

A. Ensure ongoing, up-to-date promotion and education resources to enable effective participation in CRD programs and initiatives.
B. Incorporate behaviour change components wherever possible (e.g., community-based social marketing); using a variety of education and communication strategies and tools, including digital marketing tools (e.g., social media).
C. Expand education programs to Multi-Family and ICI sector.
D. Enhance K-12 school program to include concepts of circular economy.
E. Collaborate with stakeholders on education campaigns (*a partnership with local governments and product stewards*).
F. Continue supporting environmental stewardship recognition.
G. Continue to engage residents on solid waste matters; using the appropriate level of consultation.

Strategy #2: Encourage Waste Prevention

Actions:

A. Promote less consumption and advocate for consumer responsibility.
B. Establish a community-based waste reduction grant program (could include food waste prevention projects).
C. Support single-use item reduction efforts.
D. Promote sustainable and/or packaging-free purchasing options.
E. Advocate provincially and federally to limit or eliminate the manufacturing, distribution or sale of single use items and non-recyclable materials.
F. Advocate provincially and federally for sustainable product design (e.g., standardized packaging that is reusable, recyclable, or compostable).

Strategy #3: Support Reduction of Avoidable Food Waste

Actions:

A. Support residential food waste reduction, for example, by continuing “Love Food Hate Waste Canada” program.
B. Support ICI food waste reduction, for example, by encouraging stores to donate edible food.
C. Continue to support food recovery organizations.
D. Advocate for regulation to clarify use-by versus Best Before dates and educate accordingly.

Strategy #4: Support Reuse Activities in the Region

Actions:

A. Continue to provide funding to non-profits to help offset garbage tipping fees for unusable donated items.
B. Continue to support and promote donations to reuse establishments.
C. Support reuse, renting and sharing programs, such as tool libraries, repair cafes, and sewing hubs, and other materials exchange activities.
D. Investigate free store at Hartland landfill or other facilities.

Strategy #5: Support Local Governments in Working towards Zero Waste and a Circular Economy

Actions:

A. Develop model language for bylaws, best practices, OCPs, and Economic Development strategies for use by local governments using research and collaboration to guide this process. *To be done in partnership with member municipalities and potentially other regional districts.*
B. Work with local governments to identify the need for solid waste facilities and zoning for waste management activities. *To be done in partnership with member municipalities.*
C. Use policy tools to enable local recycling infrastructure.
D. Investigate 'Pay-As-You-Throw' principles to use as tools to incent less waste disposal.
E. Investigate use of clear bags for garbage or recyclables collection to encourage proper recycling of materials, where practicable and enforceable (e.g. at events).

Strategy #6: Continue and Enhance Policy Development

Actions:

A. Develop model procurement policies for use by local governments, non-profits, etc. *To be done in partnership with member municipalities and other interested organizations.*
B. Continue to expand material bans when viable alternatives exist.
C. Investigate licensing waste management facilities in the region to encourage transparency, consistency, and a requirement that all facilities protect public health and the environment.
D. Investigate regulatory mechanisms to manage municipal solid waste and recyclable materials in the region.
E. Investigate options for debris from extreme weather, such as community chipping days or special burning allowances in electoral areas

5.2 Recycling

Strategy # 7: Increase Residential Diversion

Actions:

A. Continue to promote diversion of recyclable materials (including organics), ensuring that education strives to minimize contamination in these streams.
B. *Collaborate with municipal and private sector service providers* to support depot diversion efforts in the region for non-curbside materials.
C. Encourage local processing and markets for recyclables.

D. Develop tools, such as a guide, to support event recycling.

Strategy # 8: Increase Multi-Family Diversion

Actions:

A. Allocate resources to support Multi-Family (Multi-Family) recycling, for example, by developing standardized education materials.
B. *Work with local governments and private sector service providers* to develop waste source separation requirements.
C. Develop policy guide for recycling, composting and garbage space and access in multi-family developments.
D. *Collaborate with stakeholders (e.g., private haulers who service Multi-Family buildings or Multi-Family property managers)* to implement support for Multi-Family recycling, such as a 'Train-the-Trainer' Program.

Strategy # 9: Increase ICI Diversion

Actions:

A. Allocate resources to increase ICI diversion, for example, a business waste reduction liaison.
B. Advocate to expand the packaging and paper product EPR program to the ICI sector.
C. Create a business waste reduction toolkit, including education about how to apply Circular Economy principles.
D. Encourage municipalities to require waste management plans with business licenses.
E. Develop policy guide for ICI space and access requirements.
F. *Work with local governments and private sector service providers* to develop ICI waste source separation requirements.
G. Investigate shifting disposal ban enforcement to generator, rather than hauler.

Strategy #10: Support Existing and New EPR Programs

Actions:

A. Advocate to the province to expand EPR programs. (Note: The Province is currently conducting an EPR gap analysis and considering adding new materials.)
B. *Collaborate with stewards t*o increase consumer awareness about EPR programs.
C. Advocate for increased return-to-retailer opportunities.
D. Advocate federally to standardize EPR programs across Canada.

Strategy #11: Increase Organics Diversion and Processing Capacity

Actions:

A. Continue to promote organics waste diversion.
B. Develop an organic waste processing facility at the Hartland Landfill site to receive and process kitchen scraps. Additional information on the process to develop this facility is provided in Section 6.
C. Support compost markets by purchasing back materials.
D. *Collaborate with service providers and users (e.g., local businesses)* to develop guidelines for use of compostable products and packaging.

Strategy #12: Increase Construction, Renovation and Demolition (CR&D) Material Diversion

Actions:

A. Increase Construction, Renovation and Demolition (CR&D) Material Diversion
B. Investigate beneficial uses of CR&D waste, including a clean wood waste ban.
C. Investigate banning or surcharging mixed CR&D loads at the landfill to encourage source separation.
D. Further develop programs for managing hazardous materials, like asbestos.

Strategy #13: Encourage Proper Public Space Waste Management Activities

Actions:

A. Develop educational materials to prevent and reduce litter and abandoned materials in our neighbourhoods and public spaces.
B. Continue promoting alternatives to abandoned materials and illegal dumping by educating about proper management and disposal
C. *Collaborate with stakeholders, including local governments and private sector facilities*, to develop a regional approach to prevention of illegal dumping.
D. Investigate developing regionally-aligned bylaws. *To be done in partnership with member municipalities.*
E. Develop and pilot methodologies to 'observe, record, and report' on abandoned materials and illegal dumping incidents throughout the region.
F. Investigate options for large bulky item disposal, e.g., free drop-off days or large item pick-up days

5.3 Recovery and Residuals Management

Strategy #14: Optimize Landfill Gas Management

Actions:

A. Continue to capture landfill gas for beneficial use. (Note: On April 22, 2020, the CRD announced approval in principle of an agreement where FortisBC will purchase renewable natural gas (RNG) generated from Hartland Landfill for beneficial use in its natural gas distribution system. The CRD and FortisBC are currently working together on a supply contract that will be submitted to the British Columbia Utilities Commission for approval. If approved by the commission, the CRD will continue to be responsible for the ownership and operation of the Hartland Landfill, the landfill gas collection system and the upgrade facility. FortisBC will pay a fixed price per gigajoule for the renewable natural gas and will be responsible for the costs associated with injecting it in to the natural gas distribution system. The agreement could allow for FortisBC to purchase between 140,000 gigajoules to 280,000 gigajoules each year for 25 years, starting in late 2021. The project is expected to reduce the region's greenhouse gas (GHG) emissions by approximately 264,000 tonnes of carbon dioxide equivalent over the 25-year project life.)
B. Investigate collaboration opportunities with educational institutions to research new beneficial uses and technologies.

Strategy #15: Enhance Hartland Disposal Capacity

Actions:

A. Review ban enforcement levels, subject to recycling market conditions.
B. Continue to operate Hartland landfill using best practices.
C. Develop design options to maximize disposal capacity until 2100 and beyond. (Note: A new fill plan is in development. Design and aggregate management options could extend landfill life significantly.)
D. Continue to conduct research and investigate emerging technologies.

6 Organic Processing Facility Decision Process

Strategy #11 is to increase organics diversion and processing capacity and to achieve this, one of the key actions is to establish an organic waste processing facility at the Hartland Landfill site to receive and process kitchen scraps and other organic materials such as yard waste. This section provides additional detail on the process to establish this facility.

The CRD implemented a kitchen scraps disposal ban at Hartland Landfill in 2015. In recognition of a lack of local processing capacity for kitchen scraps, the CRD installed a kitchen scraps transfer area at Hartland landfill to receive kitchen scraps collected within the region. The kitchen scraps are then hauled and processed at facilities on southern Vancouver Island and on the mainland. This approach requires extensive transportation and is inconsistent with the Region's long term objective of managing the kitchen scraps locally to the extent possible. Consequently, in 2018 the CRD Board approved a motion directing staff to pursue an in-region or near in-region organics (kitchen scraps/yard and garden) processing facility and initiate a procurement process. The CRD subsequently issued a Request for Expressions of Interest for Kitchen Scraps and Organics Residuals Processing Facility and received a number of responses for a variety of processing methods.

As part of the next stage of this process, the CRD will engage the public to understand what the community's values are regarding organics processing (e.g. odour, climate impact, collection methods) to inform the establishment of a processing facility at Hartland landfill.

All CRD residents are primary stakeholders in the consultation process. Specific secondary stakeholder groups include municipalities and electoral areas as well as related stewardship, education and advocacy groups. First Nations will be engaged by CRD First Nations Relations staff. This consultation will be undertaken in alignment with the requirements outlined within the Guide for Solid Waste Management Planning and will be used to develop a plan to establish a facility at Hartland Landfill.

CRD's process for establishing an Organics Processing Facility within the Capital Region will follow the process outlined below:

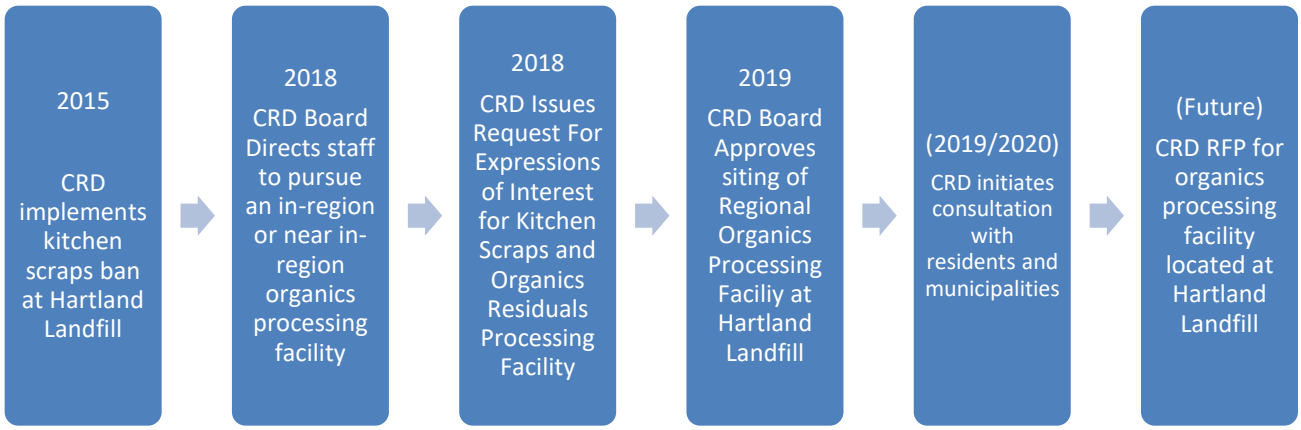


Figure 6-1: Organic Processing Facility Decision Process

Until the time that local processing capacity is established, the CRD intends to continue operation of a kitchen scraps transfer facility at Hartland Landfill.

7 Implementation Schedule

In the short-term (the first 3 years of the plan's implementation), the focus will be on the actions that target the reduction and diversion of CR&D waste and organic materials. Also in the short-term, the actions associated single-family, multi-family, and ICI diversion will be implemented.

In the medium-term (years 4-5), the focus will be on continuing and improving the single-family, multi-family, and ICI programs.

In the long-term (full plan implementation), all programs will be refined to maintain and/or improve diversion levels. Additionally, new EPR programs are anticipated to be implemented within the timeframe of this plan; in particular the Plan anticipates the introduction of EPR for ICI-generated paper and packaging and textiles.

Appendix D provides a detailed planned implementation schedule for the Solid Waste Management Plan from 2021 to 2030.

8 Plan Targets

The targets established for this plan are focused on reducing the amount of waste landfilled on a per capita basis. The CRD has set a goal of exceeding the Provincial target for per capita waste disposal. At the time of preparing this plan, the provincial target is 350 kg per capita. The per capita disposal targets proposed for the CRD are based on the strategies and actions described in Section 5 and are presented below in Table 7-1.

Table 8-1: Plan Targets

	Short-Term Goal (3 years)	Medium-Term Goal (5 years)	Long-Term Goal (10+ years)
Targeted Sectors/ Materials	▪ Construction, Renovation, and Demolition waste ▪ Organic waste from: • Single-family • Multi-family • ICI	▪ Recyclables and organic waste from: ▪ Single-family ▪ Multi-family ▪ ICI	▪ EPR for ICI-generated paper and packaging and textiles ▪ Refine programs to increase performance for all sectors
Disposal Target (kg per capita)	**340**[1]	**285**	**250**[2]

1. This target is aggressive and assumes that disposal bans for CR&D materials would be implemented.
2. This target is aggressive and assumes that new EPR programs will be implemented by the Ministry in the long-term timeframe.

9 Financing

The strategies and actions outline in this Solid Waste Management Plan are intended to decrease community waste generation from 380kg per capita down to 250kg per capita over the 10 year planning horizon.

In 2019, all costs associated with solid waste disposal and diversion programs in the CRD were funded through tipping and user fee revenues at Hartland Landfill, collection contract revenues, sale of electricity and sale of recyclables. The costs of the CRD's solid waste services, including the funding of reserves, was $27,646,550.

The annual incremental cost to deliver the strategies and actions identified in the Solid Waste Management Plan is $320,000 to $345,000 per year as shown in Table 9-1. This is an increase of approximately 1%.

Table 9-1: New Costs Associated with SWMP Strategies and Actions

Strategy		Annual Cost
1	Continue and Enhance Education Programs	$100,000
2	Encourage Waste Prevention	$50,000
7	Increase Residential Diversion	$25,000 (for 2 years)
8	Increase Multi- Family Diversion	$50,000
9	Increase ICI Diversion	$50,000
12	Increase Construction, Renovation and Demolition (CR&D) Material Diversion	$50,000
13	Enhance Public Space Waste Management	$20,000
	Total	**$320,000 - $345,000**

The 10 year operating and capital projections for the CRD's solid waste services, including the proposed SWMP investments and resulting tonnage reductions, can be funded by the current tipping fees ($110/tonne) and other projected revenues (including Renewable Natural Gas) without the need for tax requisition or debt. Table 9-2 shows the estimated impact of the projected expenditures and decreasing per capita disposal on the CRD's Environment Resource Management (i.e. solid waste management) reserves.

Table 9-2: Estimated ERM Reserves Balance (2020-2031)

2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
36,484,055	21,378,327	7,524,757	9,800,701	11,660,083	12,759,595	13,937,403	14,186,509	13,199,630	11,427,223	9,299,829	6,612,462

10 Plan Flexibility

Due to changing circumstances and priorities that may evolve over time, and with the input of the Solid Waste Advisory Committee and interested parties, all major actions identified in the Plan will be reviewed for appropriateness before implementation. This will generally occur on an annual basis. The Plan's implementation schedule will be flexible enough to reflect the availability of technologies that may arise over time, as well as the potential changes in regional issues and priorities. In addition, it will also take into account the financial priorities of member municipalities and other partners, the availability of funding to undertake actions listed in this Plan, and the availability of contractors and service providers.

The Plan is a "living document" that may be amended to reflect new considerations, technologies and issues as they arise.

An amendment of this Plan would be required if there were major changes to the solid waste management system of the following nature:

a. The opening (or changes to the location or status) of a site or facility that is *not* already identified in this *Plan* and requires an authorization under BC's Environmental Management Act; or any other facility that could have an adverse impact to human health or the environment
b. Waste import / export options which would significantly impact the CRD's or neighbouring solid waste systems, or not conform to provincial legislation, goals and/or waste reduction targets
c. Significant changes to the *Plan's* disposal targets or reductions in programs supporting the first 3Rs.
d. A change in the boundary of the *Plan*, which would significantly change the amount of solid waste to be managed under the *Plan* or significantly change the population of the *Plan* area
e. The addition, deletion or revision of policies or strategies related to the conditions outlined in the minster's approval letter
f. Major financial changes that warrant seeking elector assent.

If a Plan amendment becomes necessary, the CRD would need to undergo a public consultation process and submit an amended plan to the Minister of Environment for approval, along with a detailed consultation report.

11 Plan Monitoring and Measurement

The implementation of the solid waste management plan will be monitored to determine its on-going effectiveness. Annual measurement and monitoring allows for course corrections to be made in a timely manner.

The following monitoring and measurement actions will be undertaken.

1. **Plan Monitoring:** Monitoring progress on the Plan's implementation will be undertaken by the Solid Waste Advisory Committee (SWAC). This will maintain the linkage between the development of the plan and its implementation. The terms of reference for the SWAC are included in this Plan as Appendix A.

2. **Annual Reporting**: On an annual basis, CRD staff will continue to prepare an Environmental Resource Management Progress Report that describes the CRD's current solid waste management activities and provides several metrics including the amount of waste landfilled per capita. This report will include the status of the Plan's implementation and progress toward the Plan's targets. Additionally, the report will identify any challenges or opportunities that are affecting (or have the potential to affect) the Plan's implementation. This report will be provided to the SWAC and the Board.

3. **BC Disposal Calculator:** CRD will continue to compile data annually on all of the municipal solid waste disposal activities in the regional district for reporting to the BC Ministry of Environment's on-line disposal calculator.

4. **Interim Assessment / Plan Update:** As per the BC Guidelines for Solid Waste Management Planning, five years into the implementation of the Plan, the CRD intends to carry out a review of the plan's implementation and effectiveness. A Plan renewal will be undertaken after ten years.

5. **Waste Composition Study:** The CRD has been undertaking waste composition studies roughly every 5 years since 1990. The CRD will continue undertake these studies to provide valuable insight into how the Plan's implementation is affecting what is landfilled. This information will also assist with the preparation of the Interim Assessment and next Plan renewal.

12 Inter-Regional District Cooperation

The CRD recognizes the value of collaborating with other regional districts with an aim to improve cost-efficiencies of providing solid waste services, and also to learn from each other through sharing ideas and experiences. To this end, the CRD are members of the following organizations:

- Coast Waste Management Association
- Recycling Council of BC
- Association of Vancouver Island and Coastal Communities Solid Waste Management Committee
- BC Product Stewardship Council
- Solid Waste Association of BC

Additionally, the CRD has partnered with the Cowichan Valley Regional District and the Regional District of Nanaimo to undertake solid waste technical studies of mutual interest.

During the implementation of this Plan, the CRD will continue to participate in the above organizations as a means of collaborating with other BC regional districts, and particularly to work on solid waste solutions for Vancouver Island.

13 Plan Amendments

This plan represents the current understanding and approach to the solid waste management challenges being faced by the CRD. The plan is a "living document" that may be amended to reflect new considerations, technologies and issues as they arise.

The need for a plan amendment will be triggered by major changes to the solid waste management system which would include:

a. The opening of a site or facility that requires an authorization under the Environmental Management Act that is not currently recognized in this Plan;
b. Any other facility that could have an adverse impact to human health or the environment, as defined by the CRD Board;
c. Waste import / export options which would significantly impact the regional district's or neighbouring solid waste systems, or not conform to provincial legislation, goals and / or targets; and
d. Major financial changes that warrant seeking elector assent.

When a plan amendment becomes necessary, the CRD will undergo a public consultation process and submit an amended plan to the Minister of Environment for approval, along with a detailed consultation report.

14 Dispute Resolution

Although consultation efforts may prevent or minimize conflicts, at times disputes may arise during development or implementation of the plan. To this end, a dispute resolution procedure has been included to address any complaints or concerns that occur during plan development or implementation.

This dispute resolution procedure, included as Appendix C, may apply to the following types of conflicts that could arise during plan implementation:

- Administrative decisions made by regional district staff
- Interpretation of a statement, bylaw, policy or provision in the plan
- Any other matter not related to a proposed change to the wording of the plan or an operating certificate.

Appendix A: Solid Waste Advisory Committee Terms of Reference

PREAMBLE

The Capital Regional District (CRD) Solid Waste Advisory Committee is an Advisory Committee established by the CRD Environmental Services Committee to provide input on solid waste management matters and meet the requirements of the Ministry of Environment's Guide to Solid Waste Management Planning for an advisory committee on the development and implementation of the Solid Waste Management Plan (SWMP).

The Committee's official name is to be: Solid Waste Advisory Committee

1.0 PURPOSE

The mandate of the Committee includes advising the Environmental Services Committee regarding the following:

a. providing input on major solid waste management matters
b. serving as the advisory committee to the Steering Committee (Environmental Services Committee) on the development of Revision 3 of the SWMP
c. acting as plan monitoring advisory committee for the new SWMP, once approved

2.0 ESTABLISHMENT AND AUTHORITY

a. The Environmental Services Committee will:
    - appoint the committee members for up to a three-year term
    - act as the Steering Committee for Revision 3 of the SWMP
    - appoint a member as the liaison between the advisory committee and the Environmental Services/Steering Committee
b. The Committee will report its input to the Environmental Services Committee for consideration. The CRD Board is the final decision-making authority.

3.0 COMPOSITION

The Committee shall consist of members representing a diversity of background, interests and geographical location, representing a balance between technical and non-technical members and industry and public members, as follows:

Representation	Number of Members
Regional district director (member of Environmental Services Committee)	1
Municipal engineering staff who are involved in solid waste collection	2
Electoral Area representative	1
First Nations	2
Environmental organizations	1
Business groups	1
Non-profit group with an interest in solid waste (e.g. reuse organization)	1
Large waste generators (industrial, commercial, institutional)	2
Owners/operators of private waste management facilities	2
Private sector industry collection service providers	2
Composting industry representative	1
Product stewardship agency	1
Community representative (representing Prospect Lake/Hartland area)	1
Public representatives, at large	3
Willis Point representative	1
District of Highlands representative	1

4.0 PROCEDURES

a. The CRD Board Procedures Bylaw will apply.
b. Member from Environmental Services Committee shall be Chair of Solid Waste Advisory Committee
c. The committee shall meet at the call of the Chair and have special meetings, as required.
d. The agenda will be finalized in consultation between staff and the Chair.
e. A quorum is a majority of the committee membership and is required to conduct committee business.

5.0 RESOURCES AND SUPPORT

a. The Senior Manager, Environmental Resource Management, will lead the coordination and allocation of resources to the Committee.
b. Minutes and agendas are prepared and distributed by the Environmental Resource Management division.

Appendix B: Detailed Evaluation of the Plan's Strategies and Actions

1.0 REDUCTION AND REUSE

B-1: Strategy Evaluation - 1. Continue and Enhance Education Programs

Strategy And Associated Actions	Technical Feasibility and Effectiveness	Environmental Impact and Benefits	Social Impact	Effect on Waste Disposal	Cost Considerations
1. Continue and Enhance Education Programs A. Ensure ongoing, up-to-date promotion and education resources to enable effective participation in CRD programs and initiatives. B. Incorporate behaviour change components wherever possible (e.g., community-based social marketing); using a variety of education and communication strategies and tools, including digital marketing tools (e.g., social media). C. Expand education programs to MF and ICI sector. D. Enhance K-12 school program to include concepts of circular economy. E. Collaborate with stakeholders on education campaigns, e.g. local governments, product stewards. F. Continue supporting environmental stewardship recognition. G. Continue to engage residents on solid waste matters; using the appropriate level of consultation.	▪ **Action 1A** is in accordance with current practice and should be simple to implement and maintain. Consistent messaging throughout the CRD will aid in public understanding and use of diversion services throughout the community and support the goal of having informed citizens that participate effectively in proper waste management practices. ▪ **Action 1B** will use techniques such as Community-based social marketing (CBSM). CBSM is an approach to program promotion and education that encourages high rates of effective participation and long-term behavior change. The CBSM process centres on uncovering barriers that inhibit individuals from engaging in sustainable behaviours, identifying tools that have been effective in fostering and maintaining behaviour change, then piloting takes place on a small portion of the community followed by ongoing evaluation once the program has been implemented community-wide. ▪ A significant bank of resources exist (within and beyond British Columbia) of sample education materials and guides for rolling out educational programs for different sectors, which could be used as a foundation for **Action 1C**. Initiating education programs for MF and ICI sectors now sets the CRD up for success when rolling out additional diversion programming or making changes to existing programs. ▪ Educating youth (**Action 1D**) is a critical key to long-term behaviour change in recycling[1,2]. It influences not just recycling habits at home but builds a foundation for youth to develop positive diversion habits to continue throughout life. A myriad of resources exist on integrating zero waste education for youth which the K-12 could consider adapting for the K-12 program[3] ▪ Interested stakeholders exist throughout the CRD (e.g., universities, local governments, and private sector service providers) who are open to collaboration (**Action 1E**); this collaboration may bolster the success of education programs. ▪ **Actions 1F through 1G** are in accordance with current practice and should be simple to implement and maintain.	▪ **Actions 1A through 1H** are expected to enhance rates of participation, though little environmental impact is anticipated as a *direct* result of these initiatives. Additional material capture and participation is typically attributed to emerging/improving collection and diversion programs, thus direct impact is hard to measure. This strategy contributes to creating culture and systems change that may ultimately reduce disposal in the CRD. ▪ This strategy is a priority to ensure effective participation the CRD waste management system.	▪ **Actions 1A through 1H** will increase overall engagement with waste management systems in the CRD. They may result in an overall growth in the waste reduction movement ▪ Confusion among residents can be often widespread in diversion programs, leading to general frustration among the public (i.e., “Why is recycling so confusing?”) Receiving information and active engagement through CRD programs (**Actions 1A through 1H**) may improve public perception. ▪ Collaborating with stakeholders (**Action 1E)** may result not only in improved education programs but also improved relationships with all stakeholders interested in waste management, thus creating a more resilient waste management system in the CRD. Furthermore, collaborating with local governments on education programs would likely result in consistent messaging and more harmony between initiatives within the CRD.	▪ This strategy may have a moderate direct impact on disposal capacity. ▪ This strategy contributes to creating culture and systems change that may ultimately reduce disposal in the CRD.	▪ $100,000 annually to enhance education programs. ▪ Additional funding may be required for special campaigns, initiatives, and/or consultation (e.g. new bans).
Score (High- 5, Medium – 3, Low – 1)	High	Medium	High	Medium	

[1] Call 2 Recycle. Recycling is Important at Any Age. https://www.call2recycle.ca/recycling-is-important-at-any-age/
[2] City of Boroondara. Schools as gateways to community behaviour change on consumption and waste. https://www.mwrrg.vic.gov.au/assets/resource-files/Smart-school-MF-R1-Final-Report-Bo.pdf
[3] Sustainability Victoria. Waste Smart Schools: A practical ‘how to’ guide for Victorian schools, January 2016. https://www.sustainability.vic.gov.au/-/media/SV/Publications/Schools/Modules/Waste/RSS-waste-how-to-guide-PDF-version.pdf

Table B-2: Strategy Evaluation - 2. Encourage Waste Prevention

Strategy And Associated Actions	Technical Feasibility and Effectiveness	Environmental Impact and Benefits	Social Impact	Effect on Waste Disposal	Cost Considerations
2. Encourage Waste Prevention A. Promote less consumption and advocate for consumer responsibility. B. Establish a community- based waste reduction grant program (could include food waste prevention projects). C. Support single-use item reduction efforts. D. Promote sustainable and/or packaging-free purchasing options. E. Advocate provincially and federally to limit or eliminate the manufacturing, distribution or sale of single use items and non-recyclable materials. F. Advocate provincially and federally for sustainable product design (e.g., standardized packaging that is reusable, recyclable, or compostable).	▪ It is recommended that **Action 2B** grant criteria for projects eligible for funding including food waste prevention and recycling initiatives. This Action complements the existing Recycle BC Community Champions funding program[4] for waste reduction initiatives in communities. ▪ Efforts similar to **Action 2C** in BC municipalities (e.g., City of Victoria, City of Vancouver) have proven successful at increasing engagement. ▪ Sustainable and/or packaging-free purchasing options (**Action 2D**) have gained popularity in recent years. One Zero Waste grocery store exists in Victoria and others exist throughout BC. These types of stores mainly reach 'early adopters' – that is, environmentally-minded individuals who care and think deeply about waste. ▪ **Actions 2E and 2F** tackle issues that are outside of the CRD's jurisdiction. Advocating provincially and federally about these issues is currently the most feasible way to address them.	▪ Strategy 2 is at the top of the pollution prevention hierarchy as it deals with reduction, therefore, it has potential for environmental impacts. Waste *reduction* (as opposed to recycling) results in reduced embodied energy for materials that were not created in the first place (or were created in a less wasteful way).	▪ The intention of **Action 2A** creates widespread understanding of the importance of reducing waste at the top of the pollution prevention hierarchy. This understanding is positive as it empowers residents to make positive and impactful choices about the way that they consume. ▪ **Actions 2B, 2C, and 2D** engage with early adopters of the zero-waste movement and have the potential to create a strong community. ▪ **Action 2B** provides mechanism for the community to act on its own initiatives / take ownership for improvements in reduction. ▪ **Action 2C** directly engages with something that is highly visible and many residents feel strongly about. ▪ **Action 2D** supports organizations that have the potential to create a widespread community of residents who care deeply about zero waste. This is already happening in the CRD at the Zero Waste Emporium in the City of Victoria, where waste reduction events are hosted. Another excellent example of how these businesses can create community is Nada[5] in Vancouver, BC, a zero-waste grocery store which additionally functions as a hub for the zero-waste community in Vancouver and hosts regular events including zero waste cooking workshops and monthly meetups for interested individuals. ▪ **Actions 2E and 2F** indirectly have the potential to address residents' 'Recycling is confusing' complaints by simplifying product design and ensuring materials are clearly recyclable, compostable, or reusable. However, because this can only be done through advocacy, this positive social impact will likely not be realized in the near future.	▪ **Action 2C** (and, to a small extent, **2D**) have some potential to reduce waste disposal. ▪ Other Actions (**2A, 2B, 2E, and 2F)** are not expected to have a direct impact on waste disposal but work to create culture and systems change that may ultimately reduce disposal in the CRD.	▪ The CRD has initially proposed that the total grant funding for **Action 2B** would be $50,000. ▪ In general, Strategy 2 is in line with current practice, therefore new resources required would be minimal to moderate.
Score (High- 5, Medium – 3, Low –1)	Medium	Medium	High	Low	

[4] Recycle BC. Community Champions. https://recyclebc.ca/education/commununity/community-champions/
[5] https://www.nadagrocery.com/

Table B-3: Strategy Evaluation - 3. Support Reduction of Avoidable Food Waste

Strategy And Associated Actions	Technical Feasibility and Effectiveness	Environmental Impact and Benefits	Social Impact	Effect on Waste Disposal	Cost Considerations
3. Support Reduction of Avoidable Food Waste A. Support residential food waste reduction, for example, by continuing Love Food Hate Waste Canada program. B. Support ICI food waste reduction, (e.g., encouraging stores to donate edible food). C. Continue to support food recovery organizations. D. Advocate for regulation to clarify use-by versus Best Before dates and educate accordingly.	▪ Nationwide efforts exist to reduce food waste (**Actions 3A through 3D)**, especially as data on the enormous quantity of food being wasted comes into public view (recent estimates show that more than half of all food in Canada is being wasted).[6] ▪ Research has shown that avoidable household food waste can be reduced by up to 15% with an intensive Love Food Hate Waste campaign **(Action 3A)**.[7] ▪ Several Canadian retailers (e.g., Save On Foods and Walmart) have committed to reducing food waste and partners may exist (e.g., FoodMesh Food Recovery Program[8]) to catalyze food waste reduction in the ICI sector **(Action 3B and 3C)**. ▪ Research has shown that restaurants can save up to $7 in operating costs for every $1 invested to reduce kitchen food waste, thus providing a powerful incentive to build upon **(Action 3B)**.[9] ▪ The National Zero Waste Council, a leadership initiative advocating for waste prevention in Canada, advocates regulating for clarity around Best Before dates. Date labelling guidance exists from organizations such as ReFed in the US and WRAP in the UK **(Action 3D)**.[10]	▪ Wasted food embodies significant amounts of wasted resources (energy, water, etc.) that were required to grow, produce, and distribute that food. Reducing the amount of food wasted by one tonne has the equivalent effect on CO_2 emissions as taking one car off the road for a year **(Actions 3A through 3D)**.[13] ▪ According to 2016 waste composition results, 12% of the material disposed at Hartland is edible food waste.[11] Food waste disposed in landfills is a significant source of greenhouse gas emissions. However, much of the landfill gas is currently captured (68% in 2018)[12] and turned into electricity or flared, and the landfill gas system may be upgraded, which would likely increase the capture rate **(Actions 3A through 3D)**.	▪ Residents directly benefit financially when they reduce food waste. Estimates of money spent on wasted food per household in Canada range from $1,100[13] to nearly $1,800[6] annually. **Action 3A** directly encourages residents to waste less food, thereby encouraging consumer savings in their food budgets. Strategy 3d may indirectly result in cost savings to residents, as residents will waste less food and money if they understand when an item is truly no longer edible. ▪ Local non-profits benefit twofold from this strategy: **Action 3B** encourages local businesses to donate edible food, which results in an influx of food to local charities. **Action 3C** supports food recovery organizations in the region directly.	▪ Edible food waste makes up a large proportion of the materials disposed at Hartland (12%)[11]. One study demonstrated that an intensive Love Food Hate Waste campaign reduced household food waste by up to 15%. With **Action 3A**, similar results in the CRD (a 'best-case scenario') could yield a disposal reduction of approximately 1,400 tonnes (a 1% reduction). ▪ ICI food waste reduction **(Action 3B)** could have a more significant impact on tonnage: each year, the ICI sector disposes of over 9,000 tonnes of edible food.	▪ This strategy requires minimal additional funding due to actions that will require additional staff time. ▪ Funding may be required to continue Love Food Hate Waste program (or similar initiative).
Score (High- 5, Medium – 3, Low – 1)	High	Medium	High	Medium	

[6] Second Harvest, 2019 (https://secondharvest.ca/wp-content/uploads/2019/01/Avoidable-Crisis-of-Food-Waste-The-Roadmap-by-Second-Harvest-and-VCMI.pdf)
[7] WRAP UK, 2012 (http://www.wrap.org.uk/sites/files/wrap/hhfdw-2012-main.pdf.pdf)
[8] Food Mesh (https://foodmesh.ca/)
[9] Champions 12.3 (https://champions123.org/wp-content/uploads/2019/02/Report_The-Business-Case-for-Reducing-Food-Loss-and-Waste_Restaurants.pdf)
[10] National Zero Waste Council, 2018 (http://www.nzwc.ca/focus/food/national-food-waste-strategy/Documents/NZWC-FoodLossWasteStrategy.pdf)
[11] Capital Regional District, 2016 (https://www.crd.bc.ca/docs/default-source/recycling-waste-pdf/WasteCompositionStudy2016.pdf?sfvrsn=4) [12]
Maura Walker and Associates, Capital Regional District Solid Waste Management Plan Existing Solid Waste Management System, 2018. [13]
Love Food Hate Waste, 2017 (https://lovefoodhatewaste.ca/about/food-waste/)

Table B-4: Strategy Evaluation - 4. Support Reuse Activities in the Region

Strategy And Associated Actions	Technical Feasibility and Effectiveness	Environmental Impact and Benefits	Social Impact	Effect on Waste Disposal	Cost Considerations
4. Support Reuse Activities in the Region A. Continue to provide funding to non-profits to help offset garbage tipping fees for unusable donated items. B. Continue to support and promote donations to reuse establishments. C. Support reuse, renting and sharing programs, such as tool libraries, repair cafes, and sewing hubs, and other materials exchange activities. D. Investigate establishing a free store at Hartland landfill or other facilities.	▪ **Actions 4A and 4B** are in accordance with current CRD practices and should be simple to implement and maintain. ▪ An existing groundswell of community reuse organizers exists, which the CRD can build on with **Actions 4C**. ▪ Free Stores (**Action 4D**) can be a successful and low-cost model to raise awareness of a) high value goods being disposed of and b) availability of finding 'another person's treasure' for oneself. ▪ Free Store (**Action 4D**) feasibility is dependent on availability of appropriate space, and potentially, a local organization to run the program.	▪ Strategy 4 is near the top of the pollution prevention hierarchy as it deals with reuse, therefore, it has potential for environmental impacts. Material reuse results in reduced embodied energy for materials that were not created in the first place.	▪ **Actions 4A through 4D** improve access to reused goods, which can save residents money, as they don't need to purchase new materials. Furthermore, promotion of reuse organizations may improve social acceptability of reusing items, which is a positive social impact as residents become aware of costs savings that could be realized and the environmental benefits of buying used materials. ▪ **Actions 4A through 4C** build trust and deepen relationships with organizations essential for exchange of reused materials. Promotion of these programs is a key part of the Strategy's success. ▪ Renting and sharing programs **(Action 4D)** have the potential to become community hubs for environmentally-minded individuals. The Victoria Tool Library is an existing example of this. By supporting these initiatives, the CRD will be supporting the waste reduction community.	▪ This strategy is expected to have only a small (and nearly impossible to measure) impact on disposal but work to create culture and systems change that may ultimately reduce disposal in the CRD. ▪ **Action 4D** will enable a small reduction in disposal by encouraging reuse of materials at Hartland.	▪ **Actions 4A through 4C** do not require any additional new funding.
Score (High- 5, Medium – 3, Low – 1)	High	Medium	High	Medium	

Table B-5: Strategy Evaluation - 5. Support Local Governments in Working Towards Zero Waste and a Circular Economy

Strategy And Associated Actions	Technical Feasibility and Effectiveness	Environmental Impact and Benefits	Social Impact	Effect on Waste Disposal	Cost Considerations
5. Support Local Governments in Working Towards Zero Waste and a Circular Economy A. Develop model language for bylaws, best practices, OCPs, and Economic Development strategies for use by municipalities and electoral areas using research and collaboration to guide this process. B. Work with municipalities and electoral areas to identify the need for solid waste facilities and zoning for waste management activities. C. Use policy tools to enable local recycling infrastructure. D. Investigate 'Pay-As-You-Throw' principles to use as tools to incent less waste disposal. E. Investigate use of clear bags for garbage or recyclables collection to encourage proper recycling of materials, where practicable and enforceable (e.g. at events).	▪ Local governments in the CRD value waste reduction and would likely be open to support from the CRD in language for bylaws, best practices, OCPs, and Economic Development strategies (**Action 5A and 5B**). ▪ Disposal bans for material categories that have processing opportunities and markets can be effective to enable local recycling infrastructure (**Action 5C**). ▪ **Action 5D** would require a study by the CRD to help municipalities understand concepts of 'Pay-As-You-Throw' (PAYT) and approaches that they could incorporate into their municipal waste collection systems. Local governments typically administer waste collection. Municipalities with collection in the CRD already have a 'User Pay' system which limits the number of containers at the curb. Residents have to purchase tags to put out additional bags. This Action would involve investigating weight-based and/or frequency-based approaches. ▪ **Action 5E** would require a study to investigate an approach for using clear bags to improve diversion rates. This has been implemented in several Canadian jurisdictions (mostly in Nova Scotia and Ontario[14]) and typically relies on manual collection systems, where discarded materials are put into clear bags so that collection staff can visually inspect the contents before being placed in the collection truck. The study would help the CRD to assess whether this type of approach would be feasible for CRD municipalities to adopt.	▪ **Actions 5A through 5C** do not have directly associated environmental impacts, however, they contribute to creating a culture and systems change that may ultimately reduce disposal in the CRD. ▪ **Action 5C and 5D** could, if implemented, reduce the amount of material disposed and encourage proper diversion of materials.	▪ **Action 5A** strives to improve alignment of local governments and the CRD. This may ultimately lead to greater harmony between the local governments. Furthermore, regionally aligned programs may lead to less resident confusion, thereby supporting effective participation in CRD programs and initiatives. ▪ **Action 5C** encourages local recycling where options are available, which could in turn boost the local economy. ▪ PAYT programs (**Action 5D**) create awareness of disposal habits. These programs can save low waste generators money, thus aligning monetary incentives with waste reduction. However, these programs could lead to increased inappropriate disposal of household waste for 'free' (for example in park litter bins). However, as discussed in the 'Technical Feasibility and Effectiveness' comment for Action 5D, it is not expected that implementing PAYT for residential collection would be feasible or practical in the CRD. ▪ Use of clear bags (**Action 5E)** creates a social incentive for generators to sort waste properly.	▪ **Actions 5A through 5C** do not have directly associated impact on disposal, however, they contribute to creating a culture and systems change that may ultimately reduce disposal in the CRD. ▪ **Action 5D and 5E** will provide more information on potential effects on waste disposal that the programs described could have.	▪ **Action 5A, 5B, and 5C** are significant undertakings for a CRD staff member but would not require any capital funding.
Score (High- 5, Medium – 3, Low – 1)	High	Low	High	Low	

[14] Background Research on Clear Garbage Bag Programs Across North America, https://www.niagararegion.ca/government/committees/pdf/Quinte%20Clear%20Bag%20Report.pdf

Table B-6: Strategy Evaluation - 6. Continue and Enhance Policy Development

Strategy And Associated Actions	Technical Feasibility and Effectiveness	Environmental Impact and Benefits	Social Impact	Effect on Waste Disposal	Cost Considerations
6. Continue and Enhance Policy Development A. Develop model procurement policies for use by local governments, non-profits, etc. B. Continue to expand material bans when viable alternatives exist. C. Investigate licensing waste management facilities in the region to encourage transparency, consistency, and a requirement that all facilities protect public health and the environment. D. Investigate regulatory mechanisms to manage municipal solid waste and recyclable materials in the region. E. Investigate options for extreme weather debris such as community chipping days or special burning allowances in electoral areas.	▪ Examples of procurement policies exist for many regions within BC that could be adapted for CRD use (**Action 6A**). ▪ Since the CRD has existing material bans, it should be relatively straightforward to adapt the existing process material ban procedure for any materials that are added (**Action 6B**). Waste generators in the CRD also already have familiarity with existing bans, which lends itself to greater adherence to future bans. ▪ Several regional districts in BC, including Regional District of Nanaimo and Cowichan Valley Regional District have the ability to license waste management facilities **(Action 6C)**. This action would involve the CRD studying the requirements to establish a licensing system and understanding the positive and negative impacts. ▪ **Action 6D** would involve the CRD studying regulatory tools and mechanisms to manage materials in the region. ▪ **Action 6E** would involve the CRD studying measures to deal with debris from extreme weather events.	▪ Developing model procurement policies (**Action 6A**) could indirectly decrease disposal or encourage contractors to use other more sustainable practices. A sustainable or "green" procurement policy provides guidance to employees and departments to make purchasing decisions. Through this kind of policy, the CRD can encourage policies that prioritize the reduction of consumption, use of durable goods, or choosing items with 100% recycled content. ▪ **Action 6B** would likely lead to decreased disposal and could help to manage any materials that are identified as hazardous. ▪ **Actions 6C, 6D, and 6E** would investigate possible environmental implications of the programs described.	▪ **Actions 6A and 6B** would have an underlying impact on the system but direct social impacts would not likely be present. ▪ Programs resulting from **Actions 6C, 6D, and 6E** would also not be likely to have direct social implications – these actions describe investigations, which would include investigating social implications of any programs to be implemented.	▪ **Action 6B** has the potential for significant disposal reduction, depending on which materials are banned. However, this is a high-level maintenance action that may not result in disposal bans in the near future. ▪ **Actions 6C, 6D, and 6E** would investigate waste disposal implications of the programs described.	▪ **Actions 6A and 6B** would require minimal to moderate CRD staff resources. ▪ **Actions 6C and 6D** may require significant funding if CRD pursues licensing or regulatory mechanism, including funding for consultation.
Score (High- 5, Medium – 3, Low – 1)	High	Medium	Low	Medium	

2.0 RECYCLING

Table B-7: Strategy Evaluation - 7. Increase Residential Diversion

Strategy And Associated Actions	Technical Feasibility and Effectiveness	Environmental Impact and Benefits	Social Impact	Effect on Waste Disposal	Cost Considerations
7. Increase Residential Diversion A. Continue to promote diversion of recyclable materials (including organics). B. Collaborate with municipal and private sector service providers to support depot diversion efforts in the region for non-curbside materials. C. Encourage local processing and markets for recyclables. D. Develop tools, such as a guide, to support event recycling.	▪ **Action 7A through 7D** can be developed and implemented by CRD staff in partnership with local governments and other stakeholders. ▪ Local processing options (**Action 7C)** exist for some materials currently, such as concrete and asphalt, yard waste, and metal. The CRD should stay abreast of recycling opportunities for various materials in the CRD so that opportunities can be identified and promoted. ▪ The CRD staff can investigate approaches and tools such as City of Vancouver's Green Events Planning Guide[15] and the Downtown Victoria Business Association Green Events Guide[16] to assist with developing tools for the CRD (**Action 7D**).	▪ **Action 7A** creates positive environmental impacts by diverting materials from landfill. ▪ Given the increasing instability of international markets for recyclable materials, improving local recycling markets (**Action 7C**) can enhance long-term stability and resiliency of recycling programs.	▪ Overall, 38% of the waste produced in the CRD is produced by residential sources. Programs should continue to educate the residents about the materials that they discard, because these programs are far-reaching in that they make residents more generally conscientious about waste. This makes **Action 7A** important. ▪ Encouraging local markets for recyclables **Action 7C**, instead of shipping recyclables overseas, can provide a boost the local economy. ▪ Event recycling (**Action 7D**) is important because though the overall amount of materials diverted at events may not be significantly large, events are an excellent opportunity to educate the public in what materials can be recycled, which improves the strength and resiliency of residential recycling.	▪ Recyclable materials from residential sources represent 9% of the overall material disposed at Hartland Landfill. These actions, especially **Action 7A and 7B** support programs to divert recyclable materials that are disposed at Hartland Landfill. ▪ **Action 7D** may result in a small decrease in waste disposal, as events can create a significant amount of waste.	▪ **Actions 7A through 7D** would require minimal to moderate CRD staff resources. ▪ The CRD has initially proposed that the total support funding for **Action 7B** would be $25,000 annually for two years and evaluate effectiveness after two years.
Score (High- 5, Medium – 3, Low – 1)	Medium	Medium	Medium	Low	

[15] https://vancouver.ca/doing-business/greening-your-event.aspx
[16] https://downtownvictoria.ca/app/uploads/2018/07/Green-Events-Guide-final.pdf

Table B-8: Strategy Evaluation - 8. Increase Multi-Family Diversion

Strategy And Associated Actions	Technical Feasibility and Effectiveness	Environmental Impact and Benefits	Social Impact	Effect on Waste Disposal	Cost Considerations
8. Increase Multi-Family Diversion A. Allocate resources to support MF recycling, for example, by developing standardized education materials. B. Work with local governments and private sector service providers to develop waste source separation requirements. C. Develop policy guide for recycling, composting and garbage space and access in multi-family developments. D. Collaborate with stakeholders (e.g., private haulers who service MF buildings or MF property managers) to implement support for MF recycling, such as a 'Train-the-Trainer' Program.	▪ Allocating additional staff to support multi- family diversion would be a start to improving MF waste diversion (**Action 8A)**. This staff member could research approaches from other jurisdictions, such as the standardized educational materials for multi-family recycling exist in other nearby jurisdictions, such as Metro Vancouver.[17] ▪ Requiring source separation **(Action 8B)**, for example by developing bylaws, is feasible, as has been demonstrated by municipalities throughout BC. Municipalities in the CRD support MF diversion measures. Having the CRD work with local governments and the private sector to develop source separation requirements for the MF sector should be feasible. ▪ **Action 8C** is feasible; the CRD should consider the resources required to develop this policy guide. ▪ **Action 8D** is feasible and implementation examples exist throughout BC, including the City of Vancouver's Multi-Family Ambassador Program and the Zero Waste Coach in the City of North Vancouver.	▪ The multi-family sector disposed approximately 13% of the total materials disposed at Hartland. Of this, approximately 75% of these materials could be diverted.[18] **Actions 8A through 8D** may have a modest impact on disposal by reducing the amount disposed from the MF sector. It should be considered that the MF sector will likely grow faster than the SF sector, and therefore the quantity of materials consumed by this sector will increase.	▪ This strategy (especially **Actions 8A and 8B**) would lead to enhanced standardization across buildings and potentially municipalities, leading to improved buy-in and participation in recycling programs. Multi-family residents often report feeling 'left out' of recycling programs or are confused about what can be recycled because each building's recycling system is different. This is especially exaggerated because there tends to be a higher turnover of residents in multi-family housing than in single-family housing. This leads to frustration with the overall recycling system.	▪ **Actions 8A to 8D** would likely have the potential for a moderate effect on multi- family diversion.	▪ The CRD has initially proposed that the total allocation for **Action 8A** would be $50,000 annually for education and to implement actions.
Score (High- 5, Medium – 3, Low – 1)	High	Medium	High	Medium	

[17] http://www.metrovancouver.org/services/solid-waste/apartments-condos/apartment-recycling-toolkit/Pages/default.aspx#

Table B-9: Strategy Evaluation - 9. Increase ICI Diversion

Strategy And Associated Actions	Technical Feasibility and Effectiveness	Environmental Impact and Benefits	Social Impact	Effect on Waste Disposal	Cost Considerations
9. Increase ICI Diversion A. Allocate resources to increase ICI diversion, for example, a business waste reduction liaison. B. Advocate to expand the packaging and paper product EPR program to the ICI sector. C. Create a business waste reduction toolkit, including education about how to apply Circular Economy principles. D. Encourage municipalities to require waste management plans with business licenses. E. Develop policy guide for ICI space and access requirements. F. Work with local governments and private sector service providers to develop ICI waste source separation requirements. G. Investigate shifting disposal ban enforcement to generator, rather than hauler.	▪ Allocating additional staff resources to support ICI sector diversion would be a start to improving ICI waste diversion **(Action 9A)**. This resource could also undertake **Actions 9C, 9D, and 9E.** ▪ Other regional districts have been advocating for an ICI PPP EPR program (**Action 9B**). ▪ Researching and identifying source separation approaches for ICI sector **(Action 9F)** with the intent to develop future bylaws is feasible. ▪ **Action 9G** would involve the CRD studying approaches for shifting the disposal ban enforcement to generators. It is feasible because it could be undertaken by the FTE identified 9A.	▪ The ICI sector is the largest waste-generating sector in the CRD, representing 41% of the waste disposed at Hartland. Of this, up to 74% has diversion potential. **Actions 9A through 9G** could decrease the disposal rate.	▪ **Actions 9A, 9C, 9D and 9G** may have a positive social impact, as they will create engagement between local businesses and the CRD. ▪ Shifting disposal ban enforcement to the generator (**Action 9G**) may have a negative impact on businesses who are not interested in recycling or reducing their waste.	▪ Because the ICI sector generates so much waste, this strategy has the potential to reduce waste disposal considerably. ▪ Of special note is Strategy 9B. Though the CRD does not have direct jurisdiction over an ICI PPP EPR program, if this was implemented, if could have a large impact on disposal.	▪ The CRD has initially proposed that the total allocation for **Action 8A** would be $50,000 annually for education and to implement actions.
Score (High- 5, Medium – 3, Low – 1)	High	High	Medium	High	

Table B-10: Strategy Evaluation - 8. Support Existing and New EPR Programs

Strategy And Associated Actions	Technical Feasibility and Effectiveness	Environmental Impact and Benefits	Social Impact	Effect on Waste Disposal	Cost Considerations
10. Support Existing and New EPR Programs A. Advocate to the province to expand EPR programs. *Note: The Province is currently conducting an EPR gap analysis and considering adding new materials.* B. Collaborate with stewards to increase consumer awareness about EPR programs. C. Advocate for increased return-to-retailer opportunities. D. Advocate federally to standardize EPR programs across Canada.	▪ EPR programs must be informed by the needs of regions and constituents. Providing feedback as in **Actions 10A through 10D** are critical to build resilient and foundational EPR programming.	▪ No direct environmental impact is expected for this strategy; the increased relevance and practicability of EPR programs will indirectly improve diversion rates and participation. ▪ If the province proceeds with EPR for mattresses, textiles, plastics, CR&D materials this could have a high environmental impact.	▪ **Action 10B** will improve communication and the understanding of EPR within the communities impacted by it. This can assist with greater community ownership and adherence to EPR programs.	▪ No direct impact on waste disposal is expected for this strategy; the increased relevance and practicability of EPR programs could indirectly impact disposal rates in the future. ▪ If the province implements additional EPR programs this could reduce tonnage significantly.	▪ Funding may be required to educate the public if new disposal bans for EPR materials take effect at Hartland landfill.
Score (High- 5, Medium – 3, Low – 1)	High	Medium	Medium	Medium	

Table B-11: Strategy Evaluation 11. Increase Organics Diversion and Processing Capacity

Strategy And Associated Actions	Technical Feasibility and Effectiveness	Environmental Impact and Benefits	Social Impact	Effect on Waste Disposal	Cost Considerations
11. Increase Organics Diversion and Processing Capacity A. Continue to promote organics waste diversion. B. Investigate developing a resilient local organics processing infrastructure. *Note: The CRD Board has directed staff to issue a RFEOI for an in-region or near-region organics processing facility.* C. Support compost markets by purchasing back materials. D. Collaborate with service providers and users (e.g., local businesses) to develop guidelines for use of compostable products and packaging.	▪ **Action 11A** is ongoing and feasible. ▪ **Action 11B** is continuing to proceed. Processing capacity is required for organics collected. ▪ The CRD can work with municipalities to support procurement of composted materials from local processors **(Action 11C)**. ▪ **Action 11D** requires coordination by CRD staff to develop guidelines and is feasible.	▪ Organics are currently diverted in the CRD – this has resulted in decreased disposal and reduction in GHG emissions from landfills. **Action 11A and 11B** is a continuation of existing efforts. ▪ Purchasing compost from local processors **(Action 11C)** supports principles of circular economy.	▪ Organics processing infrastructure supports organics diversion programs **(Action 11B)**. CRD residents support diverting organics over disposal at landfill. ▪ A resilient local organics processing infrastructure should appropriately manage odours from processing facilities which have the potential to create significant community impacts **(Action 11B)**. ▪ Supporting composting markets by purchasing compost (**Action 11C**) may have a positive social impact by improving the relationships between organics processing facilities and the CRD. ▪ **Action 11D** may have a positive social impact by creating engagement between key stakeholders, such as local businesses, and the CRD.	▪ 27% of the material disposed at Hartland is organic materials[19]. **Action 11A** may have a modest impact on reducing the quantity of organic material disposed. ▪ **Actions 11B through 11D** do not have a direct impact on disposal capacity.	▪ Additional required costs will be determined through the RFEOI process. ▪ Funding may be required to educate about use of compostable products and packaging.
Score (High - 5, Medium – 3, Low – 1)	High	High	High	High	

Table B-12: Strategy Evaluation - 12. Increase Construction, Renovation and Demolition (CR&D) Material Diversion

Strategy And Associated Actions	Technical Feasibility and Effectiveness	Environmental Impact and Benefits	Social Impact	Effect on Waste Disposal	Cost Considerations
12. Increase Construction, Renovation and Demolition (CR&D) Material Diversion A. Develop a comprehensive CR&D strategy, including characterization of materials, best practices, and pilot projects. B. Develop educational tools to support CR&D material diversion, e.g., create an industry toolkit, a deconstruction guide, and/or guidelines for diverting and utilizing reused materials. C. Promote green building standards. D. Continue collaboration with local governments to develop and use policy tools (e.g., construction permits, building codes) to maximize diversion and to align management plans. E. Investigate beneficial uses of CR&D waste, including a clean wood waste ban. F. Investigate banning or surcharging mixed CR&D loads at the landfill to encourage source separation G. Further develop programs for managing hazardous materials, like asbestos.	▪ This strategy is feasible however represents significant effort and resources for CRD staff. ▪ It is known that markets exist in the CRD for CR&D materials, however, **Action 12A** needs to be undertaken to understand the state of CR&D waste management in the region, characteristics of the waste stream, best practices from other jurisdictions, and approaches to enhance CR&D diversion. This is a first step to completing other Actions outlined in this strategy, including **Action 12B and 12G.** ▪ **Actions 12E and 12F** involve investigating disposal bans on CR&D materials. Other jurisdictions have implemented similar bans; thus, this is a feasible approach. Since the CRD has existing material bans, it should be relatively straightforward to adapt the existing disposal ban process for any materials that are added.	▪ **All actions** in this strategy support the goal to decrease the CRD's overall disposal. ▪ Green building standards (**Action 11C)** such as LEED typically require diversion and the use of sustainable materials. ▪ **Action 11E and 11F** require studying the environmental impacts of potential CR&D disposal bans. If such a ban was implemented, it would have significant implications, including a decreased disposal rate.	▪ Many CRD residents recognize that CR&D materials represent a large quantity of waste and are expected to be supportive of reuse and recycling efforts for this sector.	▪ The CR&D waste sector contributes 16% of the regional garbage**.** ▪ CR&D diversion rate in other jurisdictions is typically 60-75%. ▪ **All actions** in this strategy support the goal to decrease the CRD's overall disposal.	▪ Strategy 12 will require an additional $50,000 per year for two years. ▪ Additional funding may be required to investigate beneficial uses of CR&D waste and banning or surcharging mixed CR&D loads at the landfill.
Score (High- 5, Medium – 3, Low – 1)	High	High	Medium	High	

Table B-13: Strategy Evaluation - 13. Encourage Proper Public Space Waste Management Activities

Strategy And Associated Actions	Technical Feasibility and Effectiveness	Environmental Impact and Benefits	Social Impact	Effect on Waste Disposal	Score	Cost Considerations
13. Encourage Proper Public Space Waste Management Activities A. Develop educational materials to prevent and reduce litter and abandoned materials in our neighbourhoods and public spaces. B. Continue promoting alternatives to abandoned materials and illegal dumping by educating about proper management and disposal C. Collaborate with stakeholders, including local governments and private sector facilities, to develop a regional approach to illegal dumping. D. Investigate developing regionally- aligned bylaws. E. Develop and pilot methodologies to 'observe, record, and report' on abandoned materials and illegal dumping incidents throughout the CRD. F. Investigate options for large bulky item disposal, e.g., free drop-off days or large item pick-up days	▪ **Actions 13A through 13C** are feasible and should be ongoing programs. ▪ **Action 13D** is feasible and would require the CRD to coordinate with local governments to develop regionally-aligned bylaws. ▪ **Action 13E** is feasible if partners are found to collaborate with to assist in reducing illegal dumping. ▪ **Action 13F** would involve the CRD studying options for bulky item disposal.	▪ Illegal dumping and abandoned waste are more related to community issues and to the community's perception of the local environment.	▪ This strategy strives to reduce abandoned waste and illegal dumping, which are important social issues. **All Actions** should contribute to this goal. ▪ **Action 13F** would investigate possible social implications of the programs described.	▪ Theoretically, waste disposal would slightly increase if abandoning materials and illegal dumping was decreased, however, this is expected to be extremely minimal. ▪ **Actions 13F** would investigate waste disposal implications of the programs described.	**12**	▪ $20,000 for annual illegal dumping campaign for two years; evaluate effectiveness after two years.
Score (High- 5, Medium – 3, Low – 1)	High	Low	High	Low		

Appendix C: Plan Dispute Resolution Procedures

Disputes will be settled using the following procedure:

Negotiation	Parties involved in the dispute shall make every effort to resolve the dispute on their own through non-facilitated communication. If necessary, the parties will provide each other with a written summary of their position and any relevant supporting documentation Parties may agree to make use of a facilitator
If this is unsuccessful, then:	
Solid Waste Advisory Committee	Parties involved in the dispute will have opportunity to speak to the Committee Committee will review, consider and provide recommendations to the Board
If this is unsuccessful, then:	
Board	Parties involved in the dispute will have opportunity to speak to the Board Board will receive recommendations from the Committee and settle the dispute; or, recommend mediation
If the board is unable to settle the dispute, then:	
Mediation	A neutral, impartial third-party facilitator who is acceptable to all the parties to the dispute will be selected. Using appropriate mediation techniques, the facilitator will attempt to develop a solution which satisfies all parties. The facilitator has no decision-making authority. If the parties cannot agree on a mediator, the matter shall be referred to the BC Mediation Roster Society or equivalent roster organization for selection of a mediator. All efforts will be made to reach an agreement through mediation Costs for mediation will be shared by the parties in dispute
If this is unsuccessful, then:	
Independent Arbitrator	If the dispute cannot be resolved by a mediator, the matter will be referred to arbitration and the dispute will be arbitrated in accordance with the any applicable legislation. A neutral, impartial third-party arbitrator who is acceptable to all the parties to the dispute will be selected. The arbitrator hears each party's evidence and arguments and renders a final, binding decision. Costs for arbitration shall be apportioned at the discretion of the arbitrator

Further to the above, the following principles will be followed if and when the dispute resolution process is invoked:

i. The parties will make all reasonable efforts to attempt to resolve the dispute in an amicable manner without outside intervention

ii. Disputes will be attempted to be resolved as early and at the lowest administrative level as possible; every effort will be made to avoid disputes requiring a formal resolution process

iii. The formal process is not intended to deal with inconsequential or frivolous disputes

iv. The cost of mediation or adjudication will be shared by the parties to the dispute

v. Information or data related to the dispute will be shared by the parties

vi. Rules of confidentiality and freedom of information will apply

Appendix D: Implementation Schedule

	Ongoing
	Planning/Design Phase
	Implementation Phase

Plan Strategies & Actions	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Reduction and Reuse										
Strategy #1: Continue and Enhance Education Programs (medium-term, 5 year goal)										
A. Ensure ongoing, up-to-date promotion and education resources										
B. Incorporate behaviour change components wherever possible										
C. Expand education programs to Multi-Family and ICI sector.										
D. Enhance K-12 school program to include concepts of circular economy.										
E. Collaborate with stakeholders on education campaigns										
F. Continue supporting environmental stewardship recognition.										
G. Continue to engage residents on solid waste matters; using the appropriate level of consultation										
Strategy #2: Encourage Waste Prevention (medium term, 5 year goal)										
A. Promote less consumption and advocate for consumer responsibility.										
B. Establish a community-based waste reduction grant program (could include food waste prevention projects).										
C. Support single-use item reduction efforts.										
D. Promote sustainable and/or packaging-free purchasing options.										
E. Advocate provincially and federally to limit or eliminate the manufacturing, distribution or sale										

Plan Strategies & Actions	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
of single use items and non-recyclable materials.										
F. Advocate provincially and federally for sustainable product design (e.g., standardized packaging that is reusable, recyclable, or compostable)										
Strategy #3: Support Reduction of Avoidable Food Waste (short-term, 3 year goal)										
A. Support residential food waste reduction										
B. Support ICI food waste reduction										
C. Continue to support food recovery organizations.										
D. Advocate for regulation to clarify use-by versus Best Before dates and educate accordingly.										
Strategy #4: Support Reuse Activities in the Region (medium term, 5 year goal)										
A. Continue to provide funding to non-profits to help offset garbage tipping fees for unusable donated items.										
B. Continue to support and promote donations to reuse establishments.										
C. Support reuse, renting and sharing programs, such as tool libraries, repair cafes, and sewing hubs, and other materials exchange activities.										
D. Investigate free store at Hartland landfill or other facilities.										
Strategy #5: Support Local Governments in Working towards Zero Waste and a Circular Economy (medium term, 5 year goal)										
A. Develop model language for bylaws, best practices, OCPs, and Economic Development strategies for use by local governments										
B. Work with local governments to identify the need for solid waste facilities and zoning for waste management activities.										
C. Use policy tools to enable local recycling infrastructure.										
D. Investigate 'Pay-As-You-Throw' principles										

Plan Strategies & Actions	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
E. Investigate use of clear bags for garbage or recyclables collection										
Strategy #6: Continue and Enhance Policy Development (medium term, 5 year goal)										
A. Develop model procurement policies for use by local governments, non-profits, etc. To be done in partnership with member municipalities and other interested organizations.										
B. Continue to expand material bans when viable alternatives exist.										
C. Investigate licensing waste management facilities in the region to encourage transparency, consistency, and a requirement that all facilities protect public health and the environment.										
D. Investigate regulatory mechanisms to manage municipal solid waste and recyclable materials in the region.										
E. Investigate options for debris from extreme weather, such as community chipping days or special burning allowances in electoral areas										
Recycling										
Strategy # 7: Increase Residential Diversion (medium term, 5 year goal)										
A. Continue to promote diversion of recyclable materials (including organics), ensuring that education strives to minimize contamination in these streams										
B. Support depot diversion efforts in the region for non-curbside materials										
C. Encourage local processing and markets for recyclables										
D. Develop tools to support event recycling s										
Strategy #8: Increase Multi-Family Diversion (medium term, 5 year goal)										

Plan Strategies & Actions	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
A. Allocate resources to support Multi-Family (Multi-Family) recycling, for example, by developing standardized education materials										
B. Develop waste source separation requirements										
C. Develop policy guide for recycling, composting and garbage space and access in multi-family developments										
D. implement support for Multi-Family recycling, such as a 'Train-the-Trainer' Program										
Strategy #9: Increase ICI Diversion (medium term, 5 year goal)										
A. Allocate resources to increase ICI diversion, for example, a business waste reduction liaison.										
B. Advocate to expand the packaging and paper product EPR program to the ICI sector.										
C. Create a business waste reduction toolkit, including education about how to apply Circular Economy principles.										
D. Encourage municipalities to require waste management plans with business licenses.										
E. Develop policy guide for ICI space and access requirements.										
F. Work with local governments and private sector service providers to develop ICI waste source separation requirements.										
G. Investigate shifting disposal ban enforcement to generator, rather than hauler.										
Strategy #10: Support Existing and New EPR Programs (medium term, 5 year goal)										
A. Advocate to the province to expand EPR programs										
B. Increase consumer awareness about EPR programs.										
C. Advocate for increased return-to-retailer opportunities										
D. Advocate federally to standardize EPR programs across Canada										
Strategy #11: Increase Organics Diversion and Processing Capacity (short term, 3 year goal)										

Plan Strategies & Actions	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
A. Continue to promote organics waste diversion										
B. Develop an organic waste processing facility at the Hartland Landfill site to receive and process kitchen scraps.										
C. Support compost markets by purchasing back materials										
D. Develop guidelines for use of compostable products and packaging										
Strategy #12: Increase CR&D Material Diversion (short term , 3 year goal)										
A. Increase CR&D material diversion										
B. Investigate beneficial uses of CR&D waste										
C. Investigate banning or surcharging mixed CR&D loads at the landfill to encourage source separation										
D. Further develop programs for managing hazardous materials, like asbestos										
Strategy #13: Encourage Proper Public Space Waste Management Activities (med term, 5 year)										
A. Develop educational materials to prevent and reduce litter and abandoned materials.										
B. Continue promoting alternatives to abandoned materials and illegal dumping by educating about proper management and disposal.										
C. Develop a regional approach to prevention of illegal dumping										
D. Investigate developing regionally-aligned bylaws										
E. Investigate options for large bulky item disposal										
Recovery and Residuals Management										
Strategy #14: Optimize Landfill Gas Management										

Plan Strategies & Actions	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
A. Continue to capture landfill gas for beneficial use										
B. Investigate collaboration opportunities with educational institutions to research new beneficial uses and technologies										
Strategy #15: Enhance Hartland Disposal Capacity										
A. Review ban enforcement levels, subject to recycling market conditions										
B. Continue to operate Hartland landfill using best practices										
C. Develop design options to maximize disposal capacity until 2100 and beyond										
D. Continue to conduct research and investigate emerging technologies										

SOLID WASTE ADVISORY COMMITTEE – ROUNDTABLE FEEDBACK

Feedback Item #	Strategy	Comment (from July 3, 2020 SWAC Meeting)	Proposed Action / Next Steps
Education Related			
1	1	How do we push the education/awareness for the public now that the plan is drafted	The Plan provides high level direction on how education efforts will be enhanced. The specific tools to be employed will be determined as part of the plan's implementation, as staff evaluate their annual work plan and identify opportunities to maximize resources (through collaborations, using proven materials prepared by other organizations, etc.).
6	1	Awareness of general public and understanding regarding where products go and what to do with them	This is important, particularly considering the increasing skepticism about the validity of recycling. This information/messaging can be incorporated into the implementation of the actions listed in Strategy #1.
17	1	Confusion is a challenge – align recycling methods so it is the same everywhere (i.e., colours, bins, etc.) – consistent messaging throughout	Agreed. This is something to be addressed/included as part of program design, and could be promoted by the CRD as part of its support for the Industrial, Commercial & Institutional (ICI) sector and municipalities (streetscape, municipal facilities, events). For example, in recent years, many waste management organizations are promoting a standard for colour coding of containers/signage. The more this standard is used consistently (at home, work, locally, abroad), the better it will be for everyone. We are fortunate in BC that as of 2014 we have a province-wide residential recycling program that has moved us much closer to having a consistent program across the province.
25	1	Strategy 3 (education) is of utmost importance	Agreed
28	1	Recycling/Reuse – more awareness on *how* you do it; education is essential	Agreed. "How" needs to be incorporated into how Strategy #1 is implemented.
Finance Related			
11	All	Table of proposed capital operating expenditures over the decade needed	**Plan modification recommended.** A summary of Revenue and Expenses will be inserted into the financial section of the draft Solid Waste Management Plan (SWMP).

Feedback Item #	Strategy	Comment (from July 3, 2020 SWAC Meeting)	Proposed Action / Next Steps
12	All	Is $350,000 for new initiatives laid out in SWMP sufficient? Budgets for streetscape and illegal dumping too little.	The cost estimates were provided by Tetratech and are amounts *in addition to* the budget that we currently spend on these items. However, an Environmental Services budget is developed annually, and this will allow us to adjust the budget for these items at the time they are implemented, if needed.
14	2	Review of budget to explore increasing tipping fees – is it enough?	As shown in Table 9-2, maintaining our current tipping fees for the next 10 years and achieving the waste reduction targets will diminish the reserves but not deplete them.
			There are many factors that will need to play out to determine whether these financial predictions will come true: our ability to reduce per capita disposal (not fully in our hands), the strength/weakness of the economy (correlates to waste generation), and what happens to tipping fees in other jurisdictions.
			The Board can assess the financial sustainability of the solid waste system as the plan is implemented and decide if adjusting the tipping fee is prudent. At this time and for the next 10 years, given current conditions, the CRD has the funds to implement this solid waste management plan and maintain its current financial model.
39	All	Is the current budget going to be enough?	See response to Item #12.
41	General	Provide more details on the budget, such as capital investment; where does the 15M go in 2021 and 2022?	**Plan modification recommended.** A summary of Revenue and Expenses will be inserted into the financial section of the draft SWMP.
Municipal Waste Management			
7	13	Convenience to recycling access points in public space	**Plan modification recommended.** We can add a section in the draft plan in Section 4.2 on streetscape waste management saying, "Public space litter and recycling collection is a municipal service, as well as a responsibility of Recycle BC. Streetscape recycling is part of the Recycle BC's EPR program for packaging and printed papers."
8	13	Municipality description needs: litter, street scape sanitation, collection of materials in the public realm.	**Plan modification recommended.** This can be incorporated into Table 4-1 (participants in the waste management system) and into the new section on public space/ streetscape waste management noted above.

Feedback Item #	Strategy	Comment (from July 3, 2020 SWAC Meeting)	Proposed Action / Next Steps
9	5	Municipal Waste planning, working towards zero waste.	**Plan modification recommended.** We can add this to Table 4-1. In terms of support for municipal waste planning, CRD staff are able participate on municipal advisory committees, provide technical assistance and undertake solid waste management initiatives of mutual interest/benefit with municipalities, such as collaborating on regional/municipal communication campaigns.
15	13	More support for municipalities (from CRD) for illegal dumping and street sanitation – i.e., staffing resources or financial/community grants	CRD currently supports municipalities with illegal dumping in public spaces and non-profits with waste materials they receive as donations. Since 1997, the CRD's Community Clean-up Program has been supporting non-profit groups that organize community clean-ups. The funding provided supports: • collection, processing and marketing of recyclables recovered during clean-up • container rental for transportation and disposal of non-recyclable material • supplies, such as rubber gloves and collection bags In 2019, the CRD provided funding to nine community groups. Also in 2019, the CRD used funds received through the Transport Canada Abandoned Boat Program to work with a community partner, the Dead Boats Disposal Society, to assess and remove approximately 70 boats from the region's harbours. An awareness and reporting campaign was included in this initiative, as well. As part of the CRD's Marine Debris Program, funding is provided to municipalities to dispose of marine debris (wharves, docks, flotation, fishing gear, etc.) that is not covered by the Abandoned Boat funding. In 2019, 4.45 tonnes of debris was disposed of at the landfill through this program. While the CRD does not have a role in street sanitation, it supports municipalities through regional education/awareness campaigns (anti-littering, promoting reusable containers, etc.), as included in Strategy 1 and 13. **Plan modifications recommended.** As recommended earlier in this document, street sanitation is a municipal responsibility and should be added to *Table 4 1: Participants in the Solid Waste Management System*. In addition, a section on streetscape recycling will be added to the plan noting that streetscape recycling is part of the Extended Producer Responsibility (EPR) program for packaging and printed papers. A section on the CRD's continuing initiatives associated with illegal dumping could be added to Section 4 of the draft plan, which describes the existing solid waste management system.
16	13	Implementation – new innovative ways for local government to support municipalities.	Initiative 13C is all about collaboration. Innovative approaches identified through this collaboration would be welcome. Collaborating should ultimately result in a better use of local government resources (staff and budget).

Feedback Item #	Strategy	Comment (from July 3, 2020 SWAC Meeting)	Proposed Action / Next Steps
34	1,2,7,8,9	Mandatory clear bags for all refuse loads	This is addressed in Action 5E.
Targets			
10	11,12	Prioritization of organics diversion and construction materials	These items are the top priority as identified in Section 8 on targets.
23	General	Need a target that is easy to understand	Per capita disposal is easy for us to measure at Hartland and convey. We have been tracking this data annually, and all regional districts in BC are now tracking their disposal data and reporting it to the Province, so we can readily benchmark ourselves against other BC regional districts. As it is a per capita metric, it also accounts for population growth.
24	All	Will the strategies and actions get us to the targets?	Tetra Tech developed the targets based on the specific strategies and actions listed in the draft plan. They stated that they are aggressive, and this is noted in the draft plan. However, the short- and mid-term targets are within the CRD's purview to achieve. The long-term target requires new EPR programs to be introduced, which is outside of the CRD's control.
26	General	Per capita must be calculated with the growing population	Understood. Because the total quantity of waste disposed is typically correlated to population, we look at waste disposed per person (per capita) rather than total tonnes as a means to compare one year to another. This allows an "apples to apples" comparison. Also, as it is a per capita metric, it accounts for population growth.

Illegal Dumping			
35	5	Illegal dumping – would an increase in Hartland hours help? More accessibility to Hartland in general is needed.	Illegal dumping is an issue in areas with waste facilities accessible 24/7, and without tipping fees. Hartland is currently accessible Monday to Friday (9-5) and Saturday (7-2). Not open Sundays and stat holidays. These hours provide extensive access to the facility. Further increasing the hours is not likely to improve illegal dumping behaviours. There are also a number of private transfer stations that accept garbage and recyclables throughout the region.
36	1,13	Enhancement of Community Clean-up program	The actions listed in Strategy 13 are intended to enhance community clean-ups, and hopefully reduce the need for them over time.
37	10	Abandoned boats remains an issue for the region	We can add in a section to the draft SWMP, as part of a section on illegal dumping, about abandoned boats, adding that the CRD will continue to identify funding and collaboration opportunities to address this issue.
Industrial, Commercial Institutional			
20	6,9	Strategies will be hard to implement for some businesses – ease of use is crucial	Agreed. This will need to be considered when developing educational materials, policies, programs, etc. It will be important to engage/test drive ideas with those affected prior to full development of an initiative.
21	9	Need a toolkit for business waste reduction	Included as action 9C.
22	9	DND: Federal and provincial targets set; hard to monitor and meet both. Hard to align with the CRD's per capita target	DND's waste management activities and plans contribute to meeting the CRD's and province's target, but DND is not required to adopt or meet either target. They will need to do what's right for their operation, and be able to adjust their waste management operations to meet local disposal requirements (e.g., organic waste disposal ban).
30	12	Strategy 12 (ICI) – new buildings should be constructed with materials that are easily reusable and/or recyclable	Ideally yes. This idea can be discussed/incorporated into the implementation of Actions 12 A, B and C.
Incentives			
13	7,8,9	Consider community grants for hard to recycle materials	In 1995, the CRD developed a diversion credit program as a means of encouraging the recycling of materials that did not have a robust recycling market. The diversion credit program recognized that there was value in preserving landfill space, and therefore the CRD encouraged proposals from the private and non-profit sector to collect and recycle materials that were not currently being managed by the existing solid waste management system in the CRD. The program was eventually ended due to lack of interest from the private sector in the program.

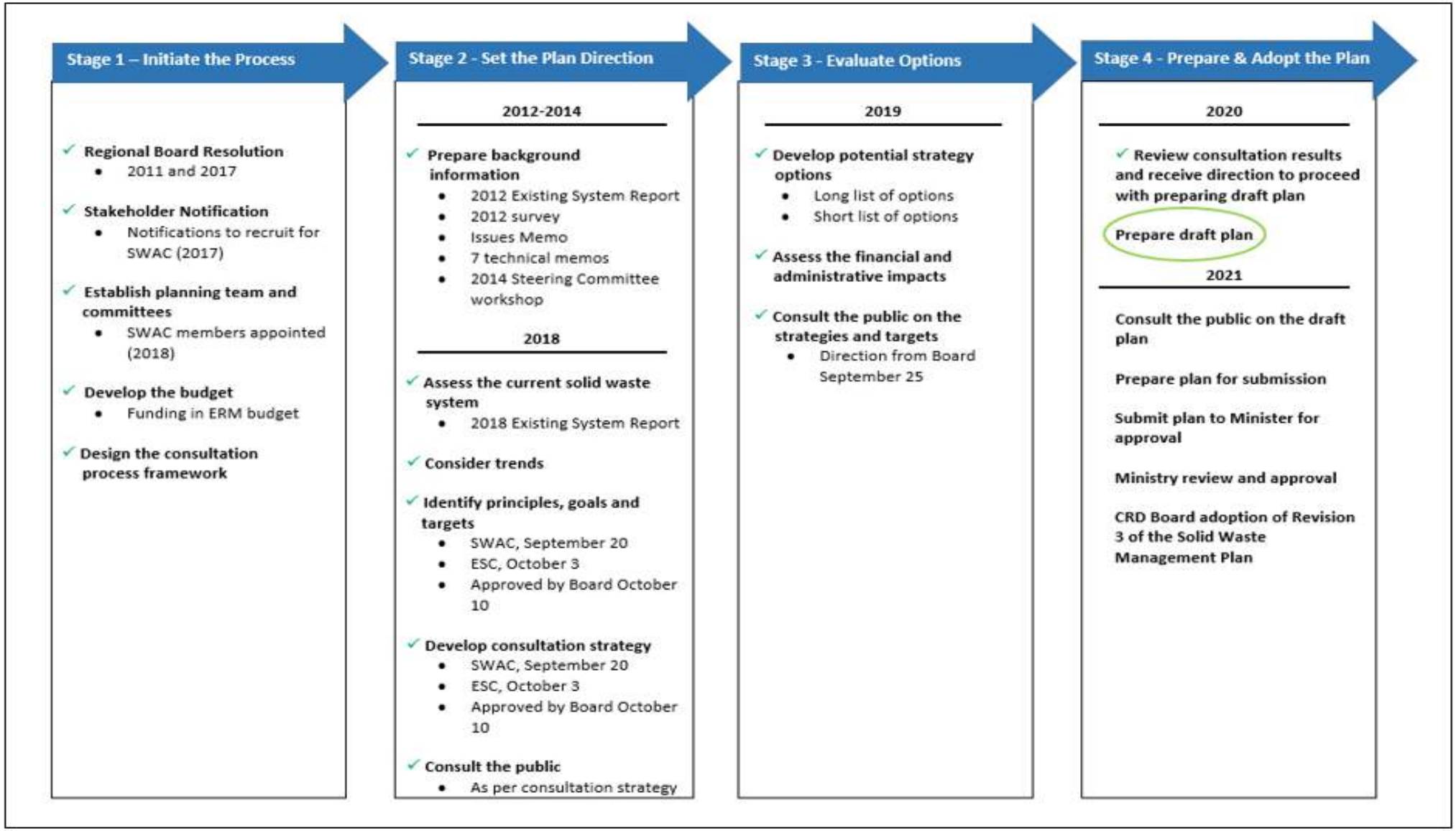
			Since then, EPR has put the onus on industry to resolve (or at least pay for) the management of many hard to recycle materials. Given the success of the CRD model (pricing of disposal, disposal bans on items with established markets and supporting the expansion of EPR) AND the demise of the diversion credit program, revisiting intervention in the marketplace may not be warranted.
38	7,8,9,10	More support/incentives for communities to recycle	There are several tools identified within each strategy to drive waste diversion. Through the application of community-based social marketing approaches, the CRD will look for successful models that could be applied here, then "test drive" them for two years before assessing them for effectiveness. With this approach, the CRD can refine the tool, choose an alternate approach, and opt to increase or decrease its use. This also allows for an assessment of the need for other forms of support or incentives.
40	7,8,9	Consider a budget for direct investment in local recycling	The CRD supports the local recycling industry through the imposition and enforcement of disposal bans on divertible materials, plus having contracts to recycle materials collected at Hartland. Disposal bans are a low-cost policy approach to supporting local recycling activities, while allowing the local market (i.e., the collectors, recyclers and generators) to innovate in response to the policy.
Miscellaneous			
2		Integration of comments that have shifted things along the way	Our consultants have used the input from each PTAC/SWAC meeting to help select the options to the ones best suited to the CRD or refine the options to make them better suited to our needs. Our consultation efforts with the general public helped us determine if we were on the right path in terms of the selected strategies and actions, or if any alterations are required.
3	7,8,9	More access to depots on the gulf islands	Depot hours are set by the local operators to optimize service levels to meet the needs of local residents. Operational details to this level of specificity are not intended to form part of the SWMP.
4	10	Household hazardous waste on the gulf islands	There is collection of household hazardous waste (HHW) materials (collected on behalf of an EPR program) at each of the Salt Spring Island and Southern Gulf Island depots. • **Salt Spring**: batteries, light bulbs/fixtures, fuels, pesticides, paint, electronics, thermostats, smoke and CO detectors • **Mayne**: batteries, electronics, paint • **Pender**: batteries, light bulbs/fixtures, paint, electronics, smoke and CO detectors • **Galiano**: household batteries, paint, electronics, smoke and CO detectors • **Saturna**: batteries, light bulbs/fixtures, paint, motor oil In addition to depot collection, some HHW may also be returned to local retailers. Finally, there is one HHW depot for all residents of the region at Hartland that is open year round and accepts the full range of EPR products free of charge. There is no plan to extend this service to other parts of the regional district.

5	10	HHW management in general was also mentioned by two other members	**Plan modification recommended.** We will add in a section on HHW into the SWMP indicating: • that the majority of HHW collection is handled through EPR programs • not all HHW is covered by EPR programs, and as a result, the CRD has a HHW depot at Hartland that receives non-EPR HHW. This will remain available as long as there is a need for the service. However, this is a cost to the CRD solid waste service. • The CRD will continue to encourage the province to expand the list of HHW products covered by EPR.
18	7,8,9	Recycling needs to be convenient and easy to find	Agreed. Convenience is important for successful participation in recycling. The pursuit of consistency across the region and province should improve proper participation, but it will take time and effort.
19	7,8,9	How do we stay on top of the changing markets (i.e., plastics, etc.) – what is recyclable – what is garbage?	The CRD's Environmental Resource Management staff keep up on what's happening in the recycling marketplace locally and globally through their membership in several waste management associations and attending relevant conferences and webinars. Additionally, CRD staff have regular contact with the waste management companies, EPR organization partners and contractors that are directly involved in marketing recyclable materials.
27	14B	Technologies/new approaches – needs to be expanded	Action 14B is to "Investigate collaboration opportunities with educational institutions to research new beneficial uses and technologies". This option is intended to be high-level to allow for the CRD to consider a broad range of collaboration opportunities, if the CRD Board deems a research opportunity to be in the best interest of the region.
29	11	Strategy 11 (organics) – needs more clarification on what will be done, what are the end-markets for finished compost?	At this point in time, the CRD Board has committed to a process to develop local organic waste processing capacity as described in Section 6. Action 11C indicates that municipal uses are intended to be one of the markets for the finished compost (and possibly the most significant market). Establishing markets and market value for the end products will be an essential component of assessing technologies and the ultimate operating cost of the processing system. Understanding the market(s) for the end products will play a critical role in the decision making process. At this time, additional details are not available to be included in the SWMP.
31	10	Electronic waste (i.e., electric cars) will represent a large waste stream in the near future	Thankfully, electronics and batteries (including vehicle batteries) are already under an EPR program and the technology for recycling the batteries from electric cars is improving. The CRD will continue to liaise with the Province and the battery extended producer responsibility organizations to ensure there is local capacity to manage these material flows as they emerge over the coming years.
32	7	Waste that is diverted, is it properly recycled? Consider the end-markets for diverted materials	The extended producer responsibility organizations that are responsible for collecting EPR materials (including residential PPP) must track and demonstrate to the Province that they have legitimate markets. The CRD also incorporates market reporting into its recycling contracts they engage with outside of provincial EPR programs to ensure that there are legitimate uses for the products collected. This is ultimately an operational item more than a SWMP item, but if it is important to make a statement about how the CRD engages with its recycling contractors in the future by requiring proof of end use/market—this is something we could add in.

33	14B	Consider novel ways to manage Greenhouse gases and utilize coming from the landfill	The CRD Board acknowledges the current climate emergency. Managing our landfill gas in the most effective way is the driver for the RNG agreement with Fortis. The CRD is interested in maximizing the value of the LFG and ensuring that its impact on the environment is minimized.
42	n/a	How much freedom do we have as an advisory committee	The Solid Waste Advisory Committee's (SWAC) Terms of Reference (associated with the SWMP) are to advise the Steering Committee (Environmental Services Committee) on the development of Revision 3 of the SWMP. It is up to the Chair to ensure that the discussions at the table serve this purpose. The process to develop a new SWMP has been underway for some time, with the input of a multi-stakeholder advisory committee and consultants. Much work has been done and input received to bring us to the draft plan stage. The process to develop the plan has been designed as linear so that it moves us towards completion of the plan. That being said, the committee can make recommendations to the Environmental Services Committee (ESC) to revisit an aspect of the plan if it deems it appropriate to do so. It will be up to the ESC to consider the recommendation.
43	General	Cruise ship waste is calculated in the per capita disposal	If the waste is disposed at Hartland, then it is included as part of the per capita disposal, the same as other tourism-related waste.

Review of SWMP Planning Process

APPENDIX D



Finalising the Draft Plan

CRD Solid Waste Management Plan

SWAC Feedback from July Meeting

- Review of input received from roundtable exercise
  - Response to each comment
  - 3 general types of response
    i. The draft plan incorporates the comment, e.g.,
    Mandatory clear bags for all refuse loads is addressed in Action 5E: *Investigate use of clear bags for garbage or recyclables collection to encourage proper recycling of materials…*

    ii. The comment will be addressed as part of implementing the plan, e.g.,
    Awareness of general public and understanding regarding where products go and what to do with them.
    This information / messaging can be incorporated into the implementation of the actions listed in Strategy #1.

    iii. The comment warrants an addition/edit to the draft plan

Recommended Plan Additions

- **Municipal waste management:**
  - Expand the description of the role of municipalities to include litter collection, streetscape sanitation, waste collection from public spaces and municipal waste planning (may include the development of Zero Waste plans)
  - Add new section under the Existing System (Section 4) on streetscape waste management saying, "Public space litter and recycling collection is a municipal service, as well as a responsibility of Recycle BC. Streetscape recycling is part of the Recycle BC's EPR program for packaging and printed papers."

Recommended Plan Additions

- **Illegal Dumping**
  - Add new section under the Existing System (Section 4) describing the CRD's illegal dumping mitigation measures
    - Communication campaigns
    - Funding to non-profit associations to conduct clean-up events in public places
    - Funding for the removal of abandoned boats and marine debris
    - Supports non-profit organizations involved in recycling clothing and used household goods
      - funding towards the disposal and recycling of unusable materials received as donations
      - providing safe disposal of abandoned hazardous materials
    - Maintaining a web page on illegal dumping on the CRD website that provides information on how to reduce illegal dumping and abandonment

Recommended Plan Additions

- **Household Hazardous Waste**
  - Add in a section indicating:
    - That the majority of HHW collection is handled through EPR programs
    - Not all HHW is covered by EPR programs, and as a result, CRD has a HHW depot at Hartland that receives non-EPR HHW. This will remain available as long as there is a need for the service. However, this is a cost to the CRD solid waste service.
    - CRD will continue to encourage the province to expand the list of HHW products covered by EPR.

Recommended Plan Additions

- **Finance**:
  - Include more detailed Revenue / Expense table in the plan

Highlights

- Base Capital $3-4MM per year (no debt)
- Large capital (no debt)
  - Renewable Natural Gas - $23.5MM (from reserves in 2020 -22)
  - Organics Processing – anticipated to be procured as a DBFO (no CRD Capital)
  - Hartland 2100 – funded through base Capital Regional District
- CRD Education / Diversion spending
  - Current budget - $2.5M / year
- Proposed education/diversion spending increase with new SWMP
  - $350,000 / year

Summary

- Recommended additions fill in information gaps
- No new actions or costs
- No requirement for additional consultation (beyond what is already planned)

Thank you.

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EHQ 20-38

REPORT TO ENVIRONMENTAL SERVICES COMMITTEE
MEETING OF WEDNESDAY, SEPTEMBER 16, 2020

SUBJECT **Summary Review of Waste-to-Energy Options**

ISSUE SUMMARY

The Capital Regional District (CRD) Board requested past reports regarding waste-to-energy options at its meeting on August 12, 2020.

BACKGROUND

As part of the deliberations on the Phase 1 consultation report in August of this year, the Board requested that previous reports on waste-to-energy be presented for the benefit of Directors who were not on the Board when the reports were first presented and direction provided.

The CRD Board has considered a number of waste-to-energy and integrated waste management reports, dating back over a decade. The reports presented in Appendix A span the recent period 2015-2019. Additional reports during this period are presented on this meeting's closed agenda. Additional reports from prior years can also be made available to the Board.

It is noted that under Strategy #15 of the draft Solid Waste Management Plan presented to committee under a separate item on this meeting's agenda, the action *continue to conduct research and investigate emerging technologies* is included, which is intended to allow for the pursuit of waste-to-energy pilots and project development under the Plan.

CONCLUSION

At its meeting of August 12, 2020, the CRD Board requested previous reports regarding waste-to-energy. The reports generated for the recent period 2015-2019 are provided in Appendix A for information.

RECOMMENDATION

The Environmental Services Committee recommends to the Capital Regional District Board:

That this report be received for information.

Concurrence:	Larisa Hutcheson, P. Eng., General Manager, Parks & Environmental Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT

Appendix A: Background Staff Reports to CRD Committees regarding Waste-to-Energy and Integrated Resource Management – 2015-2018

APPENDIX A

BACKGROUND STAFF REPORTS TO CRD COMMITTEES REGARDING WASTE TO ENERGY AND INTEGRATED RESOURCE MANAGEMENT

2015 - 2018

Date*	Committee	Staff Report
2018		
January 10, 2018	Environmental Services Committee	Integrated Resource Management – Next Steps
2017		
December 13, 2017	Integrated Resource Management Committee	Integrated Resource Management – Key Procurement Criteria
November 8, 2017	Integrated Resource Management Committee	Integrated Resource Management – Consolidated Technical Summary
September 6, 2017	Integrated Resource Management Committee	Integrated Resource Management Technology Gap Analysis – Biosolids Jurisdictional Review
September 6, 2017	Integrated Resource Management Committee	Waste Flow Management Policy Backgrounder
September 6, 2017	Integrated Resource Management Committee	Advanced Integrated Resource Management – Procurement and Project Plan Update
June 28, 2017	Integrated Resource Management Committee	Advanced Integrated Resource Management – Next Steps
April 12, 2017	Integrated Resource Management Committee	Advanced Integrated Resource Management – Next Steps
February 8, 2017	Integrated Resource Management Committee	Advanced Integrated Resource Management Project – Request for Expressions of Interest
2016		
November 9, 2016	Integrated Resource Management Select Committee	Advanced Integrated Resource Management Project – Request for Expressions of Interest
August 10, 2016	Integrated Resource Management Select Committee	Integrated Resource Management Pilot Project – Next Steps
July 13, 2016	Integrated Resource Management Select Committee	Integrated Resource Management Pilot Project
April 13, 2016	CRD Board	Follow Up on Integrated Resource Management Task Force Referral to Staff
February 24, 2016	Core Area Liquid Waste Management Committee	Report from the CRD Integrated Resource Management Task Force (submitted by Vic Derman)
February 24, 2016	Core Area Liquid Waste Management Committee	Staff Comments – Integrated Resource Management Task Force Report
2015		
May 27, 2015	Environmental Services Committee	Next Steps – Board Strategic Priority – Integrated Waste Management
February 25, 2015	Environmental Services Committee	Integrated Solid Waste and Resource Management Plan – Update

***** In reverse chronological order

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ERM 18-03

REPORT TO ENVIRONMENTAL SERVICES COMMITTEE
MEETING OF WEDNESDAY, JANUARY 10, 2018

SUBJECT **Integrated Resource Management – Next Steps**

ISSUE

To present next steps to address the Capital Regional District (CRD) Board's Integrated Waste Management priority.

BACKGROUND

In its 2015-2018 Strategic Plan, the CRD Board indicated that pursuing Integrated Waste Management (IRM), liquid waste and solid waste integration, was a strategic priority. Integrated Resource Management is defined by the Capital Regional District as the integration of solid and liquid wastes, using currently landfilled or diverted materials along with biosolids, to maximize resource recovery through combined processing of some, or all, of these materials.

The CRD has advanced planning of IRM through a number of committees. Initially, the Board formed the Integrated Resource Management Task Force (January to April 2016), for the purpose of examining options for integrated resource management of liquid and solid waste and recommending options for Board endorsement. This Task Force recommended that the CRD establish a pilot project for biosolids, kitchen scraps and municipal solid waste (MSW) as soon as possible.

Following the work of the Task Force, the Integrated Resource Management Select Committee (April to December 2016) was established to oversee and make recommendations to the Board regarding integrated resource management planning. This Committee recommended that a Request for an Expression of Interest (RFEOI) be issued asking the private sector for a regional IRM solution dealing with solid and liquid wastes in the region.

In February 2017, the IRM Advisory Committee issued the RFEOI. Key findings from this call to the market include:

- preference that the CRD provide the site, and many prefer the CRD to own the facility
- majority of respondents did not recommend undertaking a pilot
- all of the respondents indicated that their technology was capable of managing the biosolids stream, although in some cases there was a lack of clarity as to how exactly it would be managed; in some cases, the submissions indicated that they could manage biosolids or sewage sludge
- respondents generally focused on organic processes (aerobic/anaerobic) to process organic wastes and mechanical/thermal processes (refuse drive fuel, gasification) for mixed waste sources
- many respondents are open to a variety of project development, financing and ownership models

In July 2017, the CRD Board directed a number of deliverables to advance the IRM initiative, in addition to initiating the procurement process. Over the past six months, HDR Consulting has

prepared a number of technical reports, including: a draft Integrated Resource Management Project Plan outline, a gap analysis to complete the evaluation of the broader array of technologies and feedstock combinations (as required in the provincial approval of the Core Area Liquid Waste Management Plan, Amendment No. 11) and a summary of potential policy/project implications resulting from the CRD's lack of flow control over much of the waste feedstock.

At the November 8, 2017 IRM Advisory Committee meeting, HDR Consulting presented an IRM Consolidation and Project Criteria Development report. This report summarized the work of the Board on IRM to date and provided case studies of IRM facilities throughout Europe and North America. Included in the report are key procurement criteria, such as waste supply, facility siting, ownership and financing and risk tolerance, that are important factors in the successful procurement and development of such facilities.

To advance a successful procurement and to address the numerous project criteria identified above, the IRM Advisory Committee (IRMAC) worked with the consultants to provide feedback on project criteria at its meeting of December 13. A series of questions was posed to the committee, seeking input on project criteria such as siting, affordability, environmental objectives, flow control and risk. Consensus was received on siting a facility at Hartland landfill; however, there was significant variability amongst Advisory Committee members regarding a number of critical procurement assumptions, including flow control, risk, responsibility for securing end-markets for products from IRM, and the potential for land application of thermally-processed biosolids products (such as biochar or aggregate). A number of questions were not addressed due to time constraints, including feedback on an affordability ceiling for the project. A table summarizing the IRMAC project criteria feedback is presented in Appendix A.

The CRD's Core Area Liquid Waste Management Plan, Amendment No. 11, requires that the CRD determine a definitive plan for the beneficial use of biosolids by June 30, 2019. Late in 2017, the preferred proponent for the Residuals Treatment Facility (RTF) was announced by the Core Area Wastewater Treatment Project Board. The proponent will produce a dried Class A biosolids product. Regardless of the long-term beneficial use for this dried project, an interim beneficial use option must be identified that does not include the use of a biocell for storage of the material at Hartland, as directed by the Minister of Environment in her letter of November 2016.

ALTERNATIVES

That the Environmental Services Committee recommend to the CRD Board:

Alternative 1

That the CRD modify the IRM work plan by:
1. concluding the current IRM procurement process
2. issuing a Request for Proposals for the beneficial use of dried Class A biosolids produced by the Residuals Treatment Facility as a stand-alone procurement, according to the CRD's land application policy
3. pursuing an in-region organics (kitchen scraps/yard and garden) processing facility by initiating a new procurement process for a facility to be located at Hartland landfill

4. informing the Project Board of the new direction and requesting that any Core Area wastewater treatment project implications be included in the upcoming update report to the Core Area Liquid Waste Management Committee in February; and
5. submitting a revised project plan for the beneficial use of biosolids and the IRM initiative to the province

Alternative 2

That the CRD advance the IRM work plan by:

1. initiating consultation with the public and First Nations, with input on the consultation plan from the Solid Waste Advisory Committee, on an IRM project based on the following procurement assumptions:
   - Hartland landfill as the site
   - waste supply:
     - Class A biosolids produced at the Residuals Treatment Facility
     - organics (kitchen scraps/yard and garden) secured through negotiated agreements with municipal and/or private waste collection service providers
   - restriction of land application of any product using CRD biosolids as a feedstock
   - IRM affordability ceiling of no more than $120/tonne (net of IRM revenue streams); and
2. bringing the consultation results and the final draft IRM Request for Qualifications to the IRMAC in May 2018

Alternative 3

That the CRD advance the IRM work plan by:

1. initiating consultation with the public and First Nations, with input on the consultation plan from the Solid Waste Advisory Committee, on an IRM project based on the following procurement assumptions:
   - Hartland Landfill as the site
   - waste supply:
     - Class A biosolids produced at the Residuals Treatment Facility
     - organics and residual waste secured through negotiated agreements with municipal and/or private waste collection service providers
   - restriction of land application of any product using CRD biosolids as a feedstock
   - IRM affordability ceiling of no more than $75/tonne (net of IRM revenue streams); and
2. bringing the consultation results and the final draft IRM Request for Qualification to the IRMAC in May 2018

ECONOMIC IMPLICATIONS

The IRM Consolidation and Project Criteria Development report prepared by HDR Consultants identified a number of project criteria that led to successful IRM projects, along with project risks that need to be mitigated. For the CRD, the highest risk for an IRM project is the lack of regulatory flow control of waste supply. Without secure waste flow, it will be difficult for proponents to secure financing for the project, resulting in higher tipping fees and/or risk transfer to the CRD.

There are no facilities included in the case studies brought forward by HDR that currently process biosolids, raw sludge, organics and residual solid waste through one technology or facility. To advance a procurement process with an expectation of processing all of these waste streams at one facility represents a high technology risk for the project. This risk, coupled with lack of flow control, will likely result in an unsuccessful procurement process for IRM as it is currently scoped, unless the CRD is willing to finance the project and take on significant project risks. Based on input from the consultant, it is highly unlikely that the price/tonne for processing all waste streams, net of potential IRM revenue streams, will be within range of the CRD's current cost to dispose of residual solid waste at Hartland landfill, $75/tonne (the current Hartland tipping fee is $110/tonne: $75/tonne landfill expenses + $35/tonne waste diversion expenses).

Under Alternative 1, the CRD will advance two procurement processes to deal with a narrowed set of waste streams, one for the beneficial reuse of Class A dried biosolids and one for organics (kitchen scraps and yard and garden waste) processing. Past experience and current market conditions for such beneficial use opportunities will likely result in options that are within the range of Hartland's current kitchen scraps transportation and processing costs of $120/tonne, with reasonable risk transfer to the private proponent.

In September of 2017, staff met with private waste hauling industry representatives to discuss at a high level the concept of flow control within the region. Preliminary feedback from industry was not positive, indicating no support for regulatory flow control, as well as little support for entering into long-term waste supply agreements unless at very high prices.

ENVIRONMENTAL IMPLICATIONS

The CRD Board initiated the IRM strategic priority with the expected outcome of decreased waste management costs and increased environmental benefits using currently landfilled or diverted materials along with biosolids, to maximize resource recovery through combined processing or some, or all, of these materials. In addition, the CRD has been exploring a renewable natural gas (RNG) opportunity at Hartland landfill that has the potential to address the desired environmental and financial outcomes of the Board's IRM strategic priority by further optimizing the beneficial use of Hartland's landfill gas.

Alternative 1 could result in a non-land application beneficial use of the biosolids produced from the RTF and in-region processing of organic materials, in a separate facility with the potential for the nutrients from the organics processing to be applied on lands within the region.

Alternatives 2 and 3 would result in co-processing of biosolids with other solid waste residuals in an IRM facility. The outputs from any resulting IRM facility would need to beneficially use the outputs of the IRM process without applying the materials to land.

SOCIAL IMPLICATIONS

Alternative 1 consultation would not be required for the beneficial reuse of biosolids Request for Proposals. Under the CRD's current Solid Waste Management Plan (SWMP), the CRD does have approval for a composting facility, but that would not likely extend to an anaerobic digestion facility. An organics anaerobic digestion facility at Hartland would require an amendment to the existing SWMP, and associated public consultation.

Consultation with the public and First Nations is a critical next step to advance an IRM project under Alternatives 2 and 3. Staff will initiate a consultation plan based on the project assumptions determined by the Board, and seek feedback on the planning process from the Solid Waste Advisory Committee.

INTERGOVERNMENTAL IMPLICATIONS

For each of the alternatives laid out in this report, secure waste supply is a critical project criteria to advance a successful procurement process. Under Alternative 1, agreements must be secured with those willing municipal jurisdictions and private haulers that collect kitchen scraps and yard and garden waste in order to guarantee minimum tonnages for the proponent to process. Without these agreements, costs for processing organics will likely be much higher. Under Alternatives 2 and 3, agreements with willing municipalities and private haulers must also include residual solid waste tonnages.

CONCLUSION

Moving forward and building a comprehensive Integrated Resource Management facility at Hartland landfill, given the diversity of the waste feedstock materials, would likely need to involve an array of technologies. Achieving reduced costs and improved environmental performance through a single IRM facility is not realistically achievable given the project risk associated with the CRD's lack of control over waste flows and the IRM technology risk. A stepwise movement into additional resource recovery at Hartland landfill, through an organics processing facility procurement process, has the potential to have significant financial and environmental benefits.

The selection of a preferred proponent for the Residuals Treatment Facility has confirmed that the facility will produce a dried Class A biosolids product. As a result, a beneficial biosolids reuse Request for Proposals will allow the CRD to meet its Core Area Liquid Waste Management Plan biosolids requirements by providing a market based response to determine the availability and cost of a single waste stream beneficial biosolids reuse strategy.

RECOMMENDATIONS

That the Environmental Services Committee recommend to the Capital Regional District (CRD) Board:

That the CRD modify the Integrated Resource Management (IRM) work plan by:

1. concluding the current IRM procurement process
2. issuing a Request for Proposals for the beneficial use of dried Class A biosolids produced by the Residuals Treatment Facility as a stand-alone procurement, according to the CRD's land application policy
3. pursuing an in-region organics (kitchen scraps/yard and garden) processing facility by initiating a new procurement process for a facility to be located at Hartland landfill
4. informing the Project Board of the new direction and requesting that any Core Area Wastewater Treatment project implications be included in the upcoming update report to the Core Area Liquid Waste Management Committee in February; and
5. submitting a revised project plan for the beneficial use of biosolids and the IRM initiative to the province

Submitted by:	Russ Smith, Senior Manager, Environmental Resource Management
Concurrence:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

RS:ac

Attachment: Appendix A – Integrated Resource Management Advisory Committee – Project Criteria Feedback

APPENDIX A

Integrated Resource Management Advisory Committee
Project Criteria Feedback – December 2017

Question

- How important is it that the IRM solution extends life of Hartland Landfill?



Question

- How important is it that the IRM solution improves environmental performance (GHG emissions etc.)?



Question

- Will the CRD provide a site at Hartland?



Question

- If not at Hartland, who would be responsible for siting process?



Question

- What material streams will the CRD guarantee?
  - CRD controlled feedstock (Biosolids)



  - Local government controlled feedstock (30% of Kitchen Scraps, Leaf and Yard, 15% of Garbage)



Question

- Would the CRD be willing to solicit other feedstock?



Question

- Would the CRD want the IRM respondents to solicit other feedstock?



Question

- Who will be responsible for marketing recovered materials and risk?



Question

- Who will be responsible for energy offtake agreements and risk?



Question

- Should the CRD ban on land application of Biosolids apply to any beneficial use product from IRM using biosolids feedstock, this is used in some form on 'land' (i.e. biochar, aggregate)



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ERM 17-58

REPORT TO INTEGRATED RESOURCE MANAGEMENT ADVISORY COMMITTEE MEETING OF WEDNESDAY, DECEMBER 13, 2017

SUBJECT **Integrated Resource Management – Key Procurement Criteria**

ISSUE

To determine the Committee's preferred assumptions relating to the key Integrated Resource Management (IRM) procurement criteria.

BACKGROUND

At the November 8, 2017 IRM Advisory Committee (IRMAC) meeting, HDR Consulting presented an IRM Consolidation and Project Criteria Development report. This report provided case studies of IRM facilities throughout Europe and North American and identified key procurement criteria that HDR considers to be important factors in the successful procurement and development of such facilities.

Developing IRM Procurement criteria is the next step for the CRD to enable a successful procurement process. At the December 13, 2017 IRM Advisory Committee meeting, HDR will facilitate a discussion on a number of procurement criteria and seek feedback from the Committee. The consultants will lead the Committee through a presentation that includes procurement and risk considerations and that poses a series of questions that Directors will provide input and response to through a facilitated "dot-mocracy" exercise.

The feedback received from the IRMAC will form the basis for a January staff report to the Environmental Services Committee, recommending the initial IRM procurement criteria and project assumptions to the Board. Upon approval, staff will conduct initial public consultation on the IRM project, including procurement criteria and project objectives.

The IRM procurement assumptions and public feedback will inform the next step in the IRM procurement process, namely the Request for Qualifications, anticipated to be released in the second quarter of 2018. The results from the RFQ will inform the preliminary IRM business case analysis, to be reviewed and endorsed by the Board prior to issuing the IRM Request for Proposals.

RECOMMENDATION

That the Integrated Resource Management Advisory Committee receive this report for information.

Submitted by:	Russ Smith, Senior Manager, Environmental Resource Management
Concurrence:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

RS:ac

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ERM 17-56

REPORT TO INTEGRATED RESOURCE MANAGEMENT ADVISORY COMMITTEE MEETING OF WEDNESDAY, NOVEMBER 8, 2017

SUBJECT **Integrated Resource Management – Consolidated Technical Summary**

ISSUE

To present the Consolidated Technical Summary document prepared by HDR Consulting to inform the procurement of an Integrated Resource Management (IRM) Facility within the Capital Regional District (CRD).

BACKGROUND

At its September 6, 2017 meeting, the CRD Board directed staff to:

> *consolidate the technical reports and work of the IRM Committee and Task Force and work with the consultant to report back on development of the criteria to move the IRM project forward.*

As directed by the Board, the CRD's contracted IRM specialist HDR Consulting has consolidated the technical reports and the work of the CRD's IRM Advisory Committee and IRM Task Force, further informed by HDR's IRM research and experience, to produce the attached Consolidated Technical Summary report. This report presents a comprehensive summary of the findings to date, including twenty case studies of IRM facilities and initiatives worldwide. The consultants will present highlights from the report at the meeting on November 8.

The Consolidated Technical Summary also identifies a number of key procurement assumptions that were determined by HDR to be important factors in the successful procurement and development of an IRM facility:

- waste supply
- facility siting
- ownership and financing
- technology and risk tolerance
- recovered resources and resource markets
- procurement approach and contract structure

This consolidated report, along with the December 2017 IRM procurement workshop to be facilitated by HDR, will help to determine the CRD Board's key project criteria and provide a clear framework to inform the IRM procurement process. The focus of the December workshop will be to seek input and direction from the Board on key issues that will affect the approach applied in the IRM procurement process and evaluation criteria.

HDR will prepare supporting materials for the December workshop, primarily in the form of a presentation and summary sheets, to facilitate a discussion to inform the discussion on the CRD's key procurement assumptions for the development of an IRM Facility.

NEXT STEPS

Following the December IRM procurement criteria workshop, the anticipated timing of the IRM procurement steps are as follows:

- January 2018 – IRM Project Plan adopted (including procurement assumptions and consultation plan)
- February/March 2018 – Consultation period on CRD IRM Project Plan
- March 2018 – Finalize IRM Project Plan
- Q2 2018 – Issue and Evaluate Request for Qualifications (RFQ)
- Q3/4 2018 – Issue Request for Proposals (RFP) upon decision by the Board to proceed

RECOMMENDATION

That the Integrated Resource Management recommend to the Environmental Services Committee:

That the Integrated Resource Management Consolidated Technical Summary be forwarded to the Capital Regional District Board for information.

Submitted by:	Russ Smith, Senior Manager, Environmental Resource Management
Concurrence:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

RS:ac

Attachment: Appendix A – Integrated Resource Management Consolidation and Project Criteria Development – HDR

APPENDIX A

Integrated Resource Management

IRM Information Consolidation and Project Criteria Development

Capital Regional District

November 3, 2017

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Appendix G	Gasification Technologies – Characterization of Waste Resources in the Capital (TWE), September 2016
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Appendix I	Presentation by Mark McKenzie (former Manager of the Waste Strategy with the City of Sydney), IRMAC meeting of February 8, 2017
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Appendix M	CRD Integrated Resource Management – Facilities Tour Plan, September 2017
Appendix N	CRD Integrated Resource Management – IRM Project Plan Outline, September 2017
Appendix O	CRD Integrated Resource Management RFQ – Draft Outline, September 2017
Appendix P	CRD Integrated Resource Management Technology Gap Analysis – Preliminary, September 2017
Appendix Q	CRD Beneficial Reuse of Biosolids – Jurisdictional Review, September 2017

Appendix R	Report ERM 17-36 Waste Flow Management Policy Backgrounder, September 2017
Appendix S	Report to the Environmental Sustainability Committee, Results of Feasibility Studies on Waste-to-Energy, June 2011

Note: Due to the substantial file size associated with the documents listed in the Appendices, and as these documents have previously been provided as supporting information as part of reports to previous CRD Board and Committee meetings, these documents are not included as part of this report file. A separate consolidated document file of these Appendices can be provided upon request.

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Glossary of Key Terms

The following glossary is not intended to be a comprehensive overview of all descriptive terms used in this report. However, in order to provide clarity for this report, key terms essential for understanding of the overall Integrated Resource Management (IRM) project are defined as follows.

Beneficial Use / Beneficial Reuse: Beneficial use and beneficial reuse are used interchangeably and for the purpose of this report and the Integrated Resource Management Project, are assumed to have the same meaning. Beneficial use is applied in the context of this project as a concept for the management of residual solid and liquid waste as a means to save landfill disposal capacity by avoiding disposal of materials and directing them to alternative uses. To be considered a beneficial use, the materials/products recovered from the solid or liquid waste stream must not be stored in anticipation of speculative future markets, the recovered materials must be an effective substitute for an analogous material or a necessary input to generate a new product, the use of the material should not adversely impact human health or the environment, and the material should be used in accordance with applicable standards, requirements, guidelines and best management practices. In accordance with CCME guidelines, Beneficial Use is the use of municipal biosolids, municipal sludge and treated septage according to the *Canada-wide Approach for Management of Wastewater Biosolids*.

Biosolids: For the purpose of this report the term biosolids is either used interchangeably with the term Class A biosolids when making reference specifically to this material in the context of the CRD or it is used as a generic term that in the most part refers to sewage sludge that has been treated. However, in some cases it has been used consistent with the terminology used in the source material and reflects the terminology applicable in that jurisdiction which in some cases includes jurisdictions where the terms biosolids and sewage sludge are used interchangeably.

Class A Biosolids: In all parts of the document that refer to Class A Biosolids as produced in BC including the CRD, Class A Biosolids are as defined under the BC Organic Matter Recycling Regulation, that meet the requirements of section 6 of the regulation (Schedule 1, Pathogen Reduction Processes; Schedule 2, Vector Attraction Reduction; Schedule 3, Pathogen Reduction Limits; Section 3 of Schedule 4, Quality Criteria; Schedule 5, Sampling and Analysis; Schedule 6, Record Keeping). There are portions of the document where reference to class A biosolids may be made in keeping with how this is defined in the host jurisdiction.

Compost: Means a solid mature product resulting from composting but does not include compost to which the Fertilizer Act (Canada) applies. This would include materials defined as “compost” under the BC Organic Matter Recycling Regulation.

Disposal: Is used in this report to refer to the disposition of solids, in a manner that does not result in the recovery of the resources (materials or energy) from those solids, including incineration (without energy recovery) and landfill disposal.

Fertilizer: Means any substance of mixture of substances, containing nitrogen, phosphorus, potassium or other plant food, manufactured, sold or represented for use as a plant nutrient that meets the

requirements of the Fertilizer Act (Canada) and includes materials such as Compost where this material is sold as a fertilizer and thus must meet the requirements of the Fertilizer Act. This would include materials defined as “fertilizer” under the BC Organic Matter Recycling Regulation.

Integrated Resource Management (IRM): IRM is defined by the Capital Regional District as the integration of solid and liquid wastes, using currently landfilled or diverted materials along with biosolids, to maximize resource recovery through combined processing or some, or all, of these materials. Combined processing could be accomplished through the application of a single technology or a combination of technologies, from one or more technology providers, which recover resources in the form of materials and/or energy for beneficial use.

Municipal Solid Waste (MSW): Municipal Solid Waste includes solid waste material streams generated by the residential sector, institutional, commercial and light industrial sources as well as waste from construction, demolition and renovation activities. It does not include hazardous, biomedical or agricultural waste, motor vehicles or components, heavy industry waste or contaminated soil.

Pathogen: Means an organism including some bacteria, viruses, fungi and parasites that are capable of producing an infection or disease in a susceptible human, animal or plant host.

Resource Recovery: Resource recovery is identified as the 4th R in the waste hierarchy, and involves the reclaiming of recyclable components and/or energy from the solid waste stream by various methods. To be considered a resource recovery facility, waste to energy facilities will achieve an energy efficiency criteria of obtaining at least 60% of the potential energy from the MSW used as fuel. The energy efficiency criteria is modelled after Annex II of the European Commission Waste Framework Directive model.

Sewage Sludge: Means the semi-liquid material that is removed from a wastewater treatment system as an end product of the treatment process. Generally sewage sludge has been used to refer to this material prior to treatment using elevated temperature and biological processes. However, in some cases it has been used consistent with the terminology used in the source material and reflects the terminology applicable in that jurisdiction which in some cases includes jurisdictions where the terms biosolids and sewage sludge are used interchangeably.

Scientific Evidence: Is evidence which serves to support or counter a scientific theory or hypothesis. Such evidence is expected to be empirical evidence and interpreted in accordance with the scientific method.

Table of Key Acronyms and Abbreviations

AD	Anaerobic Digestion
C&D	Construction and Demolition waste
CHP	Combined Heat & Power
CNG	Compressed Natural Gas
CRD	Capital Regional District
DB	Design, Build
DBFO	Design, Build, Finance, Operate
DBFOM	Design, Build, Finance, Operate, Maintain
DBO	Design, Build, Operate
DBOM	Design, Build, Operate, Maintain
DBOO	Design, Build, Own, Operate
DBOOM	Design, Build, Own, Operate, Maintain
DBOOT	Design, Build, Own, Operate, Transfer
EPC	Engineering, Procurement and Construction
FICFB	Fast Internally Circulating Fluidized Bed
FOG	Fats, Oils and Grease
GHG	Greenhouse Gas
Ha	Hectares
ICI	Industrial, Commercial and Institutional
IRM	Integrated Resource Management
kWh	kilowatt hours
LYW	Leaf and Yard Waste
m	Meters
MBT	Mechanical Biological Treatment
MSW	Municipal Solid Waste
MW	MegaWatt
Nm^3	Normal Cubic Meter
P3	Public Private Partnership
RDF	Refuse Derived Fuel
RFEOI	Request for Expression of Interest
SRF	Solid Recovered Fuel
SSO	Source Separated Organics
tpd	Tonnes per day
tpy	Tonnes per year
VOC	Volatile Organic Compound
WWTP	Waste Water Treatment Plant

1 Introduction

The Capital Regional District (CRD) has undertaken significant work over the past few years to further its investigations of advanced Integrated Resource Management (IRM) options to address solid and liquid waste streams generated in the district. Activities undertaken included the investigations by the CRD IRM Task Force in late 2015/early 2016, continued investigations by CRD solid waste staff on IRM activities as part of current programs and a decision in early 2017 to proceed with the issuance of a Request for Expressions of Interest (RFEOI) for advanced IRM solutions. As of late 2016, HDR was retained as the IRM advisor to the CRD to assist with the RFEOI, and has undertaken a number of subsequent activities as part of this work.

On June 28, 2017 a report was made to the Integrated Resource Management Advisory Committee (IRMAC) regarding the Advanced Integrated Resource Management, Request for Expressions of Interest, Detailed Analysis. The IRMAC recommended to the CRD Environmental Services Committee that five key deliverables be prepared and delivered for the September 6th, 2017 IRMAC meeting, based on the staff report regarding Advanced Integrated Resource Management, Next Steps and the presentation that was provided regarding the IRM Road Map. These recommendations were approved by the Environmental Services Committee on June 28th, 2017 and subsequently by the CRD Board.

The reports presented to the IRMAC meeting on September 6, 2017 included:

1. Report ERM 17-35 Advanced Integrated Resource Management – Facilities Tour Plan;
2. Report ERM 17-37 Advanced Integrated Resource Management – Procurement and Project Plan Update, including the IRM Project Plan Outline (Appendix A) and IRM RFQ – Draft Outline (Appendix B);
3. Report ERM 17-34 Integrated Resource Management Technology Gap Analysis – Biosolids Jurisdictional Review, including the IRM Technology Gap Analysis (Appendix A) and Beneficial Reuse of Biosolids – Jurisdictional Review (Appendix B);
4. Report ERM 17-36 Waste Flow Management Policy Backgrounder.

Subsequent to the IRMAC meeting, a motion was passed by the Environmental Services Committee and approved by the CRD Board that:

1. That staff be directed to work with the consultant to consolidate the reports and information presented to date and to bring forward criteria that would be used for advancing the procurement process; and
2. That the work, moving forward, not include any travel, at this time.

This report is intended to address this motion, to consolidate the reports and information presented to-date and to provide context for the development of criteria that would be used for advancing the IRM procurement process.

In addition to the reports and information presented to-date to the CRD, this document also presents some information sourced through additional research, to expand upon some key areas required to provide context to the procurement criteria. A series of case studies are presented, based on documents and information presented to-date and this research, identifying key issues that will need to be addressed in the IRM procurement process.

Based on the information reviewed, key findings regarding the following topics are discussed, to prepare CRD officials for a subsequent workshop to discuss and determine the direction in which the CRD chooses to proceed for the IRM procurement. This workshop session will provide direction for the development of the criteria which would be used to advance the IRM procurement process. The findings address (but are not limited to) the following key issues that will need to be confirmed to advance the procurement process.

Table 1 Key IRM Procurement Issues

Project Element	Impact
Site	Critical Asset Critical Factor for Project Success
Waste Supply	Key to Financeable Project
Ownership	Asset Control Risk Exposure
Financing	Ability to Secure Financing Cost of Financing
Technology	Degree of Complexity affects Risk Posture
Deal Structure	Depends on level of technology risk and risk allocation
Markets	Market Access and Value affecting financing and long-term viability
Residuals Management	Long term secure access to economically and environmentally sound residuals management capacity

These issues will be addressed in the development of risk management matrices that will be presented and discussed at the upcoming workshop session.

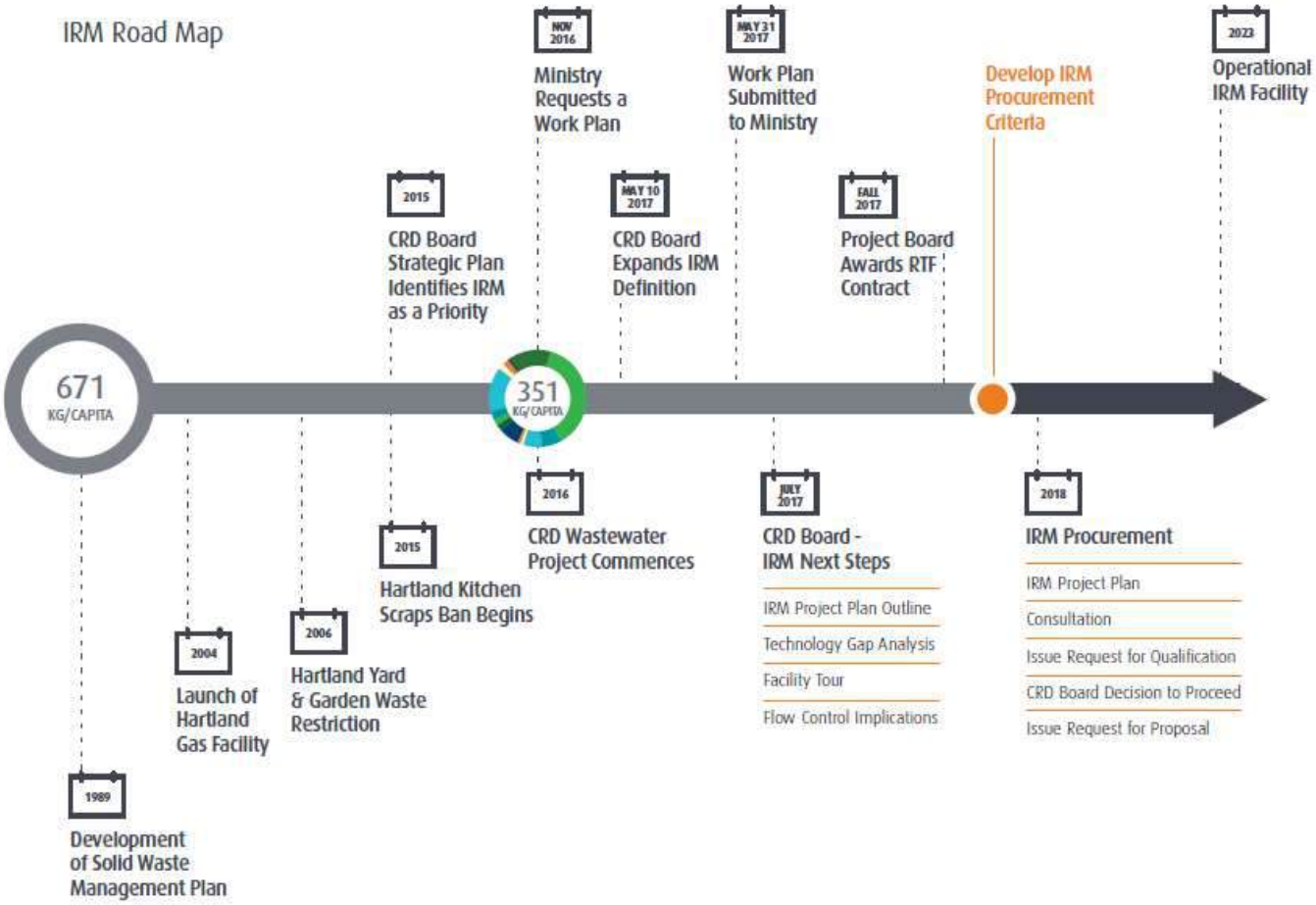
2 Summary of IRM Reports and Information

The reports and information developed to-date which support the IRM process, include materials that have been gathered for and presented to the CRD IRMAC, information arising from the Core

Area Liquid Waste Management Plan (CALWMP) process, and documentation gathered by the BC MOE in support of biosolids management in the province. The following provides an overview of reports and information that are related to the CRD IRM process and in particular the findings resulting from these reports/documents that are relevant to setting the context for IRM procurement.

Figure 1 presents a graphic timeline of the IRM roadmap indicating the progress made towards an IRM solution and proposed steps moving forward based on the IRM Workplan Outline. This progress includes progress related to the CRD Solid Waste Management Plan and the CALWMP and IRM Work plan.

Figure 1



2.1 CRD Board and Core Area Liquid Waste Management Plan – Key Information

The CRD is developing a wastewater treatment facility that will come online in 2020. The Project Board's Terms of Reference include the following key goals that are applicable to IRM:

a) optimizing opportunities to recover resources from waste as part of an integrated waste management approach; and,

b) minimizing GHG emissions.

The CRD Corporate Plan for 2015 to 2018 includes Climate Change and Integrated Waste Management as Board priority areas, and Environmental Protection and Regional Infrastructure as key corporate priority areas. In regards to Integrated Waste Management, the Board's strategic priorities include:

a) Acquiring additional expertise on technologies and solutions (including centralized/decentralized approaches and gasification) to liquid and solid waste management;

b) Investigate region-wide solutions to liquid and solid waste;

c) Establish a systematic process of evaluation for all liquid and solid waste decisions;

d) Investigate combined liquid and solid waste management plans;

e) Ensure responsible management of wastewater for the entire capital region.

Solid and liquid waste management within the CRD are currently driven by different legislative authorities/requirements and under the administration of different regional committees and Boards.

The Core Area Liquid Waste Management Plan includes the construction and commissioning of the wastewater treatment plant (WTP), development of a conveyance line for sewage sludge to the Hartland site, construction and commissioning of a residuals treatment facility (RTF) to produce Class A biosolids. The outcome of the CALWMP process, provides the key input to the advanced IRM process, being the Class A biosolids feedstock stream.

The CRD issued a Request for Qualifications (RFQ) for the RTF on December 5, 2016, and issued the subsequent RFP to qualified respondents in 2017. A decision on award of the RTF is anticipated in late 2017. Design and construction of the Residuals Treatment Facility is expected to begin in early 2018, with service commencement in the summer of 2020.

The outcome of the RFP process for the Resource Treatment Facility (RTF) will determine the quantity and composition of the biosolids stream that would be made available for an IRM solution.

Various supporting documents to the CALWMP process serve as supporting information for the IRM project. This includes for example, the various studies completed as part of the CALWMP Wastewater Treatment System Feasibility and Costing Analysis, such as Technical

Memorandum #3 – Costing and Financial Analysis which provided analysis of biosolids management costs (Appendix A). This analysis examined the energy content of the MSW stream and biosolids, and the energy balance and potential costs for AD and gasification options.

Currently there is a prohibition of land application of biosolids from CRD facilities either with or without treatment. As a result, the CRD requires that a beneficial use solution be found for management of the majority of the biosolids stream. Appendix B includes a copy of the decisions that encompass the CRD policy regarding land application of biosolids. This includes:

1. the minutes of the CRD Board meeting held on Wednesday July 13, 2011 which includes the following resolution:

   "*Be it so moved that the CRD will harmonize current and long-term practices at all CRD-owned regional facilities and parts with the approved policies of the regional treatment strategy, including ending the production, storage and distribution of biosolids for land application at all CRD facilities and parks; and*

   Be it further moved that the CRD does not support the application of biosolids on farmland in the CRD under any circumstances, and let this policy be reflected in the upcoming Regional Sustainability Strategy."

2. the minutes of the CRD Board meeting held on Wednesday October 30, 2013 which includes the following resolution:

   "*That the current policy, adopted July 13, 2011, regarding the banning of the land application of biosolids be confirmed*."

3. the minutes of the CRD Board meeting held on Wednesday, November 30, 2016, which includes the following resolution:

   "*That the Capital Regional District Board direct staff to include in the Integrated Resource Management project Request for Expressions of Interest the following:*

   1. A statement outlining the Board's current policy on land application and the concerns which drove its establishment; and

   2. A request for proponents to outline technologies that will deal with the Board's concerns; how the technology will mitigate the Board's concerns; applicability to the core area, Peninsula and other community sludge/biosolids management problem as a central and/or sub regional solution; costs, history and effectiveness.

It is the intent of the CRD to ensure that it has an integrated waste management solution that at minimum would allow for management of the Class A biosolids stream. Any system selected by the CRD, whether it consists of a single technology or a group of approaches must include a long-term solution for the management of these biosolids. The CRD is looking for a solution that can be integrated with the outcome of the current procurement process for the RTF, and is interested in identifying those options that present region-wide and/or sub-regional solutions.

2.2 BC MOE – Key Direction Documents

On November 18, 2016 the BC Minister of the Environment issued a letter regarding its revised conditional approval of Amendment No. 11 to the Core Area Liquid Waste Management Plan (CALWMP), attached as Appendix C. Amendment No. 11 includes the conveyance of sewage sludge from the McLaughlin Point WWTP to the Hartland landfill for processing into Class A Biosolids as defined under the BC Organic Matter Recycling Regulation, for beneficial use and optimization for potential opportunities for integrated resource management (IRM).

As a condition of approval, the Minister requires that the CRD develop a definitive plan for the beneficial reuse of biosolids that does not incorporate multi-year storage of biosolids within a biocell. On May 31, 2017 the CRD submitted a plan that outlines procedural steps and the schedule it will implement to achieve the definitive plan, attached as Appendix D. The definitive plan must be submitted as of June 30, 2019.

The definitive plan for beneficial reuse of biosolids:

a) is to be supported by an assessment of the full spectrum of beneficial uses and integrated resource management (IRM) options available for the Class A biosolids produced at the Hartland landfill;

b) incorporates a jurisdictional review of how similar-sized and larger municipalities within BC, North America and abroad successfully and beneficially reuse biosolids;

c) must select a beneficial reuse option for treated biosolids that meets the requirements for beneficial use specified in the Canadian Council of Ministers of the Environment *Canada-wide Approach for the Management of Wastewater Biosolids (*October 11, 2012) and be based on scientific evidence.

Upon receipt of the IRM Work Plan, the MOE issued correspondence on July 7, 2017 which noted that:

a) the IRM Work Plan submitted to the MOE exceeds the Minister's requirement as identified in the Minister's letter of November 18, 2016;

b) The Ministry distinguishes the implementation of the CALWMP and the advanced IRM facility initiative as two distinct projects. The first project is the CALWMP including the construction and commissioning of the wastewater treatment plant, conveyance line and residuals treatment facility and the beneficial use of Class A biosolids. The advanced IRM facility initiative is a longer term project where operation and commissioning is not dependent on the required timelines for implementation of the CALWMP. The Ministry concurs with the CRD that since the advanced IRM facility contemplate beneficial use of solid waste residuals, this initiative is better aligned with the CRD Solid Waste Management Plan process.

The full text of the letter is included in Appendix E. The IRM procurement process will reflect this approach.

The BC MoE has continued its own investigations and studies in support of beneficial use of biosolids in the province. Some of that work has been undertaken in support of the equivalency agreement that is being developed by the Ministry of Environment (MoE) and Environment Canada. This agreement will see amendments to the Municipal Wastewater Regulation making it equivalent in effect to the federal Wastewater Systems Effluent Regulation (WSER). The updated regulation will require all municipal wastewater facilities with flow rates greater than 100 m3/day discharging to water to have secondary treatment by 2040.

2.3 IRMAC – IRM Supporting Information

The documents discussed below, were presented and discussed as supporting information with the IRMAC, but were not prepared as specific documents within the IRM Project Plan.

2.3.1 CRD IRM Task Force Report

A CRD Integrated Resource Management (IRM) Task Force was created to examine the question of whether an IRM approach to managing waste streams might provide substantial financial benefit and substantially improved environmental outcomes to the region and its residents. In its terms of reference, the task force was asked to define the scope and parameters of Integrated Resource Management objectives, to recommend options to the CRD Board for endorsement and to recommend to the board a process for broadly seeking submissions from the private sector for implementing the recommended initiative.

It its report provided as of February 24, 2016 (Appendix F) the task force reported on the outcome of four presentations from potential technology providers.

In summary, information provided in this document that provides context to the IRM procurement process includes:

1. Partnerships with infrastructure and/or construction companies and technology providers will be required to develop the more complex IRM technologies. These entities would need to be able to guarantee and fund the development of the project. In the IRM procurement process, the RFQ stage would be required to qualify all key team members including the technology providers and the major partners required to execute a project.
2. Some technology providers offered a complete solution to manage CRD solid and liquid waste streams, while others focused on only specific material streams. This indicates potential for a single or multi-facility solution for IRM. The CRD has to determine if the procurement process would accommodate both.
3. Various potential contractual (and procurement) models were identified, with varying degree of risk transfer from the CRD. The evaluation of risk and identification of preferred contractual/procurement models will be a central part of the IRM procurement criteria development.
4. Various financial and environmental benefits were posited by the technology providers. The procurement process should include criterion related to financing and development of markets for beneficial use products which was a central theme, as well as criterion related to environmental benefits.

2.3.2 Gasification Technologies – Characterization of Waste Resources in the Capital (TWE)

Given the interest of the CRD in options for energy recovery from IRM materials, the CRD retained Talent with Energy (TWE) to undertake an assessment of waste resources available in the Capital Region to gain a better understanding of the potential for energy recovery associated with these resources. Their report on the Characterization of Waste Resources in the Capital issued in September 2016, is included as Appendix G. The analysis framework developed specifically for the CRD builds on a combination of elemental analysis data for the range of materials typically found in the domestic and commercial and industrial waste streams, and data from a composition study for solid waste streams collected within the Capital Region, developed for the CRD by Sperling Hansen Associates.

The provision of information derived from this report as supporting information in the IRM procurement process would be valuable to potential respondents considering the potential for use of CRD solid waste streams for renewable energy recovery. However, this information does not provide a similar analysis of the potential CRD biosolids stream.

2.3.3 Gasification Technologies Information – City of Sydney Australia

Based on the interest of the CRD in advanced IRM technologies, the IRMAC sourced information from the City of Sydney Australia that had undertaken an extensive gasification technologies review, as documented in the City of Sydney Advanced Waste Treatment Master Plan, Gasification Technologies Review, August 2014 by Talent with Energy (TWE) on behalf of the City (Appendix H).

Further, the CRD engaged the former Manager of the Waste Strategy with the City of Sydney (Mark McKenzie) to present via video link at the IRMAC meeting of February 8, 2017 to provide an update and information regarding the City of Sydney gasification project. The presentation is included in Appendix I.

The Sydney report indicated that in the opinion of the author, all of the key technology components (conversion, gas upgrading and delivery) were available to generate a substitute natural gas product from the gasification of waste, the network level integration of these technologies would be a unique development.

A key driver in the Sydney decision making process was the potential to increase the City's resource recovery rate and maximize energy recovery. The potential for use of biosolids directed to biomass energy recovery was considered in this study. The approach selected for advanced waste treatment is documented in the City of Sydney, Advanced Waste Treatment Master Plan (Appendix J).

Key elements within the information provided in these documents that provides context to the IRM procurement process includes:

1. Risks noted for the implementation of this energy conversion project included the nature and variability of the waste resource, the multitude of stakeholders involved, the higher degree of technology and operational risk associated with the waste

conversion processes, issues arising from public perception of WTE schemes and lack of a clear and comprehensive regulatory framework. Similar risks are associated with the CRD project and would be addressed through a detailed risk matrix to support development of the IRM procurement criteria.

2. To manage these risks, various activities were proposed including: profiling of alternative sites, waste characterization, undertaking a pre-feasibility study and preparing a business case and an assessment of the techno/economic feasibility of the facility, undertaking a multi-step procurement process that encourages the partnership between gasification technology providers and industrial gas providers.
3. Context for renewable biogas recovery is critical. With significant emissions from coal fired electricity plants, there is a significant incentive for GHG emissions reduction through complementary energy contributions.
4. Regional partnering was identified as a critical element to reach viable levels of waste for a facility (120,000 tonnes per year). Current challenges to the project and achieving a regional partnership include changes in critical staff, the political cycle, competing priorities, challenging regulatory context and the choice of technology.
5. The outcome of the gasification technology assessment undertaken by the City, was the selection of high-temperature gasification plus ash melting. One of the examples considered was the Plasco technology and facility in Ottawa, which ultimately was decommissioned (see case studies below).

2.4 IRM RFEOI

At its February 8, 2017 meeting, the CRD Board approved the advanced IRM Project – Request for Expressions of Interest documentation and directed staff to proceed with issuing the RFEOI. The purpose of the RFEOI was to gather information on potentially viable alternatives for processing of the existing solid and future liquid waste residuals that are/will be managed by the CRD. The outcome of the RFEOI process was not intended to qualify technologies or respondents, nor was it intended to validate partners.

The RFEOI was issued on February 16, 2017 and closed on March 20, 2017. Ten (10) responses were received. An initial report was presented as an appendix of Staff Report ERM 17-15 to the IRMAC on April 12, 2017 and is attached as Appendix K. Key findings from the initial review and assessment of these submissions that provide context to the development of IRM procurement criteria include:

1. The majority of respondents prefer that the CRD provide the site for the IRM facility. Many prefer that the CRD owns the IRM facility.
2. The type of business offerings in the submissions were quite varied. Many respondents are open to a variety of development models (DB, DBOM, DBOOT, etc.).
3. The majority of respondents reported their technology as being proven (operating at a commercial level) and do not recommend that the CRD undertake a pilot project. Those

respondents that did not put forward a proven technology, were more interested in, or recommended that the CRD undertake a pilot.

Following the initial review, there were a number of items that required clarification for each submission. Letters were developed and issued to all respondents, seeking additional clarification of the submissions. Discussions were held with some respondents based on their interest in participating in a teleconference with the CRD.

A detailed analysis of the RFEOI submissions was presented to the IRMAC on June 28, 2017 (Appendix L).

Key findings in the detailed analysis of the RFEOI submissions that provide context to the development of IRM procurement criteria include the following:

1. Generally the outcome of the RFEOI identified a broad spectrum of technologies and approaches that combined could offer the CRD an IRM solution, and in particular offer a range of options to beneficially use some or all of the CRD biosolids stream. However, this did not necessarily cover the full range of vendors that are capable of offering these solutions, nor did the responses to the RFEOI address all options applicable to manage the other CRD material streams. The IRM procurement approach needs to consider approaches that would broaden the market response to ensure that a sufficient number of companies representing viable technologies are qualified as a result of the process.
2. The option to integrate additional market sounding processes within any future procurement process for an IRM facility, and to integrate a proponent review process for draft procurement and/or contract documents, offer the option to fully inform the IRM procurement process and to address uncertainty and concerns regarding risk management approaches.
3. A number of RFEOI respondents, noted the difficulty in identifying IRM solutions for feedstock that is not wholly controlled by the CRD, and where there is significant potential for the materials to vary in quantity and quality over time (e.g. the CRD MSW stream). The assessment of longer-term solid waste management system impacts and determination of potential shifts in material types and tonnages is an essential component of the IRM Project Plan as is the consideration of waste flow management policy.
4. Further understanding of the need for supplemental feedstock materials is required. Additional research will be undertaken as part of developing the IRM Project Plan, to identify the potential availability of materials such as woody biomass and commercial material streams, which may be required as supplemental materials for some processes (e.g. composting, gasification). This will assist in determining the viability of some approaches.
5. The assessment of economic implications (or preliminary business case) for the IRM project, should assess the cost of continuing under the status quo for the management of the range of CRD solid waste streams, compared to the range of potential IRM system costs. Full economic implications, including the effect on existing infrastructure (e.g. the

availability of landfill disposal infrastructure) as well as the potential range of revenues associated with recovery of beneficial use products and GHG emission credits should be addressed.

6. Development of the IRM project plan will include the identification of project risks. Some of the risks identified in the evaluation of the RFEOI submissions, include the adequacy of the location identified at the Hartland landfill site for the development of a full IRM solution. Facility siting is an exercise that has presented obstacles and delays in other similar projects. In addition, there are some IRM solutions that require access to infrastructure (e.g. suitable access to the electrical grid or gas grid) for them to provide a viable option to the CRD. The project risk assessment exercise undertaken as part of the IRM Project Plan development should address these items.

7. Overall, the RFEOI submissions indicate that a number of products could be recovered and marketed and/or directed to beneficial use, from the CRD liquid and solid waste streams as indicated in the RFEOI. The market value of these materials has yet to be determined, and is an important consideration in determining the overall cost of an IRM solution. Initial feedback through the RFEOI process indicates that additional research regarding markets and market risks would be appropriate as part of the development of the IRM Project Plan. The viability of technologies that recover energy such as AD or gasification, may be contingent upon identifying a higher value market for that energy such as vehicle fuel. In regards to other products, in some cases more limited markets were identified (e.g. cement kilns as an RDF market) while in others the respondents had identified potential for a broader market (Class A compost).

8. In general, about half of the RFEOI respondents indicated a longer term agreement would be preferred (e.g. 20+ years), particularly as some form of Design Build Operate (DBO) deal structure was proposed or preferred. Some respondents did not provide any preferred term, or indicated that it would vary based on the type of deal structure/agreement. Longer term agreements tend to be favoured when the contractor is being held to rigorous performance guarantees for the facility and/or where there is more operational risk given the complexity of the facility. Assessment of the appropriate deal structure will include development of recommendations related to the appropriate term of agreement.

9. There was wide variation in the type of preferred deal structure identified by the RFEOI respondents. Respondents to the RFEOI indicated a wide variation in approach to allocation of responsibility, which reflects allocation of risk. Some indicated preferences that were balanced between the parties, and others indicated preferences that would place more responsibility on the CRD or vice-versa on the respondent. In most cases, respondents clearly stated that their preferences related to allocation of responsibility either reflects their preferred type of deal structure or would vary based on the type of deal structure appropriate for the project. As part of the procurement process, an exercise needs to be completed to identify the range of potential project risks, and will

discuss the implications of risk allocation in making a decision on ownership, the preferred procurement approach (ies) and business/deal structure.

10. The RFEOI specifically sought to understand the potential interest in or perceived necessity to undertake a pilot program in order to demonstrate the applicability of a technology or technologies to process the CRD liquid and/or solid waste materials. Respondents were requested to identify the feedstock of interest to them, the technology solution proposed, whether that technology was demonstrated at a commercial scale and whether they would recommend a pilot be undertaken. The majority of respondents indicated that a pilot would not be required, but did identify the need for the CRD to provide greater understanding of the quantity and composition of the CRD solid and liquid waste streams. Prior to undertaking any future procurement process for an IRM facility, additional waste stream characterization is recommended (e.g. compositional analysis of the SSO stream).

2.5 IRM Reports – September 2017

The following reports were prepared and presented at the September 6, 2017 Integrated Resource Management Advisory Committee meeting:

- A draft Integrated Resource Management Project Plan Outline
- A Gap Analysis to complete the evaluation of the broader array of technologies and feedstock combinations (as required in the provincial approval of the Core Area Liquid Waste Management Plan, Amendment No. 11)
- A proposed IRM Facilities Tour Plan, to address identified information gaps; and
- An IRM RFQ Outline
- And a summary of potential policy/project implications resulting from the CRD's lack of flow control over much of the waste feedstock.

An overview of these reports, and key findings which provide context for the development of IRM procurement criteria is presented below.

2.5.1 Integrated Resource Management – Facilities Tour Plan

Within the IRM RFEOI report, it was identified that consideration should be given to undertaking facility tours of a representative sample of technologies and vendors. Facility tours have the potential to flesh out understanding of a technology, over a shorter timeline and for a lower overall cost compared to undertaking a pilot study. It was recommended that facility tours not be undertaken on an ad-hoc basis, but in a strategic fashion with specific information targets in mind and that facility tours could provide first-hand information on the performance of technologies, further understanding of the approaches used to select IRM technologies, expand CRD understanding of successful procurement and ownership models and of the markets for recovered energy and products. The IRM Facility Tour Plan (Appendix M) was developed to address these recommendations.

As indicated in the Introduction, a decision was made by the CRD Board not to proceed with travel at this time. In-lieu of undertaking any facility tour, HDR has gathered from the various CRD reports and information, and from HDR information and on-line sources, various case studies (Section 5) that address much of the same information as would have been gathered in a tour.

Key findings of the facility tour report that provide context relative to the development of IRM procurement criteria include:

1. The facility tour plan developed a comprehensive list of potential facilities of interest from various sources including the reference facilities identified in the RFEOI responses. Over 70 facilities in North America and overseas were identified. Of these facilities:
    a. A small minority processed the range of similar solid and liquid waste materials identified by the CRD;
    b. A small minority current process sewage sludge and/or biosolids, and only a few of these co-process biosolids with other waste streams.

    This indicates that care will be required when developing the criteria for reference facilities required in the RFQ submissions, to allow for reasonable technical equivalencies for materials processed.

2. There were few advanced thermal or chemical technologies that met the criteria for selection for the tour including having been in operation for 2 or more years, processing at least one feedstock similar to the CRD materials and that were owned by a Municipality or municipal corporation. The majority of the facilities that met the criteria used more conventional MBT, composting, AD or thermal technologies. This speaks to the potential degree of technology risk that should be addressed in the IRM procurement criteria.

2.5.2 Integrated Resource Management – IRM Project Plan Outline

The IRM Project Plan outline (Appendix N) builds upon the IRM Work Plan which was submitted to the Province in May 2017 as requested by the Minister of Environment in her conditional approval of Amendment No. 11 of the Core Area Liquid Waste Management Plan (CALWMP). The intent was that the IRM Project Plan outline, provide more details regarding the road map for the IRM process.

Key findings of the IRM Project Plan Outline that provide context relative to the development of IRM procurement criteria include:

1. The IRM Plan Outline indicates the key decisions that would be required, in the form of recommendations from the IRMAC and subsequent decisions by Environmental Services Committee and the CRD Board throughout the IRM planning process. This Plan Outline identifies the timing of key decisions related to policy, in particular waste flow management policy implications as reflected in a separate CRD Staff report presented to the IRMAC in September, as well as the implications related to the existing CRD policy regarding Land Application and implications associated with the beneficial reuse of products that could include biosolids. Decisions related to the regulation of the flow of solid waste and organic materials will determine whether the CRD will be in the position to guarantee feedstock for

an IRM solution. In the absence of feedstock guarantees, the viability of an IRM solution will depend on its ability to compete cost effectively with options to ship materials off-island for management elsewhere. Decisions related to the CRD policy regarding Land Application and how that policy would apply to the use of products generated by an IRM solution that could contain biosolids, will significantly scope the potential for product markets and thus effect both facility design as well as the business case for implementing an IRM solution.

2. The IRM Plan Outline addresses the need for development of a Preliminary and Final Business Case for an IRM solution. Generally for similar projects a municipality would be advised to develop a Preliminary Business Case in order to determine if a project of this nature was viable, and in the event that it was viable the outcome of the business case would be used to scope the subsequent procurement process in regards to defining the preferred service delivery model to undertake the project; the preferred technology and the feedstock that would be managed.

   The timeframes currently assumed for the IRM Project Plan do not allow for a separate business case to be developed in advance of procurement. Instead, during the development of the IRM RFQ document an assessment of service delivery models will be undertaken. The IRM RFQ document, could be structured so as to allow for pre-qualification of service providers that have capability to manage IRM solid and liquid waste streams, with the identification of any preferred technologies and the feedstock to be addressed in an IRM solution to be informed by the outcome of the RFQ process. The outcome of the RFQ, including a Preliminary Business Case assessment, will provide the basis for the CRD to decide whether to proceed with the next IRM steps and the RFP scope definition for an IRM solution. The Final Business Case would reflect the outcome of the IRM RFP.

3. The IRM Plan Outline reflects alignment with the CRD solid waste management planning process, as it contemplates beneficial reuse of solid waste residuals. IRM in the Capital Region is predominantly driven by the solid waste streams, as biosolids comprise a relatively small proportion of the combined liquid and solid waste streams. The IRM project would be a fundamental shift in the way solid waste residuals and potentially other materials like organics would be managed in the Capital Region and requires a major review of the solid waste management plan. As appropriate, key steps in the development of the CRD Solid Waste Management Plan (SWMP) which can affect the IRM planning process (and vice versa) were indicated in the IRM Plan Outline.

4. The IRM Plan Outline refers to the planning and development of an advanced IRM solution, rather than making specific reference to an advanced IRM facility (in the singular) to allow for flexibility in the outcome of the process. This reflects the real potential that the outcome of the initial steps of the IRM Project Plan, including the RFQ and Preliminary Business Case, may indicate that either a phased solution or a multi-facility approach may be identified as more feasible approaches to implement an advanced IRM solution for the CRD. For example, it may be made clear that initially the focus of an IRM facility should be the management of biosolids and a smaller subset of other CRD materials, with the option that

over time either a facility expansion or an additional facility could be developed to manage other CRD materials. A phased approach could be developed by the same or a different entity. Alternatively, it may become apparent that the most feasible IRM solution may include more than one facility at the outset, developed by different entities, managing separate CRD material streams.

In the event that an IRM opportunity managing biosolids and other CRD waste streams is not proven to be the most beneficial path forward, the CRD would pursue an individual resource recovery plan or plans for the Region's solid waste streams, and present the Province with a definitive plan for the beneficial reuse of biosolids as a stand-alone opportunity.

2.5.3 Integrated Resource Management RFQ – Draft Outline

The RFQ draft outline (Appendix O) describes the proposed approach to undertake the IRM RFQ along with a proposed table of contents. The IRM RFQ Outline reflects the staff reports and documents developed to-date in support the IRM process including the outcome of the RFEOI process, the outcome of discussions with CRD staff and work completed on other components of the IRM Project Plan.

Key findings of the IRM RFQ Draft Outline that provide context relative to the development of IRM procurement criteria include:

1. The CRD will not be in a position as of late 2017 to 'guarantee' all of the feedstock types or quantities that could be made available for an IRM solution. The outcome of the RFP process for the Residual Treatment Facility will be understood in late 2017 and will allow for greater definition of the biosolids material stream in the IRM RFQ document. However, work on the Solid Waste Management Plan (SWMP) process and decisions related to flow control that would be required to guarantee other solid waste feedstock materials, will not be completed as of the time the RFQ needs to be finalized and released in order to support the overall IRM Project Plan.

   As a result, this RFQ would not seek to pre-qualify service providers capable of managing specific feedstock as required by the CRD, other than management of biosolids. Rather the RFQ would seek to pre-qualify service providers that demonstrate that they have the capability to manage biosolids along with one or more other solid waste streams. The outcome of the RFQ could result in identifying service providers that demonstrate capability to manage the full range of the potential CRD liquid and solid waste feedstock within a single integrated IRM facility as well as service providers that can manage some of these materials with their proposed technology, potentially requiring a multi-facility approach to address the full spectrum of potential IRM feedstock.

2. In most RFQ processes, a preferred type of technology or subset of technologies is identified prior to development and release of the document, which focuses the exercise to qualifying vendors with specific technologies that meet key technical criteria. This is not possible for the IRM RFQ process for two key reasons:

i. Firstly, it is difficult (to impossible) to scope the technologies that are the subject of an RFQ, without first being able to scope or guarantee the feedstock that must be managed by the facility. The current spectrum of feedstock is capable of being managed through a range of mechanical, biological and thermal technologies.

ii. Secondly, to support the alignment of the IRM Project Plan with the SWMP process, decisions cannot be made to scope or focus technologies this early in the concurrent processes, without constraining the SWMP planning process in a way that is not consistent with provincial solid waste management planning policy.

As a result, the RFQ would be designed to qualify service providers that demonstrate capability to manage some or all of the potential IRM feedstock, and the technologies proposed by those service providers that meet the qualification criteria will be used to inform the SWMP process and subsequent steps of the IRM Project Plan.

3. The outcome of the RFEOI process, as documented in the report on the detailed analysis of the RFEOI responses, did not identify any consensus or focus by the technology providers on any specific service delivery models. Interest was expressed by the majority of respondents on a longer term of agreement (20+ years) for some form of Design, Build, Operate (DBO) service delivery model. There was wide variation in the type of the preferred deal structure identified by respondents. As noted below, it is recommended that concurrent with the development of the IRM RFQ that an assessment of risk management approaches, service delivery models and contract structures be undertaken to focus the RFQ approach.
4. The RFQ would seek to qualify respondents on the basis of: the qualifications of the proponent team; the technical capability of their proposed IRM solution; and the financial capability of the respondent, pending selection of the service delivery models and contract structure selected by the CRD.

2.5.4 Integrated Resource Management Technology Gap Analysis - Preliminary

The Gap Analysis was undertaken to complete the evaluation of the broader array of technologies and feedstock combinations, as required in the provincial approval of the Core Area Liquid Waste Management Plan, Amendment No. 11.

The preliminary Gap Analysis (Appendix P) identifies the full spectrum of possible technologies that could be considered by the CRD and considers the application of these technologies to the potential feedstock combinations considered by the CRD. This preliminary Gap Analysis reflects the outcome of the IRM RFEOI as reported in the detailed analysis of the RFEOI results provided to the IRMAC on June 28, 2017 as well as the outcome of the Jurisdictional Review both of which are key components supporting the assessment of the full spectrum of approaches to beneficially reuse biosolids. As the responses to the RFEOI did not reflect the full spectrum of possible IRM technologies that are available, additional resources were used to supplement this information.

This Gap Analysis should be considered as a preliminary document/analysis, as further work will be undertaken over the course of the next few months as set out in the recommended CRD IRM Project Plan Outline (discussed in the separate report to the IRMAC) regarding the approach for technology selection and development of feedstock assumptions for the RFQ. The assessment of the full spectrum of beneficial uses and integrated resource management options in the IRM Project Plan, would be comprised of this preliminary Technology and Feedstock Gap Analysis along with the additional work undertaken regarding the approach for technology selection and development of feedstock assumptions, and the outcome of the IRM RFQ process.

Key findings of the IRM Technology GAP Analysis that provide context relative to the development of IRM procurement criteria include:

1. It is clear based on the review of the technologies presented in the RFEOI submissions, the analysis of additional technologies not captured in the RFEOI process and the technologies identified in the jurisdictional review, that there is not one single technology applied at an operating facility that has managed the full range of IRM solid and liquid feedstock. It is anticipated that further steps in the IRM Project Plan, including the proposed RFQ process, will identify a viable sub-set of technologies that would be applicable to both the solid and liquid CRD waste streams that could be developed for the CRD by qualified companies. A successful IRM solution is most likely to consist of a combination of technologies at a single facility, or a combination of facilities, integrated into the CRD's overall system for solid and liquid waste management.

2. For a CRD IRM solution to be successful, it will require consideration of the appropriate combination of technologies and the appropriate combination of feedstock materials, considering:
    a) The properties of the feedstock materials (chemical composition, heating value, moisture content etc.), which will be supported by the CRD Solid Waste Management Plan (SWMP).
    b) The quantities of the feedstock materials considering the quantities required to achieve economies of scale as well as the availability of these materials considering flows of materials that are controlled by and that are not controlled by the CRD. Economies of scale could be achieved either through some form of regulatory control (flow control), or through functional competition of an IRM solution in comparison to other waste management facilities through market forces. Flow control would be addressed through the assessment of policy/project implications in the SWMP.
    c) Requirements for amendments and other supplemental materials (e.g. woody amendment materials). The IRM RFQ process would determine, based on the responses and technologies identified, if there would be a need for the CRD or the respondents to source supplemental materials in order to implement an IRM solution. The preliminary Business Case would need to analyse the current market value of any supplemental materials and the issues that could arise in sourcing/securing these material streams.

d) The range of beneficial materials that can be recovered, and the markets for these materials. The outcome of the IRM RFQ process will assist in this determination, along with the preliminary Business Case which will need to examine local market conditions.
e) The economic implications associated with applying specific technologies to this feedstock. . This would be addressed by the development of a preliminary Business Case based on the outcome of the RFQ and a final Business Case based on the outcome of the RFP

3. Decisions regarding the technology or combination of technologies that would comprise an IRM solution, and the feedstock that would be directed to an IRM solution, must be integrated with the other concurrent IRM planning processes, and consider the effect on the CRDs overall liquid and solid waste management systems.

2.5.5 Beneficial Reuse of Biosolids – Jurisdictional Review

As the regulator for the CRD regional wastewater treatment project, the Province of British Columbia requested that the CRD conduct a jurisdictional review "of how similar-sized and larger municipalities within British Columbia, North America, and further abroad, successfully and beneficially reuse biosolids." The jurisdictional review was undertaken to support a more informed biosolids option assessment for CRD wastewater treatment and Integrated Resource Management projects, and to meet the Province of BC request. As specified in the letter from the Province dated November 18, 2016, the beneficial reuse option selected by the CRD for their treated biosolids must meet the requirements for beneficial use specified in the Canadian Council of Ministers of the Environment 'Canada-Wide Approach for the Management of Wastewater Biosolids'. EDI Environmental Dynamics Inc. (EDI) was contracted by the CRD to complete this review. The jurisdictional review was provided to the IRMAC as Appendix B to report ERM 17-34 and is referenced here in this report as Appendix Q.

Key findings of this report that provide context relative to the development of IRM procurement criteria include:

1. Only a few examples were noted in the jurisdictional review of IRM approaches for co-management of liquid and solid waste streams. In the majority of cases where IRM was applied (e.g. the Mont De Marsan facility in France) the solid waste that has been co-processed has been limited to green waste (yard waste) or residential organic waste (Edmonton) and in some countries regulatory and other pressures have resulted in biosolids being incinerated with MSW or RDF (Germany, Netherlands). As a result, it will be difficult for many technology providers responding to an IRM RFQ to identify as reference facilities, facilities that current co-manage biosolids using the same process within the same facility. Most respondents will have to show equivalencies for their IRM approach, based on grouping of multiple technologies or facility types.
2. The majority of technologies noted in the Jurisdictional review, generate some form of beneficial use product that is used in some way to build soil productivity, support agriculture/silviculture/landscaping/gardening or is used for land reclamation. This includes the range of emerging technologies that were examined, the majority of which produce some form of Class A or B biosolids or ash/biochar which is proposed or used as soil amendment.

The expectations set out in the IRM procurement process needs to recognize the range of current products and markets for materials derived from biosolids.

2.5.6 Waste Flow Management Policy Backgrounder

This staff report (Appendix R) presents policy and financial considerations regarding flow control of waste feedstocks. One of the main challenges identified in the Core Area Wastewater Treatment Program Business Case was the lack of flow control over solid waste streams in the region. Flow control refers to the ability of a regional district to regulate the flow of solid waste and recyclable materials as provided for in the Environmental Management Act (EMA). Waste flow management provides a means to guarantee feedstock for the establishment of new facilities, such as the proposed IRM facility. Regional districts in the province have identified waste flow management as a critical issue and are trying different approaches to secure feedstock availability and funding for solid waste programs. The more successful approach, in the wake of the Province's rejection of Metro Vancouver's proposed flow management bylaw in October 2014, has been the application of financial mechanisms through reduction in tipping fees for large commercial loads. The proposed solid waste generation levy and licensing of commercial haulers by Metro Vancouver is also anticipated to affect waste flow.

As part of the IRM Work Plan and during the development of the IRM procurement documents, the CRD needs to address the CRD's lack of control over the flow of solid waste streams in the Region, so that respondents are fully aware of the potential risks. Securing material flows under current conditions, will require very competitive pricing for tipping fees at an IRM solution. Current conditions in the CRD are discussed in Section 3 below and the issue of waste flow control is discussed both in the Case Studies in Section 5 and in the Findings in Section 6, as it is one of the most significant issues to be addressed as part of the IRM Project Plan.

There may be other options for securing material flows that could also be considered such as inter-municipal agreements. Some of these options/concepts are discussed in the Case Studies presented in Section 5. Certainly, the CRD has previously examined the option of pursuing development of waste management infrastructure through joint initiatives that would allow for control over larger waste streams and thus economies of scale, through the Feasibility Study for a Tri-regional Waste-to-Energy Facility as discussed in the staff report to the Environmental Sustainability Committee in June 2011 attached as Appendix S. This study determined that a tri-regional option would secure more feedstock, allowing for greater viability of a range of technology options including conventional WTE, gasification and plasma arc, and greater economies of scale and lower costs for each unit of waste processed.

3 Current CRD IRM System

The Environmental Resource Management Division of the CRD is responsible for solid waste disposal of municipally controlled waste in the Capital Region. Programs offered by the CRD are funded through fees collected at the Hartland landfill, funding received from producers for

managing stewardship items and the sale of resources and recyclable materials. No funding is drawn from the municipal tax system.

The programs offered by the CRD include:

1. The CRD residential blue box program provided to over 121,000 households in the Region.
2. Support for waste reduction, reuse and recycling through public outreach and initiatives such as the myrecyclopedia app.
3. Operation of a drop-off facility at Hartland, accepting recyclables, product stewardship items, household hazardous waste and residual garbage.
4. A Kitchen scraps landfill ban, resulting in residential collection programs provided through a combination of municipal programs and private services.
5. A yard and garden material landfill restriction, resulting in a number of municipal yard waste depots accepting the drop off of these materials including Hartland. This is also supported by collection services in 6 municipalities.
6. Operation of the Hartland landfill (discussed further below).
7. Management of construction and demolition materials at the Hartland landfill that meet the CRD landfill disposal requirements for removal of hazardous items and recyclables.

Municipal solid waste generated in the CRD that is destined for disposal, is managed at two specific sites within the region. The CRD owns and operates a landfill at the Hartland site in Saanich, approximately 14 km north of the City of Victoria. At the current rate of fill, the Hartland landfill has well over 30 years of life remaining. As indicated in Figure 1 above, since the original development of the CRD Solid Waste Management Plan, waste generation rates in the CRD have declined from 671 kg/capita/year as of 1989 to 351 kg/capita/year as of 2016 through the combined effort of the CRD and member municipalities to divert yard and kitchen scraps and through other waste reduction, reuse and recycling efforts.

Of the waste entering the Hartland landfill, approximately 50% of the approximately 150,000 tonnes per year that is landfilled, is generated by residential sources and the rest is generated by private sources and is hauled to the site by private contractors. Current tipping fees at the Hartland landfill are identified in the *Hartland Tipping Fee and Regulation Bylaw.* As of 2017 the charge for general refuse was $110/tonne. This is generally equivalent to the average tipping fees set by other Vancouver Island regional districts. The landfill gas system at the Hartland landfill currently captures 1,200 SCFM of landfill gas, of which approximately 50% is directed to a 1.6 MW co-generation plant, and approximately 50% is currently flared. The LFG that is currently flared, would be available as a supplementary energy source to an Advanced Integrated Resource Management Facility.

The CRD has embarked on a Landfill Gas Utilization Feasibility Study intended to determine if greater value can be derived from all the landfill gas generated at the site. The outcome of this exercise may provide an opportunity for co-management of landfill gas and biogas from the RTF, including the gas conditioning infrastructure to upgrade landfill gas and biogas to pipeline grade renewable gas to the grid or other options (e.g. CNG applications).

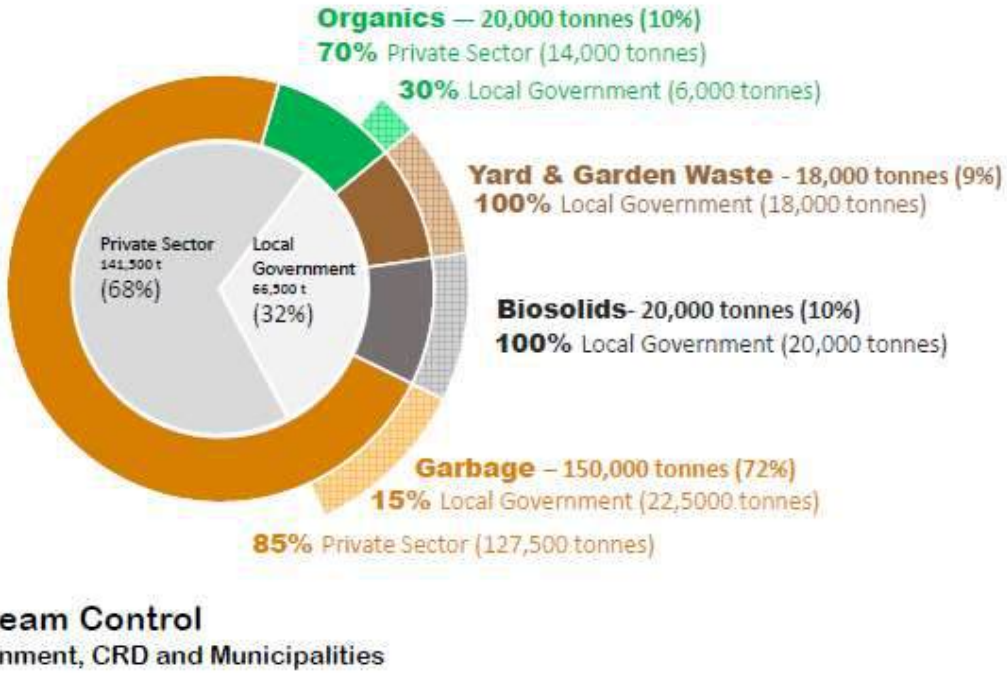
A second landfill owned and operated by Tervita known as the Highwest Waste Management Facility accepts construction and demolition (C & D) and non-hazardous institutional, commercial and light industrial (ICI) waste. This facility is the only private disposal facility located in the CRD and can dispose of a maximum of 25,500 tpy of selected non-putrescible wastes. Capacity at this site is expected to be reached around year 2019/2020.

The CRD has no control over the flow of C & D material to the Highwest facility nor does it have control of the flow of the privately managed MSW stream to the Hartland landfill beyond the current tipping fees and bans/restrictions on the disposal of yard & garden waste and kitchen scraps that are applied at the site. There may be some residual waste that flows outside the region via private haulers but that is considered negligible at this time. However, there is some concern that ICI material streams could be directed to other landfills in BC and Washington State should the tipping fee at Hartland increase such that the haul and export of waste outside of the CRD becomes financially viable.

The CRD has restricted kitchen scraps from disposal at the Hartland Landfill as of 2015. Household organics are collected through municipal services or private service providers across the CRD. Acceptable materials include food scraps, household plants and soiled paper towels and tissues. The CRD expects diverted organic tonnes to increase to 20,000 tpy over the next few years following implementation of this restriction. The CRD manages a portion (approximately 30%) of the processing of kitchen scraps collected across the Region for some of its municipal partners. This material is hauled to a transfer station at Hartland Landfill. Currently the CRD contracts for the haul and processing of these materials at a facility located outside the Region in Richmond BC.

Figure 2 below, provides an overview of the material streams generated within the CRD, and how these material streams are currently managed. This overview includes the potential generation of biosolids through the RTF.

Figure 2 Current Waste Generation and Management in the CRD



In 2012, the Capital Regional District (CRD) began development of a major revision of its 1995 Solid Waste Management Plan, referred to as the Integrated Solid Waste and Resource Management Plan (ISWRMP). The ISWRMP was put on hold in 2015 to investigate Integrated Resource Management (IRM) opportunities.

As indicated in the letter received from the MOE letter of July 2017, the Ministry's CRD Project Liaison, advised that the Ministry views the implementation of the CALWMP and the Advanced IRM facility as two distinct projects. The Advanced IRM facility initiative is seen as a longer term project which requires further details and would be better aligned with the CRD solid waste management plan process as it contemplates beneficial reuse of solid waste residuals. Updates to the SWMP would proceed under the new *Guide to Solid Waste Management Planning* released by the Province in September 2016. The Guide sets a new municipal waste disposal target of 350 kg per capita by 2020, requires consideration of eight new provincial guiding principles, and shifts the focus from a prescriptive to a results-based model for solid waste planning.

The IRM Project Plan outline presented in Appendix N was aligned with the CRD solid waste management planning (SWMP) process as it contemplate the beneficial reuse of some or all of the solid waste residuals currently managed by the CRD. The IRM project could result in a fundamental shift in the way that solid waste residuals and organics could be managed in the region. IRM has the potential to impact every aspect of the overall waste management system during the three main stages: system inputs (pre-processing), processing and system outputs.

Key steps in the re-initiation and updating of the SWMP which can affect the IRM planning process (and vice versa) have been indicated in the IRM Project Plan.

As noted in Section 2.5.6 above, as part of the IRM Work Plan and during the development of the IRM procurement documents, there is a need to address the CRD's lack of control over the flow of solid waste streams in the Region.

4 Overview of IRM and National/Regional Context in Various Jurisdictions

The national/Provincial and regional context in which IRM is implemented is a very significant factor in the success of any IRM initiative. This context includes the regulatory environment for solid waste and biosolids, greenhouse gas emission related regulations and emission reduction targets, availability of disposal capacity, the market for renewable energy and recovered materials amongst others.

In British Columbia and the CRD in comparison to other jurisdictions:

1. Management of residentially generated solid waste is largely a municipal responsibility, while management of commercial waste falls largely to the private sector. Authorities responsible for solid waste management are responsible for compliance with B.C. regulations and for the development of Solid Waste Management Plans under the new *Guide to Solid Waste Management Planning* released by the Province in September 2016, which provides a framework for how the waste streams they are responsible for are managed over time. The CRD Solid Waste Management Plan, which provides the current framework for the management of solid waste in the region, was developed in 1989.
2. There are no applicable Provincial or National bans or taxation initiatives that direct major material streams away from landfill disposal to possible IRM infrastructure. The CRD restricts the disposal of a number of materials including yard and garden waste and Kitchen scraps at the Hartland landfill, as a means of incentivizing diversion of these material streams.
3. There are no specific waste flow management requirements as discussed in Section 2.5.6 above. Generally, jurisdiction for waste management jurisdiction in the CRD is split, with the lower tier member municipalities being responsible for decisions regarding the provision of residential collection services and directing those materials to waste processing/disposal facilities for management, and the CRD being responsible for Hartland, and the services provided at this facility. As a result only 32% of the materials managed at Hartland are municipally 'controlled', with the remainder being solid waste hauled to this facility by the private sector. This is similar to the experience in other BC jurisdictions, and as a result pricing signals including the tipping fees at regional facilities are the primary influencers on waste flow. This is similar to the majority of the rest of North America. However, overseas there are many jurisdictions where waste flow is directed through regulations to regional authorities.

4. Pricing signals for disposal, often reflect the availability of landfill disposal capacity. While the CRD has significant remaining capacity at Hartland, it is recognized that the landfill is an asset that could not easily (or ever) be replaced. In jurisdictions like Ontario or the New England states, the lack of availability of landfill disposal space has resulted in higher landfill disposal tipping fees which has driven both investment in waste diversion programs and the application of IRM solutions including thermal technologies (e.g. Durham York Energy Centre discussed below). This is a significant factor in countries with limited available land or landfill disposal capacity.
5. In British Columbia the regulatory system supports the beneficial re-use of biosolids. Depending on the type and extent of treatment, biosolids can be produced as either Class A or Class B. British Columbia's Organic Matter Recycling Regulations (OMRR) outline the biosolids class requirements through quality criteria for pathogens, specifically faecal coliforms, and trace elements. Class A biosolids undergo more extensive treatment (e.g. anaerobic digestion, alkaline stabilization) and stabilization, targeted at pathogen removal, compared to Class B biosolids. Class A biosolids products are also lower in trace metal content due to the addition of additives during the treatment process such as lime, sand, or wood waste (Stantec 2011). As Class A biosolids are subject to more stringent quality criteria, they have less restrictive land application requirements than Class B biosolids due to their lower risk (BCWWA 2016, MoE 2017).
6. The availability of incentives for renewable energy production from solid or liquid waste streams varies from province to province, state to state and at a federal level. Some jurisdictions have no direct incentives at all. Some incentives are more substantial than others and provide a more significant financial premium for generation of renewable transportation fuels and/or for the generation of electricity from this type of renewable source. In BC incentives available under the Provincial Climate Leadership Plan and the Greenhouse Gas Reduction Regulation (GGRR) as well as under the Clean Energy Act are enabling utilities to increase incentives for the supply and use of renewable natural gas (RNG). RNG is considered carbon neutral. Increased use of RNG could result in up to 450,000 tonnes of GHG reductions per year in B.C., and will also help build the market for biogas, providing economic opportunities for local governments and farming and forestry operations. Amendments to the GGRR will allow utilities to double the incentives available to convert vehicles and marine vessels to natural gas when the new incentives go towards vehicles using 100% RNG, and enable utilities to recover the costs of acquiring and distributing RNG in rates.

The following sections provide some background on the national/Provincial and regional context which has affected the implementation of IRM initiatives elsewhere, and that are of relevance when reviewing the IRM case studies as presented in Section 5.

4.1 North America

Management of solid waste in North America is usually addressed within the development and implementation of solid waste management plans as required based on state or provincial acts,

regulations and/or guidelines. Requirements vary significantly from those jurisdictions that are required to achieve specific diversion targets and those where only general guidance is provided.

There are several states, counties and local jurisdictions in the US that encourage similar types of programs for some of the suite of materials CRD desires managed. However, most such similar programs are integrated to address the management of solid waste and recyclable materials and few if any include biosolids in the suite of materials requiring an integrated approach.

The United States Environmental Protection Agency (EPA) is a US federal agency which was created for the purpose of protecting human health and the environment by writing and enforcing regulations based on laws passed by Congress. The EPA enforces the Resource Conservation and Recovery Act (RCRA) which was developed to protect communities and implement resource conservation. The EPA develops regulations, guidance and policies that ensure the safe management and cleanup of solid and hazardous waste, and programs that encourage source reduction and beneficial reuse. However, in practical terms the EPA and RCRA are primarily focused on protecting the environment and not focused on resource recovery in the way CRD defines the term. The EPA also oversees the management of biosolids[1]. The EPA enforces regulations that establish a protective regulatory framework to manage the use and disposal of sewage sludge. The EPA also governs the use of biosolids when used as fertilizer. However the EPA does not require the preparation or implementation of IRM approaches, nor does it stipulate a requirement for the beneficial use of biosolids.

As an example of a local governmental entity developing IRM type programs, the Ohio Environmental Protection Agency oversees Ohio's solid waste management planning program. The program is a multi-faceted, statutorily-based program developed to ensure the state's solid waste is properly managed. The overriding objectives are to ensure that Ohio has adequate disposal capacity and to reduce Ohio's reliance on landfills for disposing of solid waste. To achieve those objectives, Ohio EPA, working with the Materials Management Advisory Council, adopts a state solid waste management plan (state plan) that establishes goals for reduction and recycling.

The state reports approximately 40 years of available disposal capacity which allows the state to focus its attention on diverting waste to alternative management options. This is achieved by ensuring that communities and businesses have opportunities to reduce, reuse, and recycle their solid waste. Making those opportunities available is a collaborative effort among many stakeholders but is driven primarily at the local level through solid waste management districts (SWMDs). SWMDs, in turn, fulfil their planning obligations by preparing and implementing solid waste management plans. Through those plans, SWMDs demonstrate how they will fulfil their statutory requirements and achieve the goals in the state plan.

[1] https://www.epa.gov/biosolids

As another example, the state of North Carolina requires its counties to develop and submit a ten-year solid waste management plan (SWMP). Mecklenburg County developed its SWMP[2] with a goal of continuously evaluating the waste stream, developing waste reduction goals, and guiding future planning decisions to "Create recycling infrastructure for no wasted resources in our County". The SWMP does not address biosolids. The County incorporates eight local governmental entities in the development of the SWMP. The latest 2012 Mecklenburg County Ten-Year Solid Waste Management Plan (Plan) represents the fifth update to the Plan, and encompasses eight local governments.

The state of California has a department (CalRecycle) devoted to managing its resources titled the California Department of Resources Recycling and Recovery[3.] The state has enacted numerous laws and regulations that mandate the recovery of resources that has resulted in significant improvement in the beneficial use of the state's solid wastes and recyclables. Businesses in California are required to implement recycling their organic materials depending on the amount of waste they generate each week. Local jurisdictions must have an organic waste recycling program in place for those businesses. The state also set the goal of 75 percent recycling, composting or source reduction of solid waste by 2020 calling for the state and the Department of Resources Recycling and Recovery (CalRecycle) to take a statewide approach to decreasing California's reliance on landfills. The approach is based on implementing programs to achieve the highest and best use of all materials in the state.[4] CalRecycle does not manage biosolids.

In regards to the Canadian approach to IRM and solid waste planning, there are general similarities in the regulatory and/or policy guidance regarding solid waste management programming for municipal jurisdictions. There are variations in extended producer responsibility programs, whether or not planning documents require approval as an overall framework for municipal systems (e.g. BC) or whether they are regarded as good practice and are expected to reflect Provincial policy (e.g. Ontario).

Within BC, as a comparison to the CRD system and SWMP as described in Section 3, the Greater Metro Vancouver Regional District adopted a Solid Waste and Integrated Resources Management Plan (ISWRMP)[5] which has been incorporated into the Metro Vancouver Regional

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2 https://www.mecknc.gov/LUESA/SolidWaste/ManagementPlan/Documents/MeckCoSolidWasteMgmtPlanJune2012.pdf

3 http://www.calrecycle.ca.gov/stateagency/IWMPlans/

4 http://www.calrecycle.ca.gov/75Percent/

5 http://www.metrovancouver.org/services/solid-waste/SolidWastePublications/ISWRMP.pdf

Growth Strategy (Bylaw 1136, 2010)[6]. The overriding principle of the Integrated Solid Waste and Resource Management Plan was based on the avoidance of waste through an aggressive waste reduction campaign and through the recovery of materials and energy from the waste that remains. In line with this principle, the Integrated Solid Waste and Resource Management Plan (ISWRMP) has four goals:

1. Minimize waste generation
2. Maximize reuse, recycling and material recovery
3. Recover energy from the waste stream after material recycling
4. Dispose of all remaining waste in landfill, after material recycling and energy recovery

Among a variety of strategies to manage resources, Strategy 2.6 of the ISWRMP targets organics for recycling and energy recovery and specifically seeks to identify beneficial and marketable products from various materials including biosolids and other utility residuals.

This plan and strategy is relatively unique in North America as it addresses the management of a range of materials outside of traditional solid waste, including biosolids.

In regards to management of biosolids in Canada, there is support for beneficial re-use of biosolids by federal and provincial agencies across Canada (CCME 2012). In Canada, the CCME has developed a 'Canada-Wide Approach for the Management of Wastewater Biosolids' (CCME 2012a) and a supporting 'Guidance Document for the Beneficial Use of Municipal Biosolids, Municipal Sludge and Treated Septage' (CCME 2012b). Federal and provincial acts and regulations are intended to ensure biosolids are managed and used in a safe and environmentally sound manner. Biosolids sold or imported as fertilizer or supplements are regulated under the Federal Fertilizer Act. End use of biosolids, including land application and disposal are governed by provincial or territorial acts and regulations, which specify standards and generally require licencing/permitting approvals for biosolids use.

Generally in North America, the driving factors that encourage any form of integrated waste management system for solid or liquid waste materials are indicated in Table 2.

Table 2 Factors That Affect IRM Project Development in North America

Political/Regulatory

Indicator	Definition/Description
Regulations banning disposal of residential and/or commercial organic wastes to landfills	Legislation that restricts or places limits on the disposal of organic/decomposable materials in landfills. Each jurisdiction has its own generator/trigger value.

[6] http://www.metrovancouver.org/services/regionalplanning/PlanningPublications/RGSAdoptedbyGVRDBoard.pdf

Carbon credit/trading programs or subsidy programs	State/Provincial level programs that provide financial incentives for facility/project owners to implement IRM solutions.
Regulatory limits on GHG emissions	Regulatory guidelines or legislation that places a cap on GHG emissions generated by waste and/or industrial facilities.
Legislation that creates renewable energy portfolio mandates/goals (e.g. 20% of state's energy will come from renewable sources)	State/Provincial level government enacted regulations and/or programs that set forth goals for energy generated by renewable sources.
State/Provincial diversion mandates requiring achievement of certain diversion goals	State/Province sets a broad goal for reuse or recovery of materials without stipulating how those goals should be achieved. States that target diversion rates higher than 50% draw market interest.
Limits/requirements regarding nutrients and land application	Specific regulatory limits/requirements that stipulates the quantity and/or type of nutrients that can be applied to land.
State's political climate on energy matters	The political makeup of the state (red/blue) and the influence of traditional energy sources on policy making.

Economic

Indicator	Definition/Description
Market price for electricity (KW/h)	The market price of electricity per kilowatt-hour (KW/h) in a given geography, particularly for energy from renewable sources.
Landfill tipping fees	The average tipping fee for landfill disposal of waste
Market price for recovered material (e.g. compost, fertilizer)	Average bulk retail price for recovered material

Social

Indicator	Definition/Description
Green ranking of a state/province or city	State/city green score.
Recycling rates or landfill diversion rates	Current waste diversion rate
Public awareness of past failures (e.g. odor, environmental, etc.) where facilities have been a public nuisance.	News articles that cite complaints regarding large-scale waste facilities.

Technology

Indicator	Definition/Description
Proximity/accessibility to distribution infrastructure (e.g. gas pipeline, grid)	Estimated natural gas pipeline mileage as reported by U.S. Department of Energy
Waste collection and pre-processing infrastructure	Status of waste collection and pre-processing infrastructure and the degree of material flow control held by the jurisdictions considering IRM

4.2 European Union

The management of waste material in the European Union (EU) reflects the diversity of the various countries that make up the EU. There are overarching regulations and guidelines in place that have for some time favoured the processing of waste, rather than direct disposal in landfills. Additional regulations and guidelines address extended producer responsibility and recently there is additional emphasis on moving towards a circular economy.

In general, members of the EU have regulations in place that require that no untreated organic waste be deposited directly in landfills, that landfills are reserved for the disposal of residual materials that remain following some form of processing and treatment. A number of jurisdictions also impose significant fees on any waste going to landfills, which in turn serves to increase the number and types of processing facilities because the higher cost of processing waste materials is competitive with these increased landfill disposal fees.

Regulations and guidelines promulgated by the EU include minimum requirements for managing certain types of waste. These include the Landfill Directive targeting biodegradable municipal solid waste, the Packaging and Packaging Waste Directive focused on recycling, the Waste Framework Directive emphasizing the hierarchy and various directives related to the treatment and disposal of waste water sludge and biosolids. The Waste Directive focuses on waste prevention and puts in place new targets which will help the EU move towards its goal of becoming a re cycling society. It includes targets for EU Member States to recycle 50% of their municipal waste and 70% of construction waste by 2020.

The Directive introduces a five-step waste hierarchy where prevention is the best option, followed by re-use, recycling and other forms of recovery, with disposal such as landfill as the last resort. EU waste legislation aims to move waste management up the waste hierarchy.

The Waste Framework Directive, revised in 2008, streamlines waste legislation, incorporating rules on a number of issues such as the management of hazardous waste and waste oils. Other pieces of EU waste legislation include

1. The Regulation on waste shipments which aims to ensure the safe shipment of all types of waste, including hazardous waste;
2. The Packaging and Packaging Waste Directive which sets standards for the design of packaging and lays down specific targets for the recycling and recovery of waste packaging;
3. The Landfill Directive and the Waste Incineration Directive which set standards and limits for the release of pollution into the air or into groundwater;
4. The End-of-Life Vehicles Directive which sets increasing re-use, recycling and recovery targets and restricts the use of hazardous substances in both new vehicles and replacement vehicle parts;
5. The Waste Electrical and Electronic Equipment (WEEE) legislation which addresses collection, recycling and recovery targets for electrical goods;

6. The Directive on the Restriction of Hazardous Substances in electrical and electronic equipment which restricts the use of hazardous substances in electronics;
7. The Batteries Directive which sets collection, recycling and recovery targets, and
8. The Council Directive concerning urban waste water treatment which states that sludge arising from waste water treatment shall be re-used whenever appropriate and that disposal routes shall minimize the adverse effects on the environment.

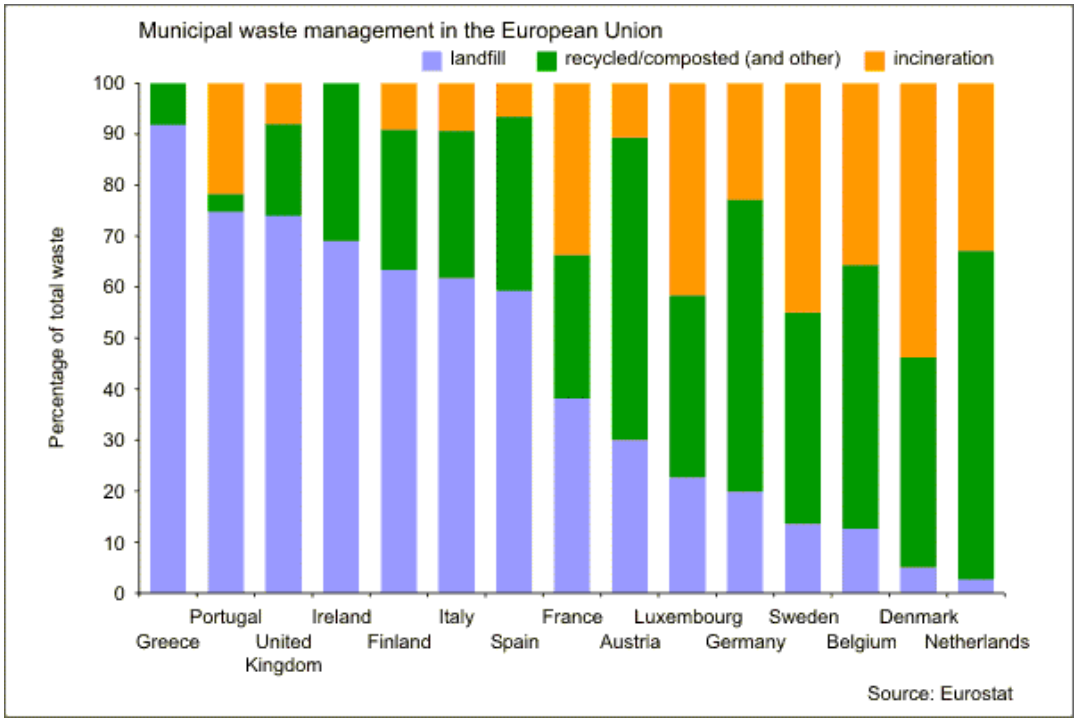
The Waste Framework Directive has also introduced life-cycle analysis into waste policies, which provides a broader view of economic and environmental aspects.

The measures used within each country to affect changes in practices varies. These include landfill bans, landfill and incineration taxes, mandatory source separation of organic waste, pay as you throw and extended producer responsibility. More recently, the emphasis on sustainability and the circular economy has increased within the EU.

These factors, coupled with the existing competing pressures on land use, have resulted in greater diversion of materials from disposal to various forms of processing/treatment. As shown in Figure x, there is significantly less landfilling of materials in many of the EU member countries than is found in North America.

In regards to biosolids management, the Jurisdictional Review (Appendix Q) provides an overview of treatment and disposal and beneficial use programs across the EU. The processing and use of biosolids varies considerably across the EU, with the dominant processing/utilization methods including application to agricultural land; composting and other land applications; landfilling; and incineration (Evan 2012, Fonts et al. 2012). Countries within the EU are required to enact Regulations and Directives into their own national legislations. While Regulations must be transposed verbatim, Directives are minimum requirements. Relevant directives include the Sludge (use in agriculture) Directive (CEC, 1986), the Landfill Directive (CEC, 1999), and the Waste Incineration Directive (CEC, 2000). EU member states have chosen a range of measures and limits in the implementation of the EU Sludge (use in agriculture) Directive (Evan 2012). Within the EU, biogas and phosphate recovery appear to be areas of future interest (Evan 2012).

Figure 3 Waste Management in the European Union



Regarding biosolids, the ultimate end use depends on the specific circumstances of each country. Countries with large populations and limited agricultural land utilize disposal/processing options other than land application. Land application is common in England, France and Spain, while in Austria and Germany, the trend is towards incineration.

4.3 Japan

Japan has a unique set of circumstances as well. Land is at a premium, so significant emphasis is placed on minimizing use of valuable land for waste disposal. Energy is also a prime driver in Japan. Japan is dependent on the overseas markets for most of its energy and resources and is therefore very focused on maximizing the efficient consumption of these resources. It has a goal of 100% energy independence, including at its wastewater treatment facilities and therefore has focused efforts on recovering energy from biosolids. Utilization of sewage sludge in Japan includes use in i) direct application to agricultural lands, ii) as a component of compost, iii) as a raw materials in cement and iv) incineration and anaerobic digestion to recover the energy content. Approximately 70% of the sludge is incinerated.

The Japanese, through a combination of public policy, private market conditions, and geographic necessity, practice integrated MSW management. The Japanese rely heavily on incineration/waste-to-energy driven by the country's severe shortage of landfill space, the desire to sanitize and sterilize the waste to minimize environmental impacts of the residuals and the drive to energy and materials sustainability.

In 2000, Japan enacted the Fundamental Law for Establishing a Sound Material-Cycle Society (Law No. 110/2000) which focused Japan's efforts toward a Sound Material-Cycle Society where resources are conserved and the environmental load is reduced to the greatest extent possible. There are a number of regulatory and legislative initiatives that directly relate to this effort. These include:

1. Law for the Promotion of Sorted Collection and Recycling Containers and Packaging which addresses collection of containers and packaging by municipalities recycling of containers and packaging by producers and users
2. Law for the Recycling of Specified Kinds of Home Appliances which addresses retailers receiving used appliances from consumers, recycling by manufacturers, etc. and consumers shouldering cost for recycling
3. Construction Material Recycling Law which requires construction contractors are responsible for the sorting and dismantling and are responsible for the recycling of construction waste
4. Law for promotion of Recycling and Related Activities for treatment of Cyclical Food Resources which requires recycling of food waste by food manufacturer, processors and sellers
5. Law for the Recycling of End-of-Life Vehicles which requires the recycling of end-of-life vehicles and payment of recycling fee at the time of purchase of new vehicle
6. The Basic Law for Environmental Pollution Control which provides basic policies for environmental conservation
7. The Fundamental Plan for Establishing a Sound Material-Cycle Society Amended in 2013, which seeks to ensure societal control of consumption of natural resources and to reduce environmental load The Basic Act for Establishing a Sound Material-Cycle Society

As Japan's landmass is limited and finding landfill disposal sites is difficult, they have developed an integrated system to collect and transport waste, process it through intermediary treatment by incineration and other methods, and then dispose of the treated residuals in sanitary landfills. As a result, Japan is host to over 1,200 incineration facilities which use several methods including stoker furnaces, fluidized bed furnaces, and gasification.

5 IRM Facility Case Studies

Based on review of the various IRM documents and information as discussed in Section 3, as well as additional investigations undertaken by HDR, a number of IRM facility case studies have been documented below to inform the development of IRM procurement criteria. The context for development of these facilities from a regulatory and market place standpoint as discussed in Section 4 above, is important to consider when reviewing these case studies and findings in regards to the implications for the CRD IRM project. The definition of biosolids, Class A biosolids

and sewage sludge in these jurisdictions varies, and may be different from how these terms are applied in BC and in the CRD.

5.1 ZAB Nuthe-Spree (Redwave reference facility)

The Zweckerverband Waste Treatment Nuthe-Spree or ZAB association was formed by two regional waste authorities in Germany, the SBAZV and the LOS in 2002. Both authorities are responsible for the management of residual waste disposal within their respective jurisdictions. The ZAB planned the facility and awarded a contract to construct an MBT facility to manage waste generated in their area. Construction began in 2004. The original general contractor became insolvent, and new contracts were signed in 2005 with Herhof GmbH for technology provision and Waste Tec GmbH for development of the facility. The facility began operations in the summer of 2007. The ZAB association runs the MBT facility and manages its affairs. Committees of the association that govern the facility including annual funding requests (facility tariffs) include an Association Assembly and a Board of Directors, with representatives from both regional waste authorities.

The primary technology applied at the ZAB Nuthe-Spree facility is a Mechanical Biological Treatment (MBT) process for the MSW and bulky waste stream. MBT is a broad term that refers to multiple sub-processes including pre-treatment, biodrying, recyclables recovery, recovery of solid recovered fuel (SRF). The equipment for each sub-process is based on a series of conventional equipment installations similar to those used in operating MBT plants elsewhere in the world. The specific technology applied at the ZAB facility is the Herhof Stabilat technology. First the waste is dried through a biological process and then the dry waste is mechanically processed. The combustible components are separated from metals and inert components (stones, sand, glass, and ceramics) in several stages. The secondary fuel produced in this way (SBS or RDF) is utilized energetically in brown coal power plants and by the cement industry.

The facility was constructed over a two and a half year period from June 2004 to November 2006 and was commissioned over a four month period. Redwave reported capital costs of 45 million euros as of 2004/2006.

The rationale for application of IRM in this jurisdiction is similar to that in other jurisdictions in the European Union (EU) being lack of available landfill disposal capacity and the EU and German directives and regulations that favour the processing of waste rather than direct disposal in landfills, and the regulatory environment and energy market that favours use of SRF and other renewable or partly renewable fuels.

Key facility information:

a. Feedstock and Flow Control
   This facility is owned and operated by the ZAB. The two regional waste authorities that formed ZAB are responsible for management of MSW and bulky waste primarily from residential sources, and are able to direct these solid waste streams to the facility. The plant has capacity for135, 000 tonnes per year of MSW and 15,000 tonnes per year of bulky waste.

b. Management of Biosolids
This facility does not manage biosolids.

c. Site Size and Characteristics
The facility occupies a site of approximately 3 hectares, and is located in an industrial area at the outskirts of a local community. The site was identified and secured by the ZAB.

d. Technology Risk
The MBT technology applied at the ZAB Nuthe-Spree facility is relatively conventional, and has been applied in many facilities across the EU. There was minimal technology risk associated with the facility, supporting the application of a DB contract as noted below. Key risks associated with the functionality of the facility were addressed through the commissioning phase of the project.

e. Products and Markets
Products recovered from the facility include recyclable materials and RDF. RDF is marketed as an alternative substitute fuel to be used in solid fuel electricity generating facilities and by cement kilns. It is important to note that the use of alternative fuels by the cement sector in Germany and many EU nations is a well-established practice with a defined market.

f. Cost and Financing
As noted above, the reported capital cost for the facility was of 45 million euros as of 2004/2006. The constructor was responsible for temporary financing during the construction phase of the facility, but ultimately the overall costs were addressed and financed by the ZAB authority. Information regarding the exact nature of the financing relationships is not available.

g. Procurement/Contract Structure
Herhof and WasteTec were retained to Design, Build and Commission the facility. They were responsible for project development, the permit application, tendering and awarding of trades in coordination with their municipal client, project management and supervision during construction and commissioning of the facility. This is typical for facility development based on conventional technologies with minimal technology risk.

h. Residuals Management
It is unclear exactly how inert non-recyclable (or mineral fraction) residue generated by the ZAB facility is managed. Generally this material can be directed for use in aggregate applications, or alternatively it would meet EU and German requirements for landfill disposal.

Applicability to the CRD / Context for IRM Procurement Criteria:

1) The Regional waste authorities responsible for the ZAB and the MBT facility have the responsibility to manage the residual waste in their jurisdiction and thus have flow control and certainty regarding the waste streams that are directed to the facility.
2) The application of EU waste directives and German legislation to comply with these directives, facilitated the development of the facility and of the markets for the RDF recovered through the MBT process. The existence of a robust market for this type of recovered fuel is essential for diversion of this material from landfill disposal.
3) The technology applied at this facility is a proven technology, applied at many facilities across the EU. As a result it was possible and reasonable for the ZAB to apply a straightforward Design/Build procurement and contract structure for the development of the facility.

5.2 ZAK Kaiserslautern Facility (Anaergia Reference Facility)

The ZAK is a 'joint communal institution' of the City of Kaiserslautern and the Kaiserslautern regional waste authority in Germany. ZAK is responsible for managing mixed solid waste generated by area residents and contracts for the management of waste from a nearby U.S. military base (60,000 servicemen). The ZAK is one component of an overall system managed by ASK a certified municipal waste management entity.

The MBT facility at ZAK uses the Organic Extrusion (OREX) Press to extract organics from mixed municipal solid waste. The installation at Kaiserslautern is operating on mixed solid waste which has a high level of contamination. The combined OREX and Organic Polishing (OPS) technologies provide a pre-treatment system is robust and flexible to handle virtually any level of contamination. The MBT facility was commissioned in 2006.

Municipal waste is unloaded in the reception area and directly fed into the hopper of the OREX. The OREX separates the input waste into two fractions: a dry and a wet fraction. The dry fraction, which has 75-80% solids concentration and a calorific value of 11,000-13,000 kJ/kg is sent directly to energy from waste plants. The wet fraction with 35-40% solids concentration is conveyed to a dry anaerobic digestion plant. The first step for the AD process is an organic polishing system where incoming material is blended with AD digestate into a slurry, which is passed through a cyclone to remove light (floating) contaminants and heavy (sinking) contaminants. The 'clean' slurry enters the digester.

The digested matter is extracted from the digester (DRANCO digester), is pressed to remove excess water, and then sent to an aerobic stabilization process. During aerobic stabilization, the matter is left to rest in static biocells with air infiltration for 3-4 weeks and then matured under a canopy for 60 days. The stabilized matter obtained is used as covering soil in landfill sites.

The facility is part of a larger existing integrated waste processing site, which includes a recycling facility, a composting facility for source separated organics, a hazardous waste management centre, and a new landfill disposal facility for inert residues developed on an old landfill site.

The rationale for application of IRM in this jurisdiction is similar to that in other jurisdictions in the European Union (EU) being lack of available landfill disposal capacity and the EU and German directives and regulations that favour the processing of waste rather than direct

disposal in landfills, and the regulatory environment and energy market that favours production of biogas as a renewable fuel.

Key facility information:

a. Feedstock and Flow Control
   The ASK is responsible for the control and management of municipal waste generated within its regional area including residential and commercial materials. The ASK contracts for additional waste streams, including the waste generated by the US military base. The services provided by ASK are recovered through a municipal refuse disposal fee collected on an annual basis and depending on the size of the non-recyclable refuse container used for collection. The overall capacity for the OREX system has been designed for 100,000 tonnes per year.

b. Management of Biosolids
   The ZAK is not responsible for the management of Biosolids.

c. Site Size and Characteristics
   The full ZAK facility encompasses 88 hectares hosting a number of IRM related activities. The facility is in a valley surrounded by forest plantations and is both visually and physically separated from residential areas.

d. Technology Risk
   Generally, the technologies employed at the ZAK facility have been proven through application in a number of locations. The OREX technology itself is a newer technology, and was chosen by ZAK to replace the previous pre-processing facility which had been used to extract the organic fraction from MSW to direct that stream to the existing AD digester. The contract with Anaergia for the OREX facility requires that it meets a guaranteed feed rate of 35 tonnes per hour.

e. Products and Markets
   The products recovered from the OREX pre-processing system and the anaerobic digester include: RDF with energy content of between 11,000 to 13,000 kj/kg; Biogas between 70 and 80 cfm/tonne used to generate electricity; Stabilized digestate material used for landfill cover; and ferrous and non-ferrous metals.

f. Cost and Financing
   The facility was financed by the ZAK. The estimated cost of installation of the new front end processing system for the MBT as of 2006 was 3.6 million euros for installation of OREX press ($5.4 million CAD). 6 million euros (9 million CAD) for separate front end recycling processing system. 20 million euro ($30 million CAD) for overall system overhaul.

g. Procurement/Contract Structure
   Anaergia was contracted for the Design, Build and Maintenance of the new front end processing system. Currently a full service maintenance contract is in effect. The guaranteed feed rate for the OREX press is 35 tonnes per hour.

h. Residuals Management

The ZAK is responsible for the disposal of inert residues, and recently entered into a contract with a private sector partner REMEX to develop an inert landfill disposal facility for 'slightly polluted' mineral waste.

Applicability to the CRD / Context for IRM Procurement Criteria

1) The Regional waste authorities (ASK) responsible for the ZAK and the MBT facility have the responsibility to manage the waste streams in their jurisdiction including commercial waste and thus have flow control and certainty regarding the waste streams that are directed to the facility.
2) The application of EU waste directives and German legislation to comply with these directives, facilitated the development of the facility and of the markets for the RDF recovered through the MBT process. The existence of a robust market for this type of recovered fuel from landfill disposal.
3) The majority of the technologies applied at this facility are proven technologies, applied at many facilities across the EU. As a result, the majority of the technologies were procured through DB contracts. For the relatively newer OREX technology, the ZAK addressed potential risk through the longer term maintenance contract and the guaranteed OREX feed rate.

5.3 AVR Rozenburg Facility, Rotterdam

The AVR Rotterdam facility is a private sector-owned integrated waste management facility which includes a number of waste to energy components as well as an ash processing and metals recovery facility. The processing capacity offered by AVR is approximately 870,000 tonnes per year of household waste and 350,000 tonnes per year of commercial waste, 20% of the overall processing capacity for residual waste in the Netherlands.

AVR operates four transfer stations in the Netherlands, accepting domestic and commercial waste streams that it transfers to its Rotterdam facility. The AVR Rotterdam facility accepts and processes residual waste, paper pulp, wood residue and industrial waste water.

The AVR facility accepts and processes 1.5 million tonnes of residual domestic waste, originating from households in the Netherlands and England. The facility also accepts and processes a range of commercial waste materials. These materials are processed through conventional grate furnace incinerators, recovering both electricity and heat for district heating.

The AVR facility accepts and processes 150,000 tpy of non-reusable waste wood (B-wood) including treated wood from demolition can cannot be directed to wood-processing industries. This material is directed to a biomass power plant, generating renewable power. AVR will be commissioning a system for direct delivery of district heating and process steam from this facility in early 2018.

The industrial waste water that it accepts for processing is unsuitable for conventional wastewater treatment, and is directed to four Vortex furnaces that are relatively unique in the EU. Collectively the Vortex furnaces are capable of processing 325,000 tonnes of industrial

waste water per year. Materials are recovered from the solid residues from the furnaces (such as molybdenum) and heat is recovered for district heating for residential and commercial development in the area.

Products and services offered by AVR include:

1. District heating for the equivalent of 160,000 homes and commercial operations. They are currently working with local utilities to provide district heating for the greenhouse farming sector.
2. Use of the bottom ash from the WTE facility to create construction products such as paving stones, clinker bricks, kerbstones and products for road construction. This material is processed through an agreement with a secondary processor that has secured product markets including Dutch Public Works and Water Management.
3. Pulp residue from paper recycling facilities is first sent to separate combustion and then the remaining minerals are processed into a product called Topcrete which is a calciferous binding agent that can be used in building materials.
4. A pilot project is under development to use CO2 from the flue gases from the facility as a carbon source for greenhouse facilities.
5. Processing of waste wood and industrial waste water as discussed above.
6. A composting facility that processes 90,000 tonnes per year of organic material.

AVR is part of a partnership with three other companies and the Port of Rotterdam for the development of an Enerkem facility to process synthesis gas from residual waste to produce methanol. This partnership was announced in the fall of 2016, the current status of development of a facility is unclear.

The rationale for application of IRM by AVR is similar to that in other jurisdictions in the European Union (EU) being lack of available landfill disposal capacity and the EU and Dutch directives and regulations that favour the processing of waste rather than direct disposal in landfills, and the regulatory and energy markets that favours energy recovery (heat, power) from non-fossil fuel sources.

Key facility information:

a. Feedstock and Flow Control
   AVR competes in the open market for waste materials. Currently the facility accepts waste materials from a variety of sources including solid waste from the United Kingdom and the Netherlands.

b. Management of Biosolids
   Conventional biosolids are not managed at the AVR facility. However, various industrial waste water streams are managed.

c. Site Size and Characteristics

The AVR facility is located within an industrial area of the City of Rotterdam. Information could not be found indicating the size of the overall site.

d. Technology Risk
The thermal technologies used at the AVR site are more conventional Waste to Energy technologies, with advanced emissions control and energy recovery systems. Some of the ancillary technologies and approaches to derive products and energy are more advanced than others in the EU and North America. The risk associated with technology adaption has been borne by the company, which has sought expertise and outside partners/advisors as necessary to support innovation.

e. Products and Markets
The facility produces a range of solid material products from processing residues as discussed above. Energy products include electricity generation equal to the requirements of around 200,000 homes as well as heat recovery for district heating. No public information on the energy market for AVR power could be found.

f. Cost and Financing
No public information on the capital investment for the AVR facility could be sourced. As a private entity, this information would be expected to remain confidential. AVR appears to have been largely if not solely responsible for financing all development, no information was found to indicate any investment from government entities. AVR generates its income from three sources: gate fees for receipt of waste materials, sale of energy and the sale of recovered materials.

g. Procurement/Contract Structure
AVR sourced all technologies/equipment and services for construction. This is a fully DBFOM facility. The majority of gate fees have been secured through long term contracts from municipalities and commercial customers. Sale of electricity and heat are also sold under long term contracts with utilities, local municipal district heating networks and industrial steam users. AVR Rotterdam has been able to import waste from other countries and states in the EU as it as a qualified energy efficient waste treatment plan holding R1 status.

h. Residuals Management
AVR is responsible for the management of all residues. The prohibitive price for landfill disposal in the Netherlands including landfill disposal taxes, incentivizes the market for alternative products derived from solid residues remaining after thermal processing.

<u>Applicability to the CRD / Context for IRM Procurement Criteria</u>

1) AVR has secured long term contracts for waste supply, which facilitates their ability to invest in and grow their facilities including advanced schemes such as CO2 recovery.
2) Market conditions such as the availability of local district heating schemes for energy products in the EU support the sale of recovered heat increasing the viability of thermal technologies.

3) AVR has mitigated technology risk by using conventional thermal technologies to form the central component of their facility, and then choosing to work with partners/advisors for the development of new products and markets.

5.4 Altriom MBT Facility (3Wayste technology)

The Altriom MBT facility in Polignac France uses the 3Wayste technology developed by the Vacher group, and was developed by a private corporation under the terms of a long term (15-year) contract with four communities in the Polignac region. These communities participated in a 7 year planning process to determine a solution to reduce waste to disposal. The resulting procurement process resulted in four bids, with a new company - Altriom winning the process. Driving factors behind the municipal decision to contract for an MBT facility were: current economics for disposal, markets for energy recovery, soil quality in area and potential market/need for soil amendment.

This MBT facility was developed to process 'grey waste' being residual mixed garbage to recover recyclables, compost and RDF. The area has a yellow bag program for recycling, which is processed at a separate facility within the same site and the Altriom MBT facility. The facility was designed to process 120,000 tpy of MSW, however in the first few years of operation the facility received and processed only 40,000 tpy. The contract was designed to ramp-up waste quantities sent to the facility as contracts expire with the local host jurisdictions. Construction of the facility took 14 months. It has been in operation since June 2014.

The MBT process used by the facility includes: material pre-sort to remove large items; opening of bags through a proprietary bag breaker, separation of the materials into a large and small fraction. The large fraction is sent through a series of optical sorters to recover recyclables. The small fraction sent to composting is largely organic (80%). Optical sorting is used to removal small metal items from the small fraction sent to compost. In-vessel composting is used to generate a compost that meets EU standards.

The rationale for application of IRM in this jurisdiction is similar to that in other jurisdictions in the European Union (EU) being lack of available landfill disposal capacity and the EU and French directives and regulations that favour the processing of waste rather than direct disposal in landfills.

Key facility information:

a. Feedstock and Flow Control
   The facility was designed to process mixed solid waste. This material is provided under long term (15 year) agreement with the communities responsible for the collection of the domestic waste stream in this region.

b. Management of Biosolids
   The 3WAYSTE facility does not manage biosolids.

c. Site Size and Characteristics

Under the DBOOM procurement process, the participating municipalities made a site available within the same site as is currently used for processing recyclables. The site in is the order of 3 to 4 hectares in size. This site is on the outskirts of the local community.

d. Technology Risk
The majority of the component technologies used at the facility are conventional MBT technologies, however the overall design and some key pieces of equipment such as the initial bag-breaker are unique to this facility. Altriom has borne the technology risk and is responsible for meeting performance guarantees under the terms of its agreements.

e. Products and Markets
The facility recovers HDPE, PET, PP, ferrous and non-ferrous metals, some paper products, compost and RDF. The recyclables generally have a downgraded value compared to the source separated recyclables. Compost recovered from processing of the organic fraction is sold for $15 CAD per tonne. Value for recyclables: 120 euro ($179 CAD)/tonne ferrous; 1,400 euro ($2,090 CAD) /tonne non-ferrous; 314 euro ($468 CAD)/tonne foil; 50 to 70 euro ($75 to $105 CAD) /tonne paper; 20 euro ($30 CAD)/tonne for RDF.

f. Cost and Financing
The estimated capital cost for the facility was 25 million Euro ($37 million CAD). Altriom was responsible for financing of the facility. Financing was secured on the basis of the waste supply contract as noted below.

g. Procurement/Contract Structure
The participating municipalities undertook procurement under a DBOOM contract structure, under which the facility was fully financed and completed by Altriom. The municipalities entered into a 15 year waste supply agreement. Altriom guaranteed under the terms of the contract, 80% recovery of recyclable materials from the mixed solid waste stream (including recovery of RDF).

h. Residuals Management
Altriom is responsible for residue disposal. Approximately 10 to 20% of the incoming waste stream cannot be recovered and is sent to disposal.

<u>Applicability to the CRD / Context for IRM Procurement Criteria</u>

1) Altriom was able to finance the development of the facility on the basis of the long term contract for waste supply and as the facility was designed using largely conventional technologies resulting in less technology risk. Reasonable local markets were also available for the sale of recovered recyclables and RDF.
2) The local/district municipalities transferred risk to Altriom through the DBOOM contract structure including the recovery rate guarantees.

5.5 SYDEC Mont de Marsan Biosolids Co-composting Facility

The Mont de Marsan biosolids composting facility is owned and operated by the SYDEC municipal waste water utility. SYDEC is a public body that includes 331 municipalities of Landes and the County Council and Regional Council of Aquitaine in France.

In April 2001, Syndicat Mixte Departemental d'Equipement des Communes des Landes (SYDEC), the regional utilities authority responsible for providing services to manage wastewater treatment plant biosolids and department green waste, conducted a study to determine the best alternative for managing biosolids and utilizing the end product. The study showed that composting biosolids with green waste and wood waste would create a product to greatly enhance the soil quality. In June 2003, SYDEC selected Veolia Water Systems/OTV-SUD Ouest, a division of Veolia Environnement, to design a composting plant that would use the USFilter IPS Composting System. Five months later, the project received environmental approval and administrative authorization to proceed. The technology provider was BPD industries.

The Mont de Marsan biosolids composting facility is comprised of ten 45-meter (148-foot) long bays, the facility is designed to handle 44 tonnes/ day (48.5 tons) of dewatered biosolids at 15 percent solids concentration and 50 tonnes/day (55 tons) of green waste. Once a day, the automated composting machine travels through each bay to mix and move the material about 4 meters (13 feet). At this rate, the compost is retained in the bays for 16 to 18 days before being transferred to the curing area where it matures for another 28 days. Although French regulations focus on specific standards for the end product and not on the actual process, the Mont de Marsan plant is required to achieve a minimum of 60°C for seven days to ensure that pathogen requirements for the final product are met. The bays are also equipped with an automated aeration system and a moisture addition system, to aid the composting process.

Odour control is imperative to the successful operation of the Mont de Marsan plant. Two chemical scrubbers and two large biofilters treat the facility's process air. Pine trees surrounding the plant's boundary provide an additional buffer between the site and its neighbours.

Mont de Marsan is centrally located to receive biosolids from the surrounding communities' wastewater treatment facilities. Initially, approximately 30 wastewater treatment facilities will participate in the composting project. Trucks will transport dewatered biosolids from as far away as 100 km (62 mi). In an effort to accommodate wastewater facilities great and small, a mobile dewatering truck will serve five small plants that wish to participate in the project.

The rationale for application of IRM in this jurisdiction through the co-composting of biosolids and yard trimmings is based on the EU and French directives and regulations that favour beneficial use of biosolids.

Key facility information:

a. Feedstock and Flow Control
   The facility processes in the order of 18,000 wet tonnes per year of biosolids, anaerobically digested to 15 to 20% DS, along with 20,000 wet tonnes per year of yard trimmings. Both material streams are municipally controlled.

b. Management of Biosolids
The primary purpose of this facility is to derive a beneficial use compost product from the processing of municipal biosolids.

c. Site Size and Characteristics
The facility site is 8 acres, and is located in an agricultural area, within a mile of the closest town.

d. Technology Risk
This facility was developed using largely conventional in-vessel composting technology. Technology risk was addressed through retaining a reputable designer, experienced in the EU market.

e. Products and Markets
Compost from the facility is marketed for agricultural applications. Initially, market assistance was provided through the French government and SYDEC paid for hauling costs for the first year.

f. Cost and Financing
Financing for the 8.05 million facility came from several sources. Agencies included Landes Counseil General (18%), European Union (20%), Agence de l'Eau Adour Garonne (20%), Agence de l'Environnement et de la Maitrise d l'Energie or ADEME (12%) and SYDEC (30%).

g. Procurement/Contract Structure
This facility was procured and developed under a Design/Build contract structure, and is owned and operated by SYDEC.

h. Residuals Management
SYDEC is responsible for the management of any residuals from the facility. However minimal residuals are generated under normal operations.

Applicability to the CRD / Context for IRM Procurement Criteria

1) SYDEC through the municipalities that are part of this utility, has control of the biosolids and yard trimmings that form its feedstock.
2) Technology risk was mitigated through technology selection and the selection of a qualified contractor with a lengthy track record of successful biosolids management.
3) Marketing risk for the recovered compost product was mitigated in the initial years through incentives such as free hauling and assistance provided by the French government.

5.6 UTE TEM, Mataro (Veolia)

The UTE TEM facility in Mataro Spain, is an integrated waste management facility which includes a 190,000 tpy MBT plant, a 35,000 tpy AD facility, a 41,000 tpy composting facility and a 160,000 tpy waste to energy plant.

The facility is owned by the Consorci de Residus del Maresme. The facility treats household waste from the 28 member municipal consortium as well as industrial waste. The facility serves the needs of 470,000 people within the Maresme region of Spain. The new incineration process at the Mataro facility was designed and built by a consortium including Veolia and Spanish partners. The entire treatment site including the WTE plant, composting and AD facility is operated by Veolia.

Construction of the facility began in 2009. The facility was commissioned in 2011. Veolia's operating contract runs into 2022.

Mixed solid waste received at the facility is directed to the MBT plant. Following mechanical sorting, recyclables are recovered and the organic fraction of the waste stream is directed to AD or composting. RDF from the MBT is directed to the WTE plant along with other industrial waste. The facility also separately receives and processes bulky waste and source separated recyclables.

The rationale for application of IRM in this jurisdiction is similar to that in other jurisdictions in the European Union (EU) being lack of available landfill disposal capacity and the EU and Spanish directives and regulations that favour the processing of waste rather than direct disposal in landfills, and the regulatory environment and energy market that favours use of RDF and other renewable or partly renewable fuels.

Key facility information:

a. Feedstock and Flow Control
   The municipal consortium that owns the facility, has flow control over the household residential waste stream that supplies the majority of the feedstock for the facility. The supplementary feedstock used for blending with the biosolids is primarily hog fuel, purchased from a local sawmill at $1.75/cubic yard as of 2010.

b. Management of Biosolids
   Biosolids are not managed at this facility.

c. Site Size and Characteristics
   The facility occupies a relatively small site in an industrial area, with an unusual configuration. The total site size is approximately 3 hectares.

d. Technology Risk
   The technologies used at the facility are relatively conventional. The Compost process employs a wide-bed in-vessel aerobic composting process, while the AD uses the BTA technology which is used at many facilities across the EU and here in North America in the City of Toronto. The WTE facility is a conventional combustion facility with two processing lines using Martin grates and a steam boiler.

e. Products and Markets
   The MBT facility recovers recyclable materials and compost as well as electricity from the AD facility and 12 MW of power from the WTE plant. Overall, 24% of the received material is

recovered for market. Information on the market value of these products has not been publicly available.

f. Cost and Financing
The municipal consortium was responsible for the capital financing for the facility. Information could not be sourced regarding the total capital cost.

g. Procurement/Contract Structure
The facility was procured through a DBOM procurement and contract structure. Following installation, the operating contract has been held with Veolia, while various maintenance contracts with specific technology providers are also in effect.

h. Residuals Management
Overall the facility generates 37,000 tpy of residue that requires landfill disposal. Disposal is the responsibility of the municipal consortium.

Applicability to the CRD / Context for IRM Procurement Criteria

1) The municipal consortium which owns the UTE TEM facility have the responsibility to manage the waste streams in their jurisdiction and thus have flow control and certainty regarding the waste streams that are directed to the facility.
2) The majority of the technologies applied at this facility are proven technologies, applied at many facilities across the EU. However, the complexity of the overall installation resulted in the selection of a DBOM procurement model and long term operating and maintenance contracts to facilitate and minimize operational risk.

5.7 Lahti Energia, Kylmijarvi II Power Plant, Finland

Lahti Energia is an energy and energy services company owned by the City of Lahti in Finland. Lahti Energia has used gasified biofuel and SRF as a complementary fuel in their coal-fired generating facility since 1998.

The Lahti Energia Kymijarvi II Power Plant uses solid recovered fuel (SRF) in a gasification process with capacity to process 250,000 tonnes of SRF to produce 160 MW of power. The facility uses 'energy waste' collected by the municipal waste authorities in the Paijat-Hame region as its primary feedstock. Energy waste consists of unclean plastic, paper, cardboard and wood. Current waste fuel suppliers collect MSW from domestic and commercial sources. Energy waste from domestic sources is collected separately and shredded, and then is hauled to the facility and comprises 20% of the fuel feed. Commercial waste is processed to recover solid recovered fuel that meets the facilities fuel specifications. Lahti energy purchases this material from these local fuel suppliers.

Construction of the project began in November 2009, with commissioning in 2012. The facility was handed to Lahti Energy as of June 2012.

The Kymijarvi II facility is a demonstration plant. Fuel is received and stored in silos. Fuel is feed from the silos to two separate gasifiers. The gasifiers use an atmospheric pressure circulating fluidized bed (CFB) gasification technology. The gas is cooled and then cleaned, prior to being

directed to a steam boiler where it is combusted to generate steam which is then directed to a steam turbine. The facility produces 50 MW of electricity and 90MW of district heat which is conducted to a district heating network to customers in the Lahti and Hollola region. The facility achieved its first 25,000 hours of operation as of October 2017.

Waste incineration plants that only utilize waste, are exempt from the carbon emissions trading system which encouraged Lahti Energy to focus on developing gasification technology.

The rationale for application of IRM in this jurisdiction is similar to that in other jurisdictions in the European Union (EU) being lack of available landfill disposal capacity and the EU and Finnish directives and regulations that favour the processing of waste rather than direct disposal in landfills, and the regulatory environment and energy market that favours use of renewable fuels.

Key facility information:

a. Feedstock and Flow Control
   Lahti Energia purchases energy waste and solid recovered fuel. No information was found regarding the market value of this material.

b. Management of Biosolids
   The Kymijarvi II facility does not process biosolids.

c. Site Size and Characteristics
   The Kymijarvi II facility is set in a forested area, near the City of Lahti. While exact information regarding the site size was not available, the site appears to be in the order of a few hectares. The facility was sited and the site is owned by Lahti Energia which is the municipally owned energy utility.

d. Technology Risk
   The Kymijarvi II facility is the largest, successfully operating gasification facility in the EU. While the technology is advanced, Lahti Energia had developed operating experience over the prior use of gasification and SRF to supplement fuels at its coal fired generating facility, thus minimizing some of the technology risk borne by the company.

e. Products and Markets
   The primary products from the facility are electricity which is sold to the national grid, and heat which is sold through Lahti Energia's local district heating systems.

f. Cost and Financing
   The original budget for the facility as 157 million Euros, rising to 160.5 million during the project. Lahti Energia primarily financed this facility, with some funding support of 15 million Euros from the Finnish state and 7 million Euros from the EU.

g. Procurement/Contract Structure
   Lahti Energia procured the facility from Valmet through a DB contract. Valmet has agreed on a long-term agreement for further marketing and commercialization of the gasification

technology. Lahti Energia had the operating experience from its existing facilities to operate the facility following commissioning and turn-over of the facility.

h. Residuals Management
Lahti Energia is responsible for the management of solid residues from the gasification process.

Applicability to the CRD / Context for IRM Procurement Criteria

1) Lahti Energia is owned by the City of Lahti, which also has control over the domestic waste stream in the Region and thus has some control over the sourcing of fuel for the facility.
2) As Lahti Energia is also a local electricity and district heating supplier, they had an existing marketing approach for recovered energy.
3) While the application of gasification to SRF is an advanced technology and not widely applied in the EU, Lahti Energia was able to mitigate technology risk through their contractual arrangement with Valmet and through their years of experience in applying similar approaches to provide some fuel for their existing coal-fired power plant.

5.8 Kelowna/Vernon Compost Facility

The Cities of Kelowna and Vernon co-own an aerobic composting facility processing municipal biosolids. The regional composting facility is located on the outskirts of Vernon and opened in 2006. It converts 100% of the received biosolids to a Class A product under the BC OMRR and meets the requirements of the federal Fertilizers Act. Major contributors of biosolids to the facility include Kelowna, Vernon and Westbank.

The technology used at the facility is an advanced aerated static pile composting process which converts biosolids to Class A compost in approximately 80 days. The composting technology was supplied by Engineering Compost Systems. Biosolids are mixed with wood waste comprised of wood chips or hog fuel and wood ash. Once composted and cured, the compost is screened to remove large woody residues and is tested in compliance with provincial and federal guidelines. Large woody residues are returned to the composting system as inoculant. The facility has a capacity to process 36,400 tonnes annually, and typically produces approximately 28,500 tonnes of compost per year. Stormwater and leachate from the facility is treated in a wetland and detention area before being discharged to the Vernon effluent force main.

The facility has recently undergone an upgrade and expansion, including additional odour control measures.

Key facility information:

a. Feedstock and Flow Control
The Cities of Vernon and Kelowna control the municipal biosolids stream. Supplemental feedstock (wood waste, ash) is purchased for the operation.

b. Management of Biosolids
The primary focus of this facility is the generation of a Class A product from the processing of biosolids.

c. Site Size and Characteristics

The current facility has a 9 hectare footprint, to accommodate expansion over the first 10 years of operation. A total 33 hectare area is available to accommodate further expansion. The site is located in an agricultural area. The site was provided by the City of Vernon. The site selection and acquisition process was lengthy, involving in-depth review, consultation, stakeholder engagement and negotiations.

d. Technology Risk

The advanced aerated static pile process used at this facility is relatively conventional presenting minimal technology risk.

e. Products and Markets

The compost product generated at the facility is marketed as 'Ogogrow' for various applications including commercial landscaping, residential gardening, nurseries and orchards and as final cover for landfill closure. The cities decided to work with compost distributors and landscape supply centres rather than entering into a competitive market position. The sale of compost has covered approximately 23% of the facility operating costs.

f. Cost and Financing

The facility was developed based on the terms of a MOU between the Cities of Kelowna and Vernon, signed in the early stages of the project. Both municipalities contributed to the capital cost of the facility based on their projected use, 2/3 Kelowna and 1/3 Vernon. The total capital cost in 2006 was 7.4 million. It is estimated that the economies of scale of the project resulted in significant savings for each partner. To cover annual operating costs, a tip fee is collected per tonne of biosolids processed from each customer group using the facility. A portion of the operating costs is covered from product revenues.

g. Procurement/Contract Structure

The facility is owned by the municipal partnership in proportion with the financing arrangement. Consultants were retained to advise through the facility design, tendering and construction period. A DB procurement and contract structure was used. The facility is operated by the municipalities under the terms of their agreement.

h. Residuals Management

The Cities of Vernon and Kelowna are responsible for the management of any non-compostable residue generated at the facility.

<u>Applicability to the CRD / Context for IRM Procurement Criteria</u>

1) The municipal consortium that owns the facility have the responsibility to manage the biosolids in their respective jurisdictions and thus have flow control and certainty regarding the primary waste stream directed to the facility. Supplementary materials are purchased on the open market.
2) The technologies applied at this facility are proven technologies, facilitating the DB procurement and contractual arrangement chosen by the Cities.

3) Siting of the facility was a complex and time consuming process. By selecting a site with room for expansion, the Cities mitigated risk associated with future biosolids management requirements.

5.9 Durham York Energy Centre

The Durham York Energy Centre is a 140,000 tonne per year mass-burn energy from waste facility procured by the Regions of Durham and York under a Design Build Operate procurement. The Regions deliver the residential municipal solid waste remaining after source reduction, recycling and composting programs in place throughout the Regions.

Planning for this project, the first new energy from waste facility in Canada in twenty years, began in the 90's. The Regional Council determined that they did not want to rely on out- of-Region disposal options and established a Long Term Strategy Plan: 2000 to 2020 with the main goals of diverting at least 50% of the residential waste from disposal, to implement an integrated residential waste management system for collection, processing and disposal of blue box recyclables, food and yard waste compostables, special wastes, and to consider energy from waste for residential garbage residential.

Over the past two decades, Durham Region has implemented several key infrastructure assets including a materials recovery facility opened in December , 2007, an organics processing facility opened in the fall of 2006 and the remediation of old landfill sites. Most recently, the Region is investigating implementation of an AD facility to recover energy and expand the capacity of local organics management options.

The factors contributing to the implementation of IRM in Durham Region include provincial regulations and policy that favour the recovery of materials, lack of landfill disposal capacity and an environment in southern Ontario that does not favour new landfill capacity development, and the cost of disposal outside the Region.

Key Facts regarding the Durham York Energy Center include:

a. Feedstock and Flow Control
   Residential MSW from the Regions of Durham and York delivered via transfer trailers from municipally controlled transfer stations. The Durham Region is responsible for 110,000 tonnes per year and the York Region 30,000, which represents the total annual capacity of the Facility. These material streams are wholly controlled by the two municipalities

b. Management of Biosolids
   Biosolids are managed under a completely separate program. Biosolids from the Region's anaerobic digesters is either directed to land application or to a regionally owned and operated biosolids incinerator. Ash from the biosolids incinerator is directed to a local cement operation where is it blended with the raw feed to supplement cement production.

c. Site Size and Characteristics
   The Durham York Energy Center is sited on approximately 28 hectare site located in Clarington. The greenfield site was selected following a multi-year site selection process. The site selection process began in 2006 and included a series of over fifteen separate public

information centres held in the Durham and York Region over a two year- span to narrow the siting options down to the preferred site, approved by the Durham and York Regional Councils in January of 2008. The site selection and approvals process included an extensive Environmental Assessment process, which examined the full suite of residual waste processing technologies, a long-list of potential sites, an REOI, RFQ & RFP and included a procurement process, and detailed site specific studies, including a Human Health and Ecological Risk Assessment, an Air Quality Assessment; Surface Water and Groundwater Assessment; Facility Energy and Life Cycle Assessment; Geotechnical Investigation; Acoustic Assessment; Visual Assessment, Natural Environment Assessment, Social/Cultural Assessment; a Stage 2 Archaeological Assessment and Built Heritage Assessment; a Traffic Assessment; an Economic Assessment; and, a Site-Specific Human Health and Ecological Risk Assessment. More than 20 different companies, and over 100 team members were involved in completing and reviewing these reports. The Notice of Completion of the Review of the EA was issued in February, 2010, almost four years after the approval of the terms of reference on March 31, 2006. The site is owned by the Region and is located in an industrial/commercial area directly off the 401 in a rural setting along the shore of Lake Ontario.

d. Technology Risk
   The Facility is a mass burn combustion unit, coupled with state of the art combustion and emission controls and generates electricity via a steam turbine generator utilizing high temperature/pressure steam generated by the combustion of the MSW in a waterwall boiler. The mass burn technology is the predominant approach used throughout the world for combustion of MSW and has a long operating history.

e. Products and Markets
   The Facility generates electricity for sale to the local power utility. Ash is also processed to recover ferrous and non-ferrous metals, which are sold in the regional scrap metals market.

f. Cost and Financing
   The capital costs totaled approximately $284 million. This included approximately $255 million for construction of the facility and $29 million for permitting, site servicing, consulting fees and economic development activities in the host community. The annual cost of operations is approximately $16 M and revenues from electricity metal sales are on the order of $8 to $9 M.

g. Procurement/Contract Structure
   The Facility is owned by the Regions and operated under a 20 year operating agreement by Covanta. It was procured under a DBOM approach, with the Regions financing the capital costs which were paid to Covanta during the construction period based on milestones achieved.

h. Residuals Management
   The responsibility for managing the residuals from this Facility is the operators (Covanta). The residuals are transported in closed transfer trailers to a landfill for disposal as a non-hazardous waste.

Applicability to CRD / Context for Procurement Criteria

The lessons learned in the DYEC implementation include:

1) A new Facility needs to be part of an integrated system that aligns with the preferred hierarchy. Adding new waste management infrastructure can be a controversial undertaking. It is critical that any new asset be right sized taking into account aggressive source reduction, composting, and reuse/recycling programs. The facility wouldn't have been approved by the Province of Ontario without the 3R's taking priority and 'recovery' being the identified method of addressing the remaining waste stream.
2) Every project needs a champion. Durham and York have strong leadership in support of this initiative from individuals who has spent considerable time learning about the technology before deciding what to do
3) Determining and understanding what "sufficient consultation" is. Even with over 100 public meetings, some residents still believe that they were not consulted enough.
4) Recognize that it is likely that there are some individuals who will never support what you are doing. These individuals should of course be allowed to be heard, but attention shouldn't come at the expense of other voices and opinions.
5) Plan for the long haul. Implementing a regional project with multiple levels of approvals and participation by various political levels is a time and energy consuming process. Be sure that there are adequate resources available and that the timeline takes into account the fact that there will be delays and surprises.
6) Having a site. The siting process was long and at times controversial. It is key to a successful project.

5.10 Palm Beach, Renewable Energy Facility 2

The Palm Beach Renewable Energy Facility 2 is the first greenfield facility built in the US in twenty years. The Palm Beach Renewable Energy Facility 2 (PBREF 2) entered commercial operation on July 18, 2015. It is a 95-MW plant, owned by the Solid Waste Authority (SWA) of Palm Beach County, was designed and constructed by a consortium of Babcock and Wilcox and KBR, Inc., and is operated under a DBO agreement by a subsidiary of Babcock and Wilcox Power Services Group. It utilizes mass burn technology, consists of three boilers and is sized to combust up to 3,000 t/d of post-recycled MSW. It generates electricity by passing the steam generated in the water wall boilers though a single turbine generator with the power (net of in-house use) supplied to Florida Power and Light Co. under a long-term power purchase agreement.

WTE facilities are subject to very stringent emissions standards. The Facility controls emissions through advanced combustion controls, use of powdered activated carbon to control dioxin, furan, and mercury emissions, a spray dryer absorber to remove acid gases, a pulse jet fabric filter (baghouse) to remove particulate matter and a selective catalytic reduction (SCR) system installed for NOx control. The bottom and fly ash generated are conveyed to an ash management building. There, a rotary magnet removes ferrous metals and an eddy current separator removes nonferrous metals from the ash stream for sale.

Planning for the Facility began in 2004 to build on other elements of the County's integrated solid waste system, which included a 1,800 tpd Refuse Derived Fuel (RDF) WTE facility, several regional transfer stations, a Subtitle D sanitary landfill, a MRF, a composting facility, a metals processing facility and household hazardous waste collection program, Remaining life at the landfill was less than 20 years. Continued population growth and a series of hurricanes in 2003, 2004 and 2005 strained the capacity of the system.

A number of alternatives were developed based on six principles

a) Waste generated in the County should be processed and disposed of in the County;

b) Should utilize proven state of the art processes;

c) Should be protective of human health and the sensitive environment;

d) Solutions should conserve resources;

e) New processing facilities should be publicly owned but be developed and operated in partnership with experienced private firms; and

f) Solutions should be cost effective and long term in nature.

After a lengthy options evaluation phase, the Board voted in 2007 to explore procuring a new WTE and in 2008 authorized the issuance of a Request for Qualifications (RFQ) for a full service design/build/operator to provide a mass burn facility. The Authority has a history of owning its facilities. While it has operated its transfer stations and landfills, it has historically used the design/build/operate model for the processing facilities.

The Facility is funded through a series of bond issues. The total project cost is estimated at $762 million. Repayment will be through revenues realized by the Authority. Revenues of the Authority include revenues from the sale of electricity, recovered materials, commercial tipping fees and non-ad valorem assessments.

Treatment of biosolids is a completely separate activity. The Authority has a biosolids pelletizing facility which opened In August 2009. The biosolids processing facility uses landfill gas as its primary fuel source to fuel the dryers.

Key facility information:

a. Feedstock and Flow Control
   The Authority's System consists of a 1,600 TPD RDF waste-to-energy WTE plant and a 3,000 TPD mass burn facility, Class I and Class III landfills, a state-of-the-art Recovered Materials Processing Facility (RMPF), a household hazardous waste (HHW) processing facility, a vegetation waste processing facility, several transfer stations, and various maintenance and other ancillary support facilities, Approximately 70 percent of all solid waste and recyclables collected in Palm Beach County pass through one of the Authority's transfer stations. PBREF2 processes mixed MSW. Most of the MSW processed at the Facility is delivered in transfer trailers.

b. Management of Biosolids
The Authority also separately operates a biosolids pelletizing facility, fuelled by landfill gas, to serve wastewater treatment plants in Palm Beach County.

c. Site Size and Characteristics
The Facility is sited on 24 acres within a larger County owned Energy Park (~ 1,300 acres). This site was chosen because of several advantageous factors. First, it was already owned by the Authority. Second, it is near the existing Energy from waste facility and the site was thus already certified as a power site. Third, it would not require any significant change in collection/transfer routing, as the waste was already coming to the site. Fourth, there was significant supporting infrastructure already in place. Fifth, residue landfilling and recovered metals processing capacity already existed close by. The Energy Park includes an 1,800 tpd RDF WTE facility, Subtitle D sanitary landfill, recovered materials processing facility for both commercial and residential recyclables, yard waste and wastewater sludge composting facility, wastewater sludge pelletizer facility, metals processing facility, and household hazardous waste drop-off facility, and administrative offices.

d. Technology Risk
The technology risk is minimal. Proven technologies were designed, constructed and operated by experienced companies.

e. Products and Markets
Markets for the energy and metals generated at the Facility are well defined and in the case of electricity sold under a long term defined contract with a secure off-take agreement.

f. Cost and Financing
The project is funded through the Authority's revenues, which include a non -ad valorem assessment, tip fees, energy and recovered ad valorem assessment. The capital cost of the winning bid was $667,981,128. The annual operating fee for the first year was $20,490,000.

g. Procurement/Contract Structure
The Facility was procured under a design build long term operate structure.

h. Residuals Management
The Facility operator is responsible for managing the residuals.

<u>Applicability to the CRD / Context for IRM Procurement Criteria:</u>

The lessons learned in the Palm Beach implementation include:

1) New Facility needs to be part of an integrated system that aligns with the preferred hierarchy. Adding new waste management infrastructure can be a controversial undertaking. It is critical that any new asset be right sized taking into account aggressive source reduction, composting, and reuse/recycling programs.
2) Control of the Waste stream simplifies the process of developing a Facility. The Authority had in place existing control of the feedstock to the Facility.

3) Having a secure source of funding is critical to obtaining project funding. The Authority had in place a funding system that was secure and thus were able to issue significant debt to fund the capital costs associated with the Facility.

5.11 Pivotal – Gussing Reference Facility

Güssing Austria was the first community in the European Union to produce its whole energy demand (electricity, heating/cooling, fuels) from renewable resources located within the Region. This arose out of a policy adopted in the early 1990's out of which a number of initiatives were developed including an initial pilot facility to gasify locally sourced wood chips and recover electricity and heat for district heating.

The Güssing Austria facility is reported to process 50 tonnes per day of biomass (wood chips from wood thinned from the forest and waste wood from a wooden flooring company) producing 2MW of electricity and 4.6 MW thermal energy. The Güssing facility was constructed in 2001-02 and produces energy for the town of Güssing. The Gussing facility does not process biosolids. The development of the facility was supported with federal funding from the Austrian government and the EU, which covered 6 million euros of the initial 16 million euro capital investment for the plant as of 2001.

The biomass gasifier plant installed at Güssing was a joint effort of a consortium called "Renet Austria" which included: AE Energietechnik as the construction company, (ii) Institute for chemical engineering (Technical University of Vienna), (iii) EVN the regional energy utility, (iv) District heating company Güssing, (v) GE Jenbacher company, and (vi) Repotec Umwelttechnik GmbH. In 2009 Renet Austria merged with the Austrian Bioenergy Centre and formed Bioenergy 2020+, a centre of excellence funding by the Austrian COMET programme. This organization is not currently involved in day-to-day operation of the facility.

The heat energy is directed to the municipally run district heating system, supplying heat to mainly private homes and local institutions as well as green industry that has been attracted to the City. The electricity is sold to the grid under an original feed-in-rate of 12.3 cents/kWh, however the current rate is not known.

Biomass supply is secured by long term contracts for purchase of wood chips from a local wood farmers association. The price was initially fixed for a duration of ten years at 1.6 cents/kWh. The water content of the wood ships is approx. 25%. It was intended that over time that in the order of 40% of the fuel would be replaced by cheaper (0.7 cents/kWh) dry fuel from local wood working industries.

The technology deployed at Güssing plant is Fast Internally Circulating Fluidized Bed (FICFB) gasification system, this process is also called dual fluidized bed gasification, developed jointly by the Institute of Chemical Engineering (Technical University of Vienna) and by AE Energietechnik in Austria. In this system, the gasification reactor is physically separated from the combustion reactor in order to gain a largely nitrogen-free product gas.

The rationale for development of this facility in Gussing are the EU and Austrian directives and regulations that favour use of renewable fuels and the local economic and policy environment.

Key Facility Information:

a. Feedstock and Flow Control
   Feedstock for the facility is biomass (wood chips and biomass). The materials are secured in a long term supply contract from a local farmers association. The price was initially fixed for a duration of ten years at 1.6 cents/kWh. The water content of the wood ships is approx. 25%.

b. Management of Biosolids
   Not applicable for this facility

c. Site Size and Characteristics
   The facility processes 50 tpd of biomass. Site characteristics of the Gussing facility are not known.

d. Technology Risk
   The Gussing facility was developed using a demonstration facility in the late 1990's prior to its development in 2002.

e. Products and Markets
   The facility produces 2 MW electricity and 4.5 MW of thermal energy, both of which are used by the community. There are no liquid emissions from the CHP plant at Gussing, as the condensate from the scrubber is evaporated and fed into the combustion zone, where the organic matter is combusted.

f. Cost and Financing
   The facility reportedly cost 16 million euros in 2001. The development of the facility was supported with federal funding from the Austrian government and the EU, which covered 6 million euros of the initial 16 million euro capital investment.

g. Procurement/Contract Structure
   The procurement and contract structure are not known. However, the original ownership structure consisted of a joint effort of a consortium called "Renet Austria" which included: AE Energietechnik as the construction company, (ii) Institute for chemical engineering (Technical University of Vienna), (iii) EVN the regional energy utility, (iv) District heating company Güssing, (v) GE Jenbacher company, and (vi) Repotec Umwelttechnik GmbH. The ownership structure changed in 2009 when Renet Austria merged with the Austrian Bioenergy Centre and formed Bioenergy 2020+, a centre of excellence funding by the Austrian COMET programme.

h. Residuals Management
   The FICFB technology literature reports the only solid residue is the fly ash from the combustion zone. The carbon content in this fly ash is reported as being very low (<0.5%) and can be handled similar to an ash from biomass combustion.

Applicability to the CRD / Context for IRM Procurement Criteria:

1. The feedstock for this facility is wood chips and biomass, which is typical of this type of gasification facility. Biomass supply is secured by long term contracts for purchase of wood chips from a local wood farmers association.
2. Since the beginning of the plant operation in the year 2002, continuous improvement in the plant operation and optimisation has been done. Publicly available information indicates that the Güssing plant had consistent hours of operation and continuously improved the availability of the plant. After the initial optimization period (2002 to 2006), the system running hours both for gasifier and engine were quite consistent; about 7000 hours and more than 6000 hours per year respectively.

5.12 Walker Industries – Thorold Facility (Net Zero Waste Reference)

Walker Industries (Walker Environmental) owns and operates an Integrated Waste Management facility in Thorold, Ontario. The site has been the location of a commercial landfill development for many years, and over time the facility has grown to include: an N-Viro biosolids treatment facility managing biosolids generated by the Region of Niagara, an aerobic composting facility processing 35,000 tonnes of municipal source separated organics and 40,000 tonnes per year of yard waste annually, and a public drop-off and recycling centre.

The Region of Niagara selected a joint venture between Walker Industries and N-Viro Systems Canada to construct a centralized biosolids treatment facility following years of study and a competitive procurement process to find an alternative beneficial use solution to manage a portion (1/2) of the Region's biosolids. The Region entered into a long term contract to supply biosolids to Walker who developed and currently operates the N-Viro facility. The process yields a Class A biosolids product marketed under the name Niagara N-Rich. It is approved for use as a fertilizer or soil amendment by the CFIA.

Niagara N-Rich is sold to large farm fertilizer distributors who sell the Class A biosolid product and the direct application service to farmers in Ontario. Most of the product is sold to neighbouring regions where the province's large cash-crop farms are located. Niagara N-Rich is well received by consumers for agricultural use and has required little marketing to date (Gunn 2015). The facility is also working with a contractor, a mining company, and university researchers to look for more uses for the product, such as mine reclamation and reforestation (Gunn 2015).

The facility processes 26,000 tonnes of treated Class B biosolids annually, most of which are from the region, and produces approximately 35,000 tonnes of the Class A Niagara N-Rich soil amendment per year (Walker Industries 2014a). The product is sold for approximately $10 per tonne (Gunn 2015). In 2014, Walker Environmental acquired N-Viro and became the sole owner of the facility, operating under a contract with the regional government. The Niagara Region pays Walker Environmental to process the Class A biosolids; however they split the net revenue from sales of the N-Rich product.

Walker Industries has also won successive contracts with the Region of Niagara for receipt and processing of the curbside collected source separated organic stream, which includes a combination of food residuals and yard waste. The facility is a GORE cover system composting

facility, with forced aeration for the initial phase of composting, followed by curing in outdoor windrows. Initially the composting facility depended on passive aeration, however, following an increase in material receipt and potential odour incidents Walker invested in the GORE technology. The overall capacity of the compost facility is 90,000 tonnes. Walker markets the compost product, largely for agricultural use.

Key information on the Walker Thorold facility:

a. Feedstock and Flow Control
   Walker industries is a private company that competes in the open market for long term material supply contracts with municipal and commercial waste generators. Walker has contracts with the Region of Niagara for the management of source separated organics and yard waste, and for the supply of 26,000 tonnes of Class B biosolids. Walker buys its alkaline agent for the process from a regional cement plant.

b. Management of Biosolids
   Walker's Thorold facility includes the NViro treatment facility for management of a portion of the Region of Niagara's Biosolids. The NViro process is a flash-lime stabilization process that creates a fertilizer product that meets federal standards.

c. Site Size and Characteristics
   The Compost facility at the Thorold site is approximately 13.5 acres. This facility is surrounded by 100's of acres of land owned and controlled by Walker Industries, which has actively secured land surrounding its operations.

d. Technology Risk
   The technologies chosen by Walker are proven technologies in the Canadian market. Walker mitigates its technology risk through its own internal technology selection process.

e. Products and Markets
   Compost and fertilizer product generated by Walker Industries are sold to larger distributors of fertilizer products. As noted above, the Niagara N-Rich product is currently sold for $10 per tonne.

f. Cost and Financing
   The reported capital cost for the compost facility was $10 million CAD as of 2009. Walker self-financed the capital for the facility. Walker also self-financed the NViro facility and all other site infrastructure.

g. Procurement/Contract Structure
   Walker has entered into long-term material supply agreements with the Region of Niagara and other entities based on competitive market conditions. Walker has been directly responsible for the design, engineering, construction and operations of the facilities in Thorold.

h. Residuals Management
   Walker is responsible for managing all residues from their operations, and dispose of these at their adjacent landfill facility.

Applicability to the CRD / Context for IRM Procurement Criteria

1) Walker has secured long term contracts for waste supply, which facilitates their ability to invest in and grow their facilities.

2) Walker has mitigated technology risk by using proven technologies for the primary components of their facility, and where appropriate choosing to work with partners/advisors for the development of new products and markets. For the N-Viro facility, it was originally developed through a joint venture and then Walker acquired N-Viro and became the sole owner of the facility following years of successful operation.

5.13 ARK Power Dynamics (APD) – Stamps Arkansas

The Ark Power Dynamics facility in Stamps Arkansas was developed as a private facility to demonstrate the Ark Reformer technology on chicken litter wastes. The facility was developed in order to derive additional value from the management of this organic material stream versus conventional approaches (e.g. land application) used to manage manures. The facility began operations in 2012. It is unclear if the facility is currently in operation.

The ARK Reformer operates at a relatively low temperature of 65 degrees C. The Ark Reformer technology reportedly can accept materials containing up to 75% moisture content (similar to biosolids) as opposed to gasification technology (which according to APD, is limited to 15% moisture)[7].

Key Facility Information:

a. Feedstock and Flow Control
   The facility processes chicken litter which has a moisture content up to 75% moisture. The facility processes as much as 3 tons of feedstock per day. Feedstock with a water content of 50 to 60 percent is reportedly preferred. The chicken litter processing revealed the facility may process any carbon-based wet waste, such as animal waste which is similar to other carbon based wet materials such as biosolids. In regards to control of the material processed by the facility, this is through agreement with local suppliers. There are no indications that this technology may be suitable for other solid material streams generated in the CRD.

b. Management of Biosolids
   Biosolids were not processed at this facility however APD points out that the high moisture content feedstock of chicken litter is similar to that of biosolids.

[7] http://www.google.com/patents/US9005536

c. Site Size and Characteristics
The facility processes 1 to 3 tons per day. The actual site size has not been noted, but generally the size required to process this quantity of material would be relatively small.

d. Technology Risk
It is unclear exactly how the risk associated with the development of the technology was addressed, however it can reasonably be assumed based on the current ownership of this plant that it was largely (or completely) assumed by the technology provider.

e. Products and Markets
The exact products derived at this facility and the market value of these products are not known, however APD reports output could include: a synthetic oil, syngas and a remnant ash that is also referred to as a sterile soil.

Applicability to the CRD / Context for IRM Procurement Criteria:

1. The facility processes feedstock (chicken litter) which has a moisture content of up to 75% moisture which is similar to dewatered biosolids. Although there are no indications the technology is suitable for other solid wastes, the technology could be suitable for the CRD's biosolids, particularly if they are blended with wood chips at an appropriate mixture to yield a feedstock moisture content in the 50 to 60% range.

5.14 Ostara – Gold Bar, Edmonton

The Ostara nutrient recovery facility was constructed at the Clover Bar sewage-settling lagoons at Edmonton's 310- million-litre-per-day Gold Bar wastewater treatment plant in 2015. The Ostara Gold Bar facility was the largest largest-ever nutrient-recovery facility in Canada as of 2015. The facility removes phosphorus from the liquor following biosolids dewatering and is reported to produce 10,000 kilograms per day of plant fertilizer. The facility was a scale up by 20 times of an initial demonstration plant installed in 2007.

The Ostara nutrient recovery process recovers phosphorus from post-digestion liquor resulting from dewatering biosolids, through a controlled precipitation of struvite from the biosolids. Phosphorous recovery from post-digestion liquor is a chemical precipitation process that recovers nutrients (phosphorus and nitrogen) from dewatering liquor stream before they accumulate as struvite in pipes and on equipment. Struvite is a crystalline formation of minerals that occurs in alkaline conditions which is common in post digestion liquor (biosolids that have been digested). Phosphorous recovery is a controlled chemical precipitation process that facilitates the generation and growth of struvite "seeds" (crystalline pellets). This process occurs in an up-flow container that keeps the struvite seeds in suspension until they accumulate mineral crystals to a desired size for commercial fertilizer markets. The crystals are allowed to settle, extracted and dried for commercial horticulture and agriculture markets.

Key Facility Information:

a. Feedstock and Flow Control
The Gold Bar Ostara facility receives the liquor from post-digestion biosolids dewatering of the 310- million-litre-per-day Gold Bar wastewater treatment plant.

b. Management of Biosolids
This facility processes the liquor from dewatered biosolids to recover phosphorus in the form of a crystal pellet called Crystal Green™.

c. Site Size and Characteristics
The 600-sq-meter, 12-m-high facility was constructed at the Clover Bar sewage-settling lagoons at Edmonton's Waste Management Centre. The facility is designed to produce 10,000 kilograms per day of slow release plant fertilizer.

d. Technology Risk
Ostara's proprietary technology incorporates a fluidized-bed reactor and crystallization process to precipitate phosphorus and nitrogen out of dewatering recycle streams at the Gold Bar treatment plant. An added benefit of the process is the reduction in the build-up of struvite that typically occurs in the process equipment. The technology is considered proven and commercially operating in dozens of facilities in the US, Canada and Europe.

e. Products and Markets
The Crystal Green product Ostara produces is reportedly a multi-nutrient source (5-28-0 with 10%Mg). Phosphorus from Crystal Green® reportedly optimizes crop performance by providing plants with a more effective and efficient source of nutrients than conventional phosphate fertilizers. The product is marketed for a variety of agricultural fertilizer purposes. Ostara would assume responsibility for the certification, management, storage and distribution of the produced fertilizer product, providing a revenue share to the CRD under a fertilizer offtake agreement (fixed price or index price).

f. Cost and Financing
Not known for this facility. As a private company Ostara is not required to disclose financial information. The equipment reportedly ranges between $5 million to $10 million for a typical facility.

g. Procurement/Contract Structure
The contract structure consists of a partnership between EPCOR Water Services Inc. (the WWTP owner/operator) and Ostara Nutrient Recovery Technologies. The WWTP (EPCOR) owns and operates the facility which was designed by Ostara. Ostara supports EPCOR in periodic operations as needed and retains a long-term offtake agreement for the Crystal Green™ fertilizer by-product.

h. Residuals Management
Solid residuals of the process are the Crystal Green™ product that Ostara commits to purchase at agreed upon price. Ostara takes responsibility for the certification,

management, storage, and distribution of the produced fertilizer product while still also providing a revenue share to the public sector consistent with the respective responsibilities of each party Ostara has used this method to accept the financial risks for the product thereby insulating the City from the significant volatility of the agro-chemical, commodity fertilizer market. Ostara then resells Crystal Green primarily to retailers in the agriculture market and distributors in the turf and ornamental markets. These retailers and distributors combine Crystal Green with other fertilizer components to produce finished products that provide the desired nutrient balance for specific end user applications. These finished products are then sold to end-users (e.g. farmers, golf courses, lawn care professionals). Ostara has built relationships with an extensive network of customers across the United States, Canada, and Europe.

Applicability to the CRD / Context for IRM Procurement Criteria:

1) The Ostara process focuses on processing the liquor from post-digestion biosolids. As such it could form part of an overall IRM solution, but would not on its own constitute an IRM approach suitable for management of some or all of the CRD solid and liquid waste streams. A process like Ostara could be considered and implemented outside of the IRM procurement process or as a step in IRM implementation.
2) Ostara enters into a long term Crystal Green™ product repurchase agreement whereby Ostara agrees to purchase the fertilizer by-product at agreed upon pricing. This off-take agreement has been used to remove the financial risks of the potentially volatile agro-chemical commodity market from the public entity where it can be managed by the private sector.

5.15 WTT – Surrey Biosolids Facility

The Surrey Organics to Biofuel Facility employs a dry anaerobic digestion system and is designed to recover energy from a co-collected yard and food waste feedstock. The City of Surrey Organics to Biofuel project was the result of the City of Surrey seeking to identify beneficial use of its organic wastes pursuant to a regional directive by Metro Vancouver who adopted a comprehensive, long term waste strategy to divert 70% of all wastes from the landfill by 2015. A key tenant of the strategy is to divert yard and kitchen wastes from being landfilled. Accordingly, the City expanded its residential yard waste collection program in October, 2012 to accept kitchen wastes and food solid paper. The City implemented a waste sampling and composition protocol throughout the first year collection of the combined material streams and provided that information to the prospective proposers as the information became available.

The City applied and secured P3 Canada funding in support of the facility development for provincial funds up to 25% of the capital or not to exceed $16.9M.

The City solicited for developers to provide design, construction, financing and operations of an Organics to Biofuel facility for a 25 year operating period. The terms included the obligation to provide equipment to process the biogas for use as a pipeline grade natural gas or to produce electricity for sale to BC Hydro. The City also expressed a preference for the production of pipeline gas including compressed natural gas suitable for CNH fuelled vehicle use. The solicitation requested the facility include pre-processing of the mixed feedstock materials, anaerobic digestion, biogas production and recovery, and by-product management.

The City offered the use of a city-owned site. The site is a 6.6 acre parcel of land located adjacent to the Surrey Waste Transfer Station within the Port Kells Industrial Park. The City also offered an additional 3.3-acre parcel of land located adjacent to the 6.6 acre parcel but separated by the only entrance/exit to the Waste Transfer Station. The offering of the 3.3 acre parcel obligated the developers to be responsible for environmental remediation of the site. The 3.3 acre site had been used as a storage area for biomass from a former facility and would necessitate the removal of the biomass prior to its use in the development.

The City required that the project finance structure meet its affordability ceiling. The affordability ceiling was set as the maximum cost of organic waste disposal based on the 2013 Metro Vancouver disposal rates for municipal wastes. The City intended to pay the developer annual service payments, net of any revenues the developer would secure, over the 25 year term of the agreement.

The agreement included a hand-back provision which includes the developer turning over the ownership and operations to the City at the end of the 25 year operating agreement.

The procurement process included an RFQ phase wherein capable companies were requested to submit evidence of their qualifications. After review and shortlisting, the process included an RFP process to request facility design, build, finance, own, operate cost proposals. The RFP process included collaborative meetings to explore technical and commercial matters through workshop and key topic meetings.

The City selected Orgaworld as the preferred proponent. The project includes a dry fermentation anaerobic digestion technology with biogas clean-up and compression into the pipeline grid in addition to CNG offtake for vehicle use. Solids from the project are composted and will be sold to the agri-business by the project company. The project development, design and construction has been on-going since 2014. Project completion has been reported and commencement of operations is expected in late 2017 or early 2018.

Key Facility Information:

a. Feedstock and Flow Control
   The City of Surrey was obligated to deliver all of the waste collected from the city's residential co-collected yard and food waste program to the facility. The contract includes a provision for increased quantities, beginning with approximately 80,000 tonnes per year of material and increasing over the contract duration to eventually 115,000 tonnes per year. The City has flow control to guarantee the material which was used as the basis for the private sector development partner when securing private financing for the project. In addition to the city's residential organics, the development partner was obligated to secure industrial, commercial and institutional (ICI) wastes to make the economies of scale attractive for the project. As the city's residential wastes increase over time, the private operator will need to reduce the quantities of ICI wastes to allow the City's waste as first priority for processing.

b. Management of Biosolids
   The Surrey facility does not receive or process biosolids.

c. Site Size and Characteristics

The city provided a site consisting of approximately six acres for the proponent to use under a long-term no-cost lease for the duration of the contract. The City also offered an additional three acre site that the developer could use if desired however, it is separated from the primary six acre parcel by an access road that serves as the primary access to the City's waste Transfer Station. The developer choose to not use the additional three acre site. The site is located in an industrial area of the City. The site was equipped with utilities and street access. The developer has used the entirety of the six acre parcel for the facility.

d. Technology Risk

The project developer proposed and guaranteed the technology, assuming all risks for the adequacy and efficacy of the technology and Facility design, construction and operation. The technology risk of the facility was relatively minimal as anaerobic digestion was the selected technology. The somewhat problematic risk of feedstock quality and related pre-processing risk was minimized by the city implementing a co-collected yard and food waste collection system a year in advance of the project. The City performed an analysis of the feedstock on a monthly basis providing the information to the prospective bidders. The bidders were also allowed access to the feedstock during this time.

e. Products and Markets

The primary product of the facility is the biogas which is to be upgraded to pipeline quality renewable natural gas (RNG). The City initiated interaction with utility companies, entering into a long term off-take agreement with Fortis BC for the RNG produced by the facility.

f. Cost and Financing

The capital cost for the facility was $68M Canadian. The project was partially funded by P3 Canada, receiving $16.9M in funding towards capital costs. According to the P3 funding process, private equity funding was included in the financing.

g. Procurement/Contract Structure

The procurement process consisted of a Request for Expressions of Interest, followed by a Request for Qualifications, followed by a short-listing of firms. The top three qualified firms were invited to participate in a Request for Proposals. The two firms that competed but were ultimately not selected were compensated for their efforts by payment in the amount of $125,000 to each of the firms. The procurement process followed the procedures of P3 Canada and included a Fairness Advisor, collaborative/in-confidence (sounding) meetings and strict adherence to the confidential management of information under P3 Canada's guidelines. The contract obligates the developer to secure private industrial, commercial and institutional (ICI) wastes from the region to meet the facility capacity levels in the early stages of the contract when the City's wastes have not grown to the ultimate capacity, as anticipated in the later years of the contract. The contract requires private financing of the project beyond the P3 contribution of $16.9M. The contract includes a 25-year design, build, own, operate agreement that includes a hand-back provision that returns facility ownership to the City at the end of the 25-year operating agreement (DBOOT).

h. Residuals Management
Solid residuals from the anaerobic digestion process are converted to a soil amendment using an aerobic composting process.

Applicability to the CRD / Context for IRM Procurement Criteria:

1) The Surrey Organics to Biofuel facility's dry fermentation anaerobic digestion system represents the biological portion of the mechanical-biological system offered by WTT.
2) The dry fermentation technology demonstrates the ability to process food waste, yard waste (SSO) for beneficial uses including energy, and compost.

5.16 Edmonton Waste Management Centre

The Edmonton Waste Management Centre is a 200+ hectare integrated waste management system incorporating an integrated processing and transfer facility, a composting facility, a materials recovery facility, a construction and demolition waste recycling facility, a transfer station, an electronic waste recycling facility, a closed landfill with landfill gas recovery, a waste to biofuels production facility, a biosolids management facility, a research facility and administrative offices.

The Integrated Processing and Transfer Facility (IPTF)

Waste arrives at the IPTF and is divided into three separate waste streams: composting, biofuels production and landfill. Waste that can't be recycled or composted becomes feedstock for Enerkem's waste to biofuels facility.

The IPTF includes two loading bays, two rotating screens with bag breaking "spikes" to separate materials into different streams, manual pick stations, magnets and other equipment to remove unprocessable materials such as propane bottles, a mechanical system to produce feedstock for Enerkem's waste-to-biofuels facility from processed waste, a conveyor to transfer organic waste materials to the composting and non-recyclable, non-compostable waste to the adjacent Waste-to-Biofuels Facility, bays to load materials for transport to other landfills for disposal.

Biosolids Management Facility

Biosolids generated from the Edmonton region's two wastewater treatment plants are stored in the Clover Bar lagoons. Biosolids are currently managed through a combination of land application (the NutriGold program which utilizes liquid biosolids from the Clover Bar lagoons) and via co-composting

Composting Facility

Edmonton's organics processing program uses the organic portion of the waste collected in combination with biosolids (treated sewage sludge) to create compost. Processing organic waste currently take place at the composting facility. The composting facility is the largest of its kind in North America by volume and size. It was built in 2000 and processes compost from 160,000 tonnes of organic waste and biosolids per year for use in agriculture and horticulture.

The Enerkem Waste to Biofuels Facility

The waste to biofuels facility is owned and operated by Enerkem. It receives 100,000 tonnes per year of pre-processed MSW for conversion into liquid methanol/ethanol. The company has been producing and selling methanol since 2016. Enerkem is responsible for financing, construction and operation of the ~ $100 M Facility. It is the first industrial scale waste to biofuels facility of its kind.

The C & D Processing Facility

The C&D facility located at the Waste Management Centre processes mixed C&D recycling or segregated C&D recycling. The C&D Facility recycles wood, drywall, asphalt shingles, concrete, metals and brush and trees. .Mixed loads of material are diverted from landfill and either sold to recycling processors or used in the City's operations.

Global Electric and Electronic Processing, Inc. Facility

The electronics processing facility processes more than 30,000 tonnes per year of old computers, televisions, and other electrical and electronic waste materials for recycling. It was built and is operated by GEEP Alberta, Inc.

The Proposed Anaerobic Digestion Facility (ADF)

This facility will also be located at the Edmonton Waste Management Centre and will supplement the composting facility by processing up to 48,000 tonnes of organic waste per year to generate renewable energy and a high quality compost for use in agriculture and horticulture. It is a partnership between the City of Edmonton, BIOFerm and the University of Alberta. The ADF is scheduled to be in operation by the first half of 2018

The Materials Recovery Facility (MRF)

The MRF is almost 6,000 square metre (64,000 square feet) sized to handle processing 50,000 tonnes per year, the MRF processes all types of recyclables accepted in the City's blue bag, blue bin and recycling depot programs.

The Facility is owned by the City and has been operated since April 2014 by SUEZ Canada Waste Services Incorporated.

Key information regarding the Edmonton Waste Management Centre:

a. Feedstock and Flow Control
   There are several waste streams being delivered directly to the Waste Management Centre by various public and private entities. The City is responsible for the management of all residential waste streams, including the collection of residential waste from single and multi-family residents. The City also offers services to the commercial sector, competing with a number of private companies who also operate in Edmonton. There are multiple competing landfills and transfer stations located in or near Edmonton.

b. Management of Biosolids
   Biosolids are currently managed through a combination of composting and land application.

c. Site Size and Characteristics

The site is over 570 acres and serves as the home of several waste processing/management facilities.

d. Technology Risk
The majority of the facilities at the Waste Management Centre utilize proven technology with long operating histories on the specific feedstocks. The one exception to this is the waste to fuels facility which represents a significant step in the commercialization of this technology to convert waste to methanol and ethanol.

e. Products and Markets
The process outputs vary depending on the Facility and thus the markets as well. The various products include recovered materials sold into the recyclables and compost markets and biofuel sold in the fuel market.

f. Cost and Financing
The expenses of the Management Centre are funded primarily through a Waste Management Fee line item in the utility bill, which is $44.90 per month in 2017 for a typical residential customer. Additional revenues includes fees and grants. The capital cost of the Enerkem facility owned and operated by Enerkem is ~ $100 M. The IPTF owned by the City and operated under subcontract cost ~ $40 M. Alberta Innovates contributed $29 M to funding the biofuels initiative.

g. Procurement/Contract Structure
Edmonton utilizes public private partnerships extensively. The waste to biofuels facility, the IPTF Facility, the Electronics Processing Facility, the C & D Facility and the MRF are all operated and/or maintained by private companies.

h. Residuals Management
The City provides residuals management at the Waste Management Centre.

Applicability to the CRD / Context for IRM Procurement Criteria:

1) The Edmonton Waste Management Centre is a good example of an integrated resource management system. There are a number of separate facilities co-located on a single site operated by different entities which have been developed sequentially over several years.
2) The City controls all of the residential waste materials and the biosolids and has control over the various processing operation. The system is funded through an enterprise fund tied to the utility bill. Thus, they are able to provide assurance of long term supply of feedstock and ultimately a secure source of revenues.

5.17 PGH Energy – Lebanon Tennessee

The PHG Energy (now the Aries Clean Energy Project) is a 64 TPD gasification plant co-located at the city's wastewater treatment plant. It will convert up to 64 tons of blended waste wood, sewer sludge and scrap tires into power, generating up to 300 kilowatts that will be used for the power

needs of both the plant and the wastewater treatment facility. PHG completed a similar, but smaller-sized project in Covington, Tennessee, in 2013.

Funding for the project included a $250,000 matching-funds grant awarded by the Tennessee Department of Environment and Conservation's (DEC) Clean Tennessee Energy Grant Program and $5.5 million of the Qualified Energy Conservation Bonds initiative, a low-cost financing tool offered by the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy.

A key project participant is Lebanon-based Rockwood Recycling who has assumed all responsibility for collecting, transporting and preparing the feedstock for the plant. It also receives discarded tires from Wilson County officials. Rockwood has a yard located close to the Facility where they store wood and tires for the plant's fuel.

Lebanon is the 13th commercial gasification plant installed by PHG Energy. The plant is expected to divert more than 8,000 tons of waste from the landfill annually. It currently processes 32 tons per day—3 tons of sludge, 3 tons of tires and 26 tons of wood waste. At full capacity, it will use 64 tons of feedstock per day. The plant will convert up to 64 tons per day of waste into fuel gas and five percent of the waste which turns into biochar, which will be sold for fertilizer or kiln fuel.

Wood and tires are first shredded to a particle size of 1 to 3 inches (25 to 76 mm) and blended with sludge before gasification with a target moisture content of 30%. The materials are then fed into a down draft thermal gasifier. The syngas produced by the gasification process is combusted and the thermal energy is used to heat water, which in turn drives three Clean Energy Technologies' Organic Rankine Cycle generators with a total output of 420Kw.

Key facility information:

a. Feedstock and Flow Control
   Two of the three feedstock elements (wood waste and tires) are furnished by a private company, Rockwood Recycling, while the third material, sludge, is provided by the City.

b. Management of Biosolids
   The biosolids from the City's WWTP are processed in this Facility.

c. Site Size and Characteristics
   The footprint of the Facility is approximately one acre and is located on City property adjacent to the WWTP.

d. Technology Risk
   Wood waste, shredded tires and sludge are blended prior to introduction into the gasifier. There are fewer risks with this mix of fuels when compared to gasification of more non-homogenous feedstocks.

e. Products and Markets
   The syngas is used to reduce the energy demands of the adjacent wastewater treatment plant and the biochar can be used in fertilizer or other applications.

f. Cost and Financing

The City utilized funds available under the Qualified Energy Conservation Bonds initiative, a low-cost financing tool offered by the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy.

g. Procurement/Contract Structure
The facility was procured under a DB type arrangement, with the City owning and operating the Facility and Aries providing the technology, general contracting services and operational support.

h. Residuals Management
The City operates the Facility and is responsible for managing the gasification process residuals.

Applicability to the CRD / Context for IRM Procurement Criteria:

1) The mix of feedstocks used by this facility are limited to wood waste, tires and sludge.
2) Development of the facility permitted the City to change its then current management of sludge which involved the use of an ATAD (Autoheated Thermophilic Aerobic Digester) to produce Class A biosolids for land application to the recovery of energy from the sludge, thus reducing the cost of operation and energy demand at its existing WWTP.

5.18 Plasco – Ottawa

In the mid 2000's, the City of Ottawa entered in an agreement with Plasco to deliver a portion of their waste stream to a pilot plasma arc facility. The proposed technology utilized plasma arc to refine gases produced during gasification, which were then fed into Jenbacher internal combustion engines to generate electricity. The Facility began operation in 2008.

In December 2012, Plasco concluded a contract with the city of Ottawa for the construction of a three train commercial plant. The plant as designed was intended to process up to 405 tonnes/day, producing electricity and aggregate.

This contract offered an option for the City to reduce the waste landfilled at the Trail Road landfill facility, extending the life of the landfill and would have contributed to the City's efforts to increase diversion of materials from disposal.

In 2015, the City terminated its relationship after several extensions intended to provide Plasco with time to make modifications in the process and bring the Facility up to full scale operations. Plasco was not able to meet project milestones for financing of the facility and to bring the Facility up to full scale operations. Plasco sought protection from creditors and the Facility was auctioned off in 2015.

Key facility information:

a. Feedstock and Flow Control
The City was obligated to deliver waste to the Facility which it controlled and was then currently sending to the Trail Road landfill

b. Management of Biosolids

This was not part of this project.

c. Site Size and Characteristics
Plasco leased land from the City across from the Trail Road landfill. The Facility occupied three acres.

d. Technology Risk
Clearly there was technology risk, as the Facility was not able to reach full scale production after several years.

e. Products and Markets
The Facility was intended to utilize the syngas generated to power internal combustion engine generator sets.

f. Cost and Financing
When initially proposed, Plasco was to fund the costs to build the pilot Facility, then estimated at approximately $30 million. In 2008, Plasco proposed to build an expanded 400 TPD $125 million facility. Plasco reportedly raised over $300 million over the span of several years from various private and public investors, but was not able to implement the needed modifications to bring the Facility up to full scale operations.

g. Procurement/Contract Structure
Plasco was responsible for the design, construction, operation, ownership and financing of the Facility. The City's obligation was to deliver 109,500 tonnes of city waste annually and pay $83.25 for every tonne of garbage it processed.

h. Residuals Management
Plasco was responsible for the management of process residuals

Applicability to the CRD / Context for IRM Procurement Criteria:

1) It is critically important that the technology selected, works at the proposed scale on the waste streams being considered. The criteria applied during the RFQ stage to qualify proponents and the performance guarantees and specifications at the RFP stage are intended to screen out those technologies that would not work or meet the CRD requirements.
2) The private partner in a public private partnership needs to have the financial capacity to weather potential upsets. The application of procurement criteria related to the qualifications and capability of the private partner and their financing is critical to the success of this type of project.

5.19 Tees Valley

Commissioning on the first phase of the Tees Valley 1 Facility was started in late 2014. The advanced gasification facility being developed by Air Products utilizes the AlterNRG Westinghouse plasma arc. Air Products developed the Tees Valley Renewable Energy Facility in Northeast England intending to process 950 tonnes per day of household waste and convert it into 50 MW of electricity.

Problems first arose shortly after Tees Valley 1 reached completion. The facility had been due to enter operations in summer 2014 – but 18 months later was still undergoing commissioning due to technical issues. Construction work on the second of the two facilities was suspended in November 2015 because of the operational challenges in making the facility function correctly. On April 4, 2016, Air Products announced it was leaving the waste-to-energy business, and was taking a write-down of $0.9-$1.0B. The company said that the decision was due to technical difficulties in making the technology work as expected. As a result, the company treated the energy from waste business segment as a discontinued operation.

The rationale for application of IRM in this jurisdiction was similar to that in other jurisdictions in the European Union (EU) being lack of available landfill disposal capacity and the EU and English directives and regulations that favour the processing of waste rather than direct disposal in landfills, and the regulatory environment and energy market that favours energy generation from renewable fuels.

Key facility information:

a. Feedstock and Flow Control
   The waste is supplied by the site's owners, Impetus Waste Management.

b. Management of Biosolids
   Not part of this project

c. Site Size and Characteristics
   The total acreage for both facilities is approximately 37 acres. They are located on industrial land owned by Impetus Waste Management adjacent to a major chemical complex.

d. Technology Risk
   The degree of technology risk was reflected in the need for a major corporation to take an almost $1 billion write off upon abandoning the project due to the inability to bring the facility up to full operations.

e. Products and Markets
   The Facilities used the syngas generated to generate ~ 50 MW of electricity per facility.

f. Cost and Financing
   The combined facilities capital cost totalled over $800 million.

g. Procurement/Contract Structure
   Air Products developed this project under a DBFOM model.

h. Residuals Management
   Residual management was the responsibility of Air Products.

Applicability to the CRD / Context for IRM Procurement Criteria:

1) It is critically important that the technology selected, works at the proposed scale on the waste streams being considered. The criteria applied during the RFQ stage to qualify proponents and the performance guarantees and specifications at the RFP stage are intended to screen out those technologies that would not work or meet the CRD requirements.
2) The private partner in a public private partnership needs to have the financial capacity to weather potential upsets. The application of procurement criteria related to the qualifications and capability of the private partner and their financing is critical to the success of this type of project.

5.20 Silicon Valley Clean Water

The Silicon Valley Clean Water (SVCW) Authority is a joint powers authority located in Redwood City California and serves the communities of Redwood City, City of San Carlos, and the City of Belmont as well as the West Bay Sanitary District. Since the 1980s, the SVCW has disposed of its biosolids through contracts with private companies that haul the biosolids to dedicated agricultural land application and compost sites or, when necessary, to an approved landfill for either burial or preferably as an alternative daily cover.

The disposal of biosolids is a major expense for any wastewater treatment facility and the options for disposal continue to shrink, while costs increase. The cost per ton of biosolids disposed has increased approximately 10 percent per year, every year for the past decade with the expectation of continued increases in the future.

SVCW began working towards alternative disposal options as an active participant in the Bay Area Biosolids to Energy Coalition (BAB2E), a consortium of Bay Area wastewater treatment facilities. The BAB2E operates under a “Joint Exercise of Powers” agreement. This group is focused on finding alternative processes that will eliminate the need to dispose of biosolids and turn it into an asset that produces more energy than the cost of treatment and to address the increasingly restrictive environment for land application of biosolids in the state. That process has proven very difficult and the coalition continues to work with vendors and educational facilities in the evaluation and testing of processes to meet the goal. The BAB2E coalition has worked in support of its members to advocate for state legislation to support the conversion of biosolids to clean energy and in federal bills to support biosolids to energy technologies. The intent of the coalition is to address the challenges with technology development, recognizing that commercial-scale demonstration of biosolids to energy technologies requires large capital investment that is difficult to obtain without a revenue stream, yet agencies cannot commit a revenue stream without commercial-scale demonstration.

SVCW has employed a practice of having more than one disposal option available at all time for biosolids. This practice is due to the fact that the options for disposal have changed many times over the years and continue to change today. SVCW currently has only one biosolids disposal contract in place. Synagro Inc. is a major biosolids disposal company in the United States and the SVCW contract with them allows for disposal via agricultural land application, at a landfill or for composting. While this contract provides three methods for disposal, it is with one company that has little control over their cost of disposal due to the fact that they are using other people's or agencies' property for the majority of their operation. This fact makes the Synagro disposal options susceptible to closures or increases in cost.

The current average cost per ton of biosolids disposed by Synagro for SVCW is approximately $49 per ton and is expected to exceed $60 per ton within two years. The goal of the BAB2E has been to find a disposal option that will allow the production of some level of energy to be created from the disposal of biosolids and at a cost of less than $100 per ton.

Based on a three-year study, the SVCW elected to proceed with an agreement with BioForceTech, Inc. for a full service biosolids disposal contract. BioForceTech is an Italian firm with a new process that uses very little energy to dry the biosolids. BioForceTech approached the SVCW offering a partnering relationship in the United States to test their process, with an ultimate goal of installing a facility utilizing their equipment. SVCW agreed to work with them in the testing process and to evaluate the potential for a full-scale installation at the Authority's site.

SVCW and BioForceTech have developed a system through the combined testing that will allow for disposal of the biosolids and production of a small amount of electricity for use in the treatment facility for a cost of $59 per ton of biosolids during the first year of operations. This cost is lower than BioForceTech's expected retail cost to other future facilities due to the fact that the SVCW installation is the first in the country and is, at least in theory, at their "cost" of providing the service. It should be recognized that the cost should be considered speculative at this time and that the true cost will not be known for several years, or until the facility has been developed and is fully operational.

While even this cost is more than the current cost of biosolids disposal, it is expected to be very competitive in the near future, and is much less expensive than the options the BAB2E coalition has found to date.

SVCW has worked very closely with BioForceTech in the development of a facility at the SVCW site. BioForceTech intends to develop a full scale operating facility to demonstrate to others that the technology works and is cost effective. Initially, BioForceTech proposed that SVCW purchase a full scale facility to treat 100% of the SVCW biosolids for a reasonable price, but SVCW staff felt it was not prudent for the agency to risk our capital to prove their process and staff also believed it was in the Authority's best interest to develop multiple alternatives for long-term biosolids disposal.

For these reasons, SVCW entered into a 10-year service contract with BioForceTech. The contract calls for BioForceTech to build, operate and maintain a facility that is capable of drying and disposing of approximately one-half (50%) of the biosolids produced by the SVCW. SVCW provides a site and utilities for the facility, at the proposed land lease cost to BioForceTech of one dollar ($1.00) per year.

BioForceTech will make all connections to the utilities at their cost. BioForceTech is responsible for all permits needed for construction and continued operation of the facility for the term of the agreement.

From an operational standpoint, the financial impact over the long term is expected to save SVCW money. Short term, for the first year or two, the added cost to dispose of approximately one-half of SVCW's annual biosolids production through the BioForceTech process could result

in an additional cost of $70,000 per year, if there is no inflation or other costs added to the current Synagro costs.

It is believed the actual impact will be much less than this as Synagro costs have gone up each year of the contract term to date, due to inflation and transportation cost increases. The estimate of $70,000 is a worse-case scenario. This also does not take into account the value of electricity that will be produced by the BioForceTech system and used in the treatment facility. The quantity and reliability of power generated will be determined as the facilities come on line.

An added benefit of the BioForceTech process is the elimination of many truck trips from the SVCW facility to the out of county disposal locations. It is estimated that over 500 truck trips per year will be eliminated due to the drying and power production onsite versus disposal at the current offsite locations. The BioForceTech facility employs an oxygen-rich compost process to dry the biosolids. The process occurs in a set of large cylinders aimed at accelerating a process similar to compost, in which oxygen-fueled bacteria break down the solid matter into smaller pieces. The process reportedly dries the biosolids without using any gas from about 80 percent water to 20 percent water in 48 hours.

Once dried, the shrunken biosolids will be fed into a pyrolysis process that heats them up in the absence of oxygen to about 1,100 degrees Fahrenheit, causing more of the mass to evaporate and creating the energy used to fuel the two machines. The process produces thousands of small, black particles with large pores and a volume that is 8 percent of the volume of the waste fed into it. BioForceTech have named the particles 'Nutrieno' and intend to explore their ability to absorb/adhere toxins and other chemicals. The presence of trace chemicals, drugs and other toxins in processed biosolids have caused some jurisdictions to ban or restrict their agricultural use.

Key Facility Information:

a. Feedstock and Flow Control
   The SVCW is providing a feedstock (biosolids) and flow control (half the SVCW biosolids) for a ten year period in the form of a service agreement, whereby BioForceTech will design, build, own and operate the facility.

b. Management of Biosolids
   The facility will process biosolids from the SVCW WWTP.

c. Site Size and Characteristics
   The SVCW provided the site and utilities. The size of the site and its characteristics are not known at this time.

d. Technology Risk
   The technology risk is borne by the developer BioForceTech as a part of a ten year service agreement to produce a system that beneficially uses biosolids at a cost equal to (or near) the current land application rate.

e. Products and Markets
   The process produces dried biosolids which are then gasified in a pyrolysis process. The process produces excess heat which is available for accelerated biosolids drying.

f. Cost and Financing
The cost and financing are not clear at this time, however the preliminary findings indicate the process will be able to manage biosolids for $59/ton (US ton) which is slightly higher than the current $49/ton for transportation and land application cost provided by an independent contract.

g. Procurement/Contract Structure
BioForceTech is reported to have approached the SVCW seeking an agreement to test, and then to design, build, operate a biosolids processing technology. The 10-year service contract appears to be a service agreement for half of the SVCW biosolids.

h. Residuals Management
The BioForceTech process produces a small quantity (approximately 8% by volume) of the dried biosolids fed into the pyrolysis process. At this time, further research is on-going as to the use of the residuals.

Applicability to the CRD / Context for IRM Procurement Criteria

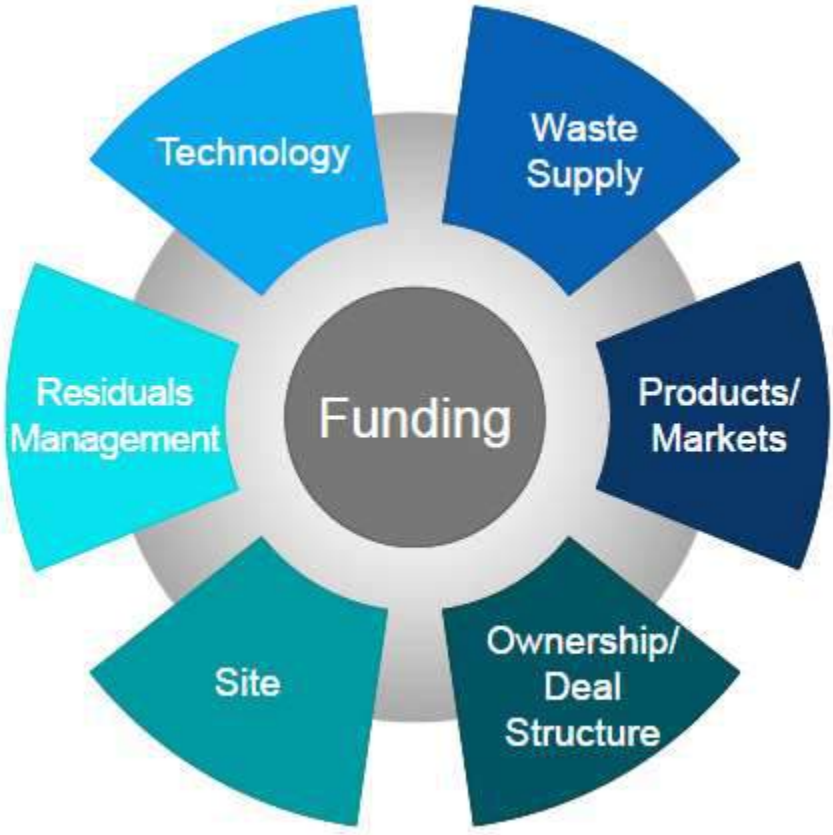
1) The combined drying and pyrolysis process being developed by BioForceTech is potentially applicable to the CRD biosolids feedstock. The BioForceTech process does not address the other feedstock materials the CRD wishes to be managed.
2) The BioForceTech process is in a developmental phase at this time. Further proof of technology is anticipated in the coming years.
3) The form of agreement between the SVCW and BioForceTech apportions the majority of the risk associated with the biosolids to energy technology to BioForceTech.
4) SVCW began working towards alternative disposal options as an active participant in the Bay Area Biosolids to Energy Coalition (BAB2E), a consortium of Bay Area wastewater treatment facilities. Project participants in the BAB2E share their respective progress towards biosolid to energy programs through the coalition which includes various technology assessments and progress on a number of partnerships with various companies to implement solutions (e.g. SVCW with BioForceTech, FSSD with Lystek international). The work of the coalition has advocated for state legislation to support the conversion of biosolids to clean energy and in federal bills to support biosolids to energy technologies to address the funding/financing/revenue gap to develop successful technologies.

6 Summary of Findings

The review of the IRM related documentation prepared to-date in support of this project, and of IRM related case studies arising out of these documents, provides context for the key procurement issues that will need to be addressed as part of the development of the IRM procurement criteria which would be applied through the IRM RFQ and RFP process. The key findings arising from this review and the implications for the development of IRM procurement criteria are discussed below. These findings are organized around key themes that are critical to the success of the IRM procurement process.

The key elements of a successful project are indicated in Figure 4.

Figure 4 Elements of a Successful IRM Project



This summary of findings, as presented below, is intended to:

1. Form the basis for the development of a risk assessment matrix and supporting documentation for an IRM procurement workshop to be held with elected officials later this year. This will serve to clarify the CRD's preferred risk posture related to key project elements which will define the appropriate structure of the business arrangement and clearly define the respective roles of the CRD and the Respondent.

2. Provide the context for key decisions that need to be made to support development of the IRM procurement criteria. Some 'Criteria' reflect fundamental decisions or elements of the project that should be decided upon prior to the procurement process proceeding. They form the framework for the procurement such as identifying the waste supply that is available, the CRD role in providing a site, and the deal structure that the CRD is interested in considering. Certain criteria will reflect mandatory requirements regarding minimum technical, team and financial qualifications, experience and capability, while other criteria will be rated or scored reflecting evaluation of their specific proposal as it relates to financing, design/engineering, construction, operations and maintenance and marketing and deriving value from recovered materials and energy.

Each of the key elements of a successful project in the context of the IRM project, are discussed below.

6.1 Site

Facility siting was noted as a significant risk element in many supporting information reports (e.g. Sidney Master Plan) and in the IRM case studies (e.g. Durham York Energy Centre). Arising from the IRM RFEOI process, the majority of respondents preferred that the CRD provide the site for the IRM facility. In the majority of case studies that were examined, for facilities managing municipally controlled waste, the municipal authority was responsible for facility siting. The facility siting process itself can be complex and controversial. The CRD has attempted to mitigate this by identifying as set out in the IRM RFEOI, that it has space available at Hartland for development of an IRM solution. However, comparison of this space to the site size requirements for many of the IRM options (which vary by technology) indicates that this space may not be sufficient. Certainly, the Hartland site offers conveniences to an IRM solution including proximity to the RTF, potential for shared infrastructure such as access roads, scales etc. and potential access to the electrical and/or gas grid (and potentially opportunities to share some gas infrastructure).

While the CRD has expressed interest in examining the concept of sub-regional IRM solutions, the approach to facility siting for sub-regional facilities has not been identified.

Prior to proceeding with the IRM procurement process, the CRD should determine:

1. If the CRD will retain specific responsibility for identifying and providing a site for an IRM facility, and exactly what its role would be in siting for options that include any sub-regional or multi-facility approaches;
2. If the CRD can provide more area at Hartland for consideration as a location for an IRM facility;
3. If a siting process would be required, would the CRD lead this process and how would it be addressed within the IRM Project Plan and/or the CRD Solid Waste Management Plan process.

6.2 Waste Supply

As indicated in the majority of the case studies discussed in Section 5 of this report, secure waste supply is the key for a financeable and sustainable project. Waste supply is usually secured through two means. For municipal entities that have implemented facilities, waste supply focuses on the materials over which those entities have waste flow control. Some municipalities do compete on the open market, however, generally facility sizing decisions and financing decisions are focused on the material streams for which they have certainty of supply. For the private sector entities that have implemented facilities, the majority of waste supply is secured through long term contracts.

Where there is more than one municipal body (upper and lower tier jurisdictions) or in those areas where multiple jurisdictions have partnered to develop facilities, waste supply has been addressed through long term agreements. This could be an option for the CRD to consider, particularly if the CRD is interested in pursuing any relationships with other jurisdictions to seek an IRM solution.

Currently, as discussed in Section 3 (see Figure 2), the CRD only controls a fraction of the solid waste stream generated in the region. The CRD currently only has assurance that it can make available the RTF Biosolids stream, and a portion of the organics stream (primarily yard waste) that it currently manages. In regards to the MSW stream, while the Hartland landfill currently manages significant IC&I waste streams, and the disposal of residential waste as directed by the area municipalities, this stream is not a guaranteed feedstock for an IRM solution as its availability is governed through competitive pricing and the availability of competitive disposal/processing options.

A number of RFEOI respondents, noted the difficulty in identifying IRM solutions for feedstock that is not wholly controlled by the CRD, and where there is significant potential for the materials to vary in quantity and quality over time (e.g. the CRD MSW stream). The assessment of longer-term solid waste management system impacts and determination of potential shifts in material types and tonnages is an essential component of the IRM Project Plan as is the consideration of waste flow management policy.

Prior to proceeding with the IRM procurement process, the CRD should determine:

1. What specific material streams will the CRD identify and guarantee that it would make available for processing for an IRM solution;
2. Are there any contractual or other relationships that the CRD would want to pursue itself, in order to secure additional material streams?
3. Although not preferred, how much risk for waste supply would be passed onto the respondents to the IRM procurement? Would this focus only on the supplemental materials required by their technology (e.g. wood waste) or would it extend more broadly to any other commercial material streams required to develop a viable IRM solution? What are the implications of this risk on pricing and the future availability of a facility?

Based on the decisions regarding waste supply, this could reduce the range of potential IRM solutions that are viable in the CRD, and allow for greater focus in the IRM procurement process.

6.3 Ownership

The question of facility ownership is central to the decisions made regarding deal structure, financing and allocation of project risk. In the majority of the case studies discussed in Section 5, the municipal authority held ownership of the IRM infrastructure that was developed particularly when the potential technology risk was lower through the application of proven/conventional technologies. There were some examples however, of municipal jurisdictions choosing to allow for private sector ownership of infrastructure (e.g. Walker Industries, Thorold Facility) where competitive pricing and long-term contractual guarantees provided a reasonable solution for the municipality and reduced the need for municipal capital investment.

No specific position on IRM facility ownership has been taken by the CRD Board. Many of the respondents to the IRM RFEOI indicated some preference towards CRD ownership of the facility, although most were flexible in the type of procurement and ownership model that could apply. Decisions regarding ownership are reflected in the form of procurement and contract structure as discussed below, and can affect access to federal or provincial grants that may require either immediate or transfer of ownership of the asset.

As shown in the case studies, there are facilities that are owned by the public sector and there are those that are owned by the private sector. The decision as to the which structure makes the most sense depends on the local circumstances and several key parameters. These include:

1. What do the parties bring to the transaction- i.e. technology, site, waste supply, market contracts, operating capability, and residuals management?
2. What is the historical preference of the public participant?
3. What is the tolerance for risk?

Prior to proceeding with the IRM procurement process, the CRD should determine:

1. What is the preferred ownership arrangement?
2. Are there any circumstances in which the CRD would not want to own the Facility?
3. What is the preferred risk posture?

6.4 Procurement and Contract Structure

The predominant procurement and contract structure utilized in those instances in which the Respondent is providing proprietary technology is some form of DBOM, either a straight DBOM, where the public sector provides the financing, a DBFOM where the Respondent provides the financing, a DBOOM, where the Respondent retains ownership or a DBOOT, where ownership of the Facility is ultimately transferred to the public sector.

Control of the asset beyond the initial contract term is one element of the decision process. In those situations in which the public sponsor provides the site and the procured facility is part of

a larger system, there is greater emphasis on retaining access to the asset. That in turn tends to drive in the direction of public ownership. As noted above, decisions regarding ownership are reflected in the form of procurement and contract structure, and can affect access to federal or provincial grants that may require either immediate or transfer of ownership of the asset.

Several of the RFEOI respondents were open to a wide range of business arrangements, ranging from providing the technology to DBFOM.

Prior to proceeding with the IRM procurement process, the CRD should confirm:

1. If preferred business model is some form of public/private partnership with the private sector providing design, construction, and operation and maintenance services for at least a portion of the operations period; and,
2. The recommended procurement approach is an RFQ/RFP structure to procure the selected business model (i.e.), with the RFQ and RFP including technical, financial, and team criteria.

6.5 Financing/Funding

Project financing is directly correlated to commitment of a waste supply over time (i.e.: flow control) enhanced by long term off-take agreements for the process byproducts. As discussed in Waste Supply above for the majority of the case studies discussed in Section 5 of this report, secure waste supply was the key for a financeable and sustainable project. In addition to waste supply the project financing can be enhanced with long term committed off-take agreements for the byproducts of the facility. Financing through local government authorities is usually obtained at a lower rate of interest than private financing, reducing the overall cost of IRM facility development.

Obtaining the required capital to fund the permitting, design and construction of the facilities needed to meet the IRM goals of the CRD is a critical element in the ability to successfully develop an IRM program. Financing approaches in the industry vary. As noted in the various case studies, some projects are financed by the private sector, others are financed by the public sponsor. The RFEOI respondents varied in their preference for which party would provide the financing. One of the factors in considering which approach to take is that private sector financing is generally more costly than public financing.

Financing is tied to ownership and structure of the procurement model/business deal, which in turn is linked to technological risk. As noted in several of the case studies, one of the ways technology risk was addressed was to require the Respondent to provide the financing for the project, with the public sector providing the waste under a long term fee for service.

Another mechanism for mitigating technological risk is to require that the Respondent provide construction financing, with the public sector providing payments either in the form of a large single payment upon successful completion of an acceptance test or via debt service payments over the operating term.

Another important consideration is the financial strength of the Respondent. One of the project elements that providers of capital will review is the financial strength of the Project participants and their ability to backstop their guarantees and performance obligations.

Prior to proceeding with the IRM procurement process, the CRD should determine:

1. Availability of Public Funding. What sources of funds could be used to fund the Project and the attendant security and interest rates anticipated.
2. Preferred Approach. Will the CRD require private financing of the Project, either during the construction period or overall?
3. What specific material streams will the CRD identify and guarantee with long term payment provisions that would make it possible for a private developer to secure project financing.
4. What off-take agreement terms will the CRD entertain.

6.6 Technology Risk

In summary, the IRM process undertaken to-date and discussed in Section 2 and the Case Studies discussed in Section 5 of this report, address a range of thermal, chemical, mechanical and biological processes. These technologies range from conventional processes (combustion, anaerobic digestion, composting, mechanical and biological treatment, RDF production, nutrient recovery) and more emerging technologies from the perspective of managing integrated solid and liquid waste streams (gasification, plasma arc gasification, pyrolysis, hydrolysis, catalytic and thermal depolymerization, waste to fuel).

Technology risks affect:

1. Performance of the facility with respect to the ability of the facility to receive and process the agreed upon quantity of material the large majority of the time. This is often expressed as the percent of operational time over the course of an operating year.
2. Performance of the facility with respect to achieving material and energy recovery rates.
3. Performance of the facility with respect to achieving environmental performance requirements related to emissions (air, water), greenhouse gas emission targets, noise/odour/dust effects on the community etc.

Decisions made on the procurement and contract structure that would be applied by the CRD, are usually coupled to the degree of risk associated with the technologies, although as discussed in the case studies, there are various means of sharing risk through performance guarantees and other contractual mechanisms.

In general, the following trends were clear from the review of the supporting documents and case studies:

1. Less technology risk is associated with conventional technologies, in many cases resulting in decisions by municipal entities to assume more risk related to the project and often less complex DB procurement and contractual structures.
2. More technology risk is associated with less conventional technologies, in many cases resulting in decisions to allocate more risk to the facility developer, including responsibility for long-term facility operations and in many cases for the majority of all areas of responsibility under the contract. Projects offering more technology risk are generally avoided by municipal entities to protect public funds from speculative enterprises.

Technology risks for the IRM would be addressed through the application of criteria in the RFQ process to select qualified respondents, through the various performance guarantees and specifications applied through the IRM RFP, and through the deal and contract structure decided upon by the CRD as discussed below.

Prior to proceeding with the IRM procurement process, the CRD should determine:

1. As discussed above, what specific waste streams will be provided, as this will impact technology options.
2. What degree of technology risk the CRD is willing to accept.
3. What minimum reference project/ team experience will the CRD require.

6.7 Markets

The financial viability of the majority of IRM solutions also reflects the range of potential products that can be recovered (materials, energy) and the market value of those materials. Market value is often driven by factors beyond municipal control, such as the regulatory environment, availability of raw materials and/or other energy sources. It is clear that market conditions in jurisdictions like the EU for example, reflect that a premium is often available for electrical or bio-energy (liquid or solid fuels) that support transition from fossil fuels, and that lack of competing raw material sources (e.g. aggregate) can support marketing of alternative products derived from waste materials.

The responses to the IRM RFEOI indicate that a number of products could be recovered and marketed and/or directed to beneficial use, from the CRD liquid and solid waste streams. The market value of these materials has yet to be determined, and is an important consideration in determining the overall cost of an IRM solution. The viability of technologies that recover energy such as AD or gasification, may be contingent upon identifying a higher value market for that energy such as vehicle fuel. In regards to other products, in some cases more limited markets were identified (e.g. cement kilns as an RDF market) while in others the respondents had identified potential for a broader market (Class A compost).

Respondents to the RFEOI provided varying feedback as to who should be allocated energy/commodity price risk and responsibility for energy offtake agreements.

Prior to proceeding with the IRM procurement process, the CRD should determine:

1. Does it have a preference for how responsibility would be allocated for energy offtake agreements.
2. Does it have a preference as to how responsibility would be allocated for energy/commodity price risk and marketing of recovered products/energy.

Additional research regarding markets and market risks would be appropriate as part of the development of the IRM Project Plan, and will be undertaken to support the risk and procurement workshop in December.

6.8 Residuals Management

Secure, long term availability of residual management capacity is critical to financing the Project. Most of the respondents to the RFEOI indicated that they were looking to CRD to provide this. As noted in the case studies, responsibility for residuals management in most instances rests with the owner.

Prior to proceeding with the IRM procurement process, the CRD should confirm its willingness to provide residuals management capability throughout the proposed term of the agreement or identify the specific anticipated obligations of the private sector to address this critical aspect of the project.

6.9 Alternative Approaches / Concepts

In order to address many of the above elements of a successful IRM project, some jurisdictions have applied alternative approaches / concepts to resolve one or more of these issues. As indicated in Section 5:

1. In some cases a consortium or group was formed with private sector companies and/or municipal entities (e.g. Lahti Energia Kylmaijarvi II, Finland) to pursue a project and reduce the technical risk assumed by the partners in pursuing advanced technologies.
2. There were cases such as with the Kelowna/Vernon biosolids composting facility or the Durham York Energy Centre, where municipalities have partnered to develop a project to address the requirements for feedstock flow control, economies of scale and financial risks.
3. In some cases municipal coalitions / consortiums / agreements have been used to resolve broader IRM issues associated with biosolids and solid waste management such as the BAB2E Coalition in California. The CRD had previously explored the concept of tri-regional energy from waste solutions. It is possible that multi-regional concepts or inter-regional agreements could also play a role in IRM. The complexity of such arrangements can sometimes require significant effort to overcome, however there could be benefits of examining this type of relationship either on the island or with jurisdictions like Metro-Vancouver on the mainland.

At this stage in the process, the CRD should carefully examine the potential viability of difference partnership arrangements, particularly with other regional jurisdictions, to determine if they offer

an option to address IRM risks. This is particularly important to address prior to entering into IRM procurement at the RFP stage, as it could significantly alter the scope and contractual arrangements that would apply to IRM facility development.

7 Next Steps

In summary, the elements of a successful IRM project reflect a combination of critical factors, many interrelated, that need to be addressed as part of moving forward with the successful implementation of an IRM system. This summary of findings is intended to provide the context for key decisions that need to be made to support development of the IRM procurement process. It is proposed that these findings would form the basis for the development of risk management matrices that will be presented and discussed at an IRM procurement workshop to be held with elected officials later this year to help address the key decisions that must be made.

Following this workshop, the criteria that would be used for advancing the IRM procurement process will be developed.

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ERM 17-34

REPORT TO INTEGRATED RESOURCE MANAGEMENT ADVISORY COMMITTEE MEETING OF WEDNESDAY, SEPTEMBER 6, 2017

SUBJECT **Integrated Resource Management Technology Gap Analysis – Biosolids Jurisdictional Review**

ISSUE

To present the Integrated Resource Management (IRM) Technology Gap Analysis and the Biosolids Jurisdictional Review.

BACKGROUND

The IRM Request for Expressions of Interest (RFEOI) process resulted in 10 expressions of interest submissions representing a wide variety of technologies. The Capital Regional District Board recommended the completion of a Technology Gap Analysis to ensure comprehensive consideration of available IRM technology, presented in Appendix A.

An outstanding condition of the Province's approval of the Core Liquid Waste Management Plan Amendment No. 11, and associated provincial and federal funding of the core area sewage project, is a Jurisdictional Biosolids Review to present examples of how other jurisdictions produce and beneficially use biosolids. The review was completed by Environmental Dynamics Inc. (Appendix B) and reviewed by the Province to confirm it meets their requirements. Information was compiled for 15 jurisdictions with established biosolids programs, with the intent of presenting a diversity of Class A biosolids processing, end uses and marketing strategies in North America.

ALTERNATIVES

Alternative 1

That the Integrated Resource Management Advisory Committee recommend to the Environmental Services Committee:

1. That the Integrated Resource Management Technology Gap Analysis and the Biosolids Jurisdictional Review be received for information;

2. That the Biosolids Jurisdictional Review be submitted to the Minister of Environment and Climate Strategy; and

3. That these reports be forwarded to the Saanich Peninsula and Gulf Islands Wastewater Commissions and the District of Sooke for information.

Alternative 2

That staff be directed to bring back more information to the committee.

IMPLICATIONS

A number of technologies were not represented in the RFEOI process. The table below summarizes the findings of this gap analysis.

Summary of Technology Gap Analysis Findings

Technology Classification	Technology	Represented in the RFEOI Responses (by Company Name)	Not Represented in the RFEOI Responses
Mechanical	Mechanical Sorting	Anaergia, APD, ECS, ICC Group, Pivotal, Redwave, Veolia, Walker, WTT	
	Autoclave/Steam Classification		Not represented
Biological	Composting	ECS, Redwave, Veolia, Walker, WTT	
	Anaerobic Digestion Dry or High solids	Anaergia, Redwave, WTT	
	Anaerobic Digestion using wet (low solids) or WWTP	Veolia, Walker	
Thermal	Gasification	Pivotal, ICC Group	Not all gasification technologies represented
	Electro-Thermal Gasification	APD	
	Pyrolysis		Not represented
	Waste to Fuel (Fischer-Tropsch)		Not represented
	Combustion (WTE, EFW, Mass Burn)		Not represented
	Refuse Derived Fuel (also pelleting or briquetting)	Anaergia, ICC, Pivotal, Redwave, WTT	
Chemical	Thermal and Chemical Hydrolysis		Not represented
	Catalytic and Thermal Depolymerization		Not represented
Other	Nutrient Recovery	Ostara	

The Jurisdictional Review was compiled for 15 jurisdictions with established biosolids programs. Jurisdictions were selected with the intent to present a diversity of Class A biosolids product processing types, end uses, and marketing strategies used in North America. The review highlights that biosolids are processed, reused, or disposed of in a variety of ways worldwide. The most prevalent biosolids management option in many regions of the world, including North America, is land application.

CONCLUSION

Information from the IRM Technology Gap Analysis and the Biosolids Jurisdictional Review will provide valuable background information as the CRD moves forward with the evaluation and potential development of an Advanced Integrated Resource Management solution.

RECOMMENDATION

That the Integrated Resource Management Advisory Committee recommend to the Environmental Services Committee:

1. That the Integrated Resource Management Technology Gap Analysis and the Biosolids Jurisdictional Review be received for information;

2. That the Biosolids Jurisdictional Review be submitted to the Minister of Environment and Climate Strategy; and

3. That these reports be forwarded to the Saanich Peninsula and Gulf Islands Wastewater Commissions and the District of Sooke for information.

Submitted by:	Russ Smith, Senior Manager, Environmental Resource Management
Concurrence:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services
Concurrence:	Larisa Hutcheson, P.Eng., Acting Chief Administrative Officer

RS:ac

Attachments: Appendix A – IRM Technology Gap Analysis – HDR
Appendix B – Beneficial Reuse of Biosolids – Jurisdictional Review - EDI

IRM Technology Gap Analysis

Capital Regional District

Advanced Integrated Resource Management (IRM) Project

August 25, 2017

1. Introduction

On June 28, 2017 the Integrated Resource Management Advisory Committee (IRMAC) recommended to the CRD Environmental Services Committee that five key deliverables be prepared and delivered for the September IRMAC meeting, based on the staff report entitled the Advanced Integrated Resource Management, Next Steps and the presentation that was provided regarding the IRM Road Map. These recommendations were approved by the Environmental Services Committee on June 28th, 2017 and subsequently by the CRD Board. One of these five key deliverables is the completion of a Gap Analysis to addressing the evaluation of the broader array of technologies and feedstock combinations, as required in the provincial approval of the Core Area Liquid Waste Management Plan, Amendment No. 11.

The following provides a Gap Analysis regarding technologies and potential feedstock. This Gap Analysis identifies the full spectrum of possible technologies that could be considered by the CRD and considers the application of these technologies to the potential feedstock combinations considered by the CRD. This preliminary Gap Analysis reflects the outcome of the IRM RFEOI as reported in the detailed analysis of the RFEOI results provided to the IRMAC on June 28, 2017 as well as the outcome of the Jurisdictional Review both of which are key components supporting the assessment of the full spectrum of approaches to beneficially reuse biosolids. As the responses to the RFEOI did not reflect the full spectrum of possible IRM technologies that are available, additional resources were used to supplement this information including: other reports prepared on behalf of the CRD such as the *Gasification Technologies – Characterization of Waste Resources in the Capital Region (September 2016)*, studies provided previously as information to the CRD including the *City of Sydney Advanced Waste Treatment Master Plan (March 2014)*, and reports prepared by HDR that have been developed in the course of undertaking similar studies on behalf of other jurisdictions in North America such as the *Oregon Metro, Long Term Waste Management Options Study (March 2015)*. A selected list of references is provided at the end of this document.

This Gap Analysis should be considered as an initial document that would be refined as further work is undertaken over the course of the next few months as set out in the recommended CRD IRM Project Plan Outline (discussed in the separate report to the IRMAC) regarding the approach for technology selection and development of feedstock assumptions for the RFQ. The assessment of the full spectrum of beneficial uses and integrated resource management options in the IRM Project Plan, would be comprised of this Technology and Feedstock Gap Analysis along with the additional work undertaken regarding the approach for technology selection and development of feedstock assumptions, information gathered during the proposed IRM facility tours as set out in the IRM Facility Tour Plan and the outcome of the IRM RFQ process.

2. IRM Technology Gap Analysis

The Detailed Analysis of Responses to RFEOI No. 16-1894 (Detailed Analysis) was presented to the IRMAC on June 28, 2017. An overview of the technologies offered by the RFEOI respondents and the subject liquid and solid waste streams was summarized in Table 6.1 of the Detailed Analysis. Generally there was good representation of technologies suitable for managing the full spectrum of the CRD solid and liquid waste streams, however not all known technologies were reflected in the RFEOI submissions. In addition, no one technology indicated in the RFEOI submissions offered a complete IRM solution for managing all of the solid and liquid waste feedstock identified by the CRD. Some submissions indicated interest in processing a sub-set of the

CRD materials. Others indicated the use of a combination of technologies in order to manage all potential feedstock.

The RFEOI responses generally can be categorized within specific technology groups that could be applied to manage solid and liquid waste streams in an integrated resource management process as noted in Table 1 below. Table 1 also notes specific technologies that were not represented within the RFEOI responses.

Table 1 Overview of Technologies Represented and Not Represented in the RFEOI Responses

Technology Classification	Technology	Represented in the RFEOI Responses (by Company name)	Not Represented in the RFEOI Responses
Mechanical	Mechanical Sorting	Anaergia, APD, ECS, ICC Group, Pivotal, Redwave, Veolia, Walker, WTT	
	Autoclave/Steam Classification		Not represented
Biological	Composting	ECS, Redwave, Veolia, Walker, WTT	
	Anaerobic Digestion Dry or High solids	Anaergia, Redwave, WTT	
	Anaerobic Digestion using wet (low solids) or WWTP	Veolia, Walker	
Thermal	Gasification	Pivotal, ICC Group	Not all gasification technologies represented
	Electro-Thermal Gasification	APD	
	Pyrolysis		Not represented
	Waste to Fuel (Fischer-Tropsch)		Not represented
	Combustion (WTE, EFW, Mass Burn)		Not represented
	Refuse Derived Fuel (also pelleting or briquetting)	Anaergia, ICC, Pivotal, Redwave, WTT	
Chemical	Thermal and Chemical Hydrolysis		Not represented
	Catalytic and Thermal Depolymerization		Not represented
Other	Nutrient Recovery	Ostara	

Assessing the technologies represented in the RFEOI submissions indicates that:

1. In regards to mechanical processing, the RFEOI submissions addressed the current range of sorting technologies applied to mechanically process MSW and other solid waste materials, including some newer technologies that are currently being successfully applied to extract the organic fraction of the waste stream from other materials. The submissions did not include emerging technologies such as autoclave/steam classification.

2. In regards to biological processing, the RFEOI submissions addressed the current range of aerobic composting processes as well as the range of anaerobic digestion (AD) processes (dry stackable, high solids and wet AD) that are being successfully applied to process and recover value from the organic fraction of the solid waste stream as well as to process biosolids (and/or sewage sludge).

3. In regards to thermal processing, the RFEOI submissions addressed a few specific gasification technologies that can be applied to recover energy from the solid waste stream. However, a number of current thermal technologies were not represented including combustion and some types of gasification (e.g. plasma gasification) as well as some emerging technologies.

4. There are a few emerging chemical processing technologies that were also not reflected in the RFEOI submissions.

The mechanical, biological and thermal technologies represented in the RFEOI submissions were discussed in detail within the *Detailed Analysis of Responses to RFEOI No. 16-1894*. Those IRM technologies not represented in the RFEOI responses are discussed further in Section 2.1.

The full spectrum of technologies capable of specifically managing biosolids and/or sewage sludge were not represented in the RFEOI responses. The RFEOI responses focused primarily on those technologies that could manage biosolids as part of an IRM solution (per Table 1), with one technology focused on managing a sub-set of the biosolids stream (recovery of nutrients from dewatering liquid). A separate *Beneficial Reuse of Biosolids Jurisdictional Review* was prepared for the CRD in June 2017 to present examples of how other jurisdictions produce and use Class A biosolids. The well-established and emerging technologies represented in that report include those technologies that address biosolids management in a separate stream, as well as those that can address biosolids in an IRM approach with other materials. A brief summary of the outcome of that separate study is provided in Section 2.2 for reference, specifically noting those technologies that were identified which could contribute to an IRM solution.

2.1 Discussion Regarding Other IRM Technologies

The following text discusses the thermal technologies that were not represented in the RFEOI submissions. In each case a brief overview of the technology is provided as well as a summary table indicating key parameters regarding the technology.

2.1.1 Autoclave/Steam Classification

Autoclaving is classified as a "mechanical" process that uses heat and pressure in a mechanical rotating cylinder to separate the cellulosic material from other portions of the municipal solid waste stream. The basic Autoclave technology has been in use for sterilization of hospital wastes and equipment and other related applications for many years.

Autoclaving addresses only a portion of the waste stream, namely the cellulose-fiber-containing portion, which is usually 40% to 60% of the total MSW input stream. This technology can accept mixed MSW which contains a large organic fraction to be used as a "front-end" to many of other technologies. The Autoclave process has the potential for a 40% to 60% reduction in waste volume with the cellulose recovery having the potential to be used as feedstock for paper production, fuel, ethanol production feedstock, compost feedstock; or digester feedstock for methane production.

Autoclaves are large rotating vessels that have steam injected and kept at a certain temperature and pressure over a 2 to 4 hour period to convert the MSW. A trommel screen is usually utilized after autoclaving to separate out the various mixes of fibrous organic materials produced from autoclaving and other materials (i.e., fine organics stream, bulky organics stream, and overs, such as inorganic materials, and recyclables such as glass, metals and plastics). If the goal for the autoclaving technology is recovery for paper production, because the fibers are of such a mixed grade, the main product that can be produced is a lower-grade cardboard.

Autoclaves are currently operating in batch mode accepting from approximately 1 to 25 tons per batch (2-3 hour). The Salinas Valley Solid Waste Authority employed an autoclave pilot study for several years at their Crazy Horse Landfill in Salinas California. The study was partly funded by grants to explore cellulosic fuel development.

There are no large-scale commercial Autoclave facilities operating in North America that use a purely mixed MSW stream as a feedstock. All of the demonstration projects have been completed on a fairly small scale (less than 300 tpd) on different feedstocks besides MSW. No known commercial operation exists at this time in the U.S. or elsewhere for processing MSW.

Benefits include the diversion of materials from landfill, the production of a cellulose product valuable for many uses as described above. The environmental risks of Autoclaving are not known. Water consumption and wastewater generation for this technology is unknown at this time.

SUMMARY Autoclave/Steam Classification
Technology Classification: Mechanical
Current Technology Providers: There are dozens of medical autoclave providers but no waste processing providers at commercial levels. CR3 developed the Salinas Valley demonstration facility.
General Description of Processing Technology (overview): Cycled steam pressurization in rotating vessel followed by screening to separate inert materials (metals, glass, etc) from the cellulose (paper products) for further refinement. Autoclave technology is commonplace in the medical field to sterilize medical instruments. This is a preprocessing technology that could separate cellulose for a variety of other technologies such as RDF, Waste to fuel, AD, etc.
Inputs (acceptable feedstock composition): Mixed waste material containing paper, paperboard, cardboard, etc.
Size (range of existing facility sizes): Currently small scale-batch type facilities operating at 2 to five tons per hour.
Environmental Implications (air, noise, water, GHG emissions): This is a preprocessing system to prepare and extract cellulose for a variety of other processes such as RDF, waste to fuel, etc.
Products / Materials / Energy Recovered: recyclables (metals, glass, some plastics), cellulose as a feedstock for further refinement or as a feedstock for other processes.
Status: New and Emerging. There have been some demonstration applications completed using mixed municipal solid waste and other select waste streams; however, there has been no widespread commercial application of this technology.
Reference Facility(ies):
Representative Existing Facilities: Salinas Valley Solid Waste Authority: pilot research project.[1]

2.1.2 Thermal and Chemical Hydrolysis

Hydrolysis is a multi-step process to eventually produce a fuel-grade ethanol solution from the cellulose fractions in municipal solid waste (paper, food waste, yard waste).Hydrolysis is a multi-step process that includes four major steps: Pre-treatment; Hydrolysis; Fermentation; and Distillation. For MSW the pre-treatment step would include separation of the feedstock stream as necessary to remove any inorganic/inert materials (glass, plastic, metal, etc.) from the organic materials (yard waste, paper, etc.). Feedstock materials that are appropriate for hydrolysis/fermentation of the cellulosic components of MSW include wood, green waste and paper. Wastewater treatment plant operators may also apply a form of hydrolysis (Thermal Hydrolysis) to increase the biogas generation from their anaerobic digesters and improve the de-waterability of the sludge.

Pre-processing of the incoming waste stream for this technology involves separating the cellulose fraction of the municipal solid waste. This can be accomplished by a variety of methods including air classification, screening, and manual sorting. The remaining organic material is shredded to reduce size and produce a more homogenous feedstock.

The feedstock is placed into a reactor. Next, the feedstock reacts with a strong acid (e.g. sulfuric acid) to produce sugars. After that, these sugars are fermented to produce an organic alcohol. This alcohol is then distilled to produce a fuel-grade ethanol solution. The by-products from this process are carbon dioxide (from the

[1] Oregon Metro Solid Waste Plan Phase 3 Final Report, March 2015. HDR.

fermentation step), gypsum (from the hydrolysis step) and lignin (non-cellulose material from the hydrolysis step). Since the acid acts only as a catalyst, it can be extracted and recycled back into the process.

The process of chemical Hydrolysis is well established for some organic feedstocks, such as in the conversion of wood to paper pulp, but has only been applied to MSW-derived organics on a conceptual basis, or limited to laboratory- or pilot-scale. There has been no widespread commercial application of this technology using MSW as a feedstock in North America or abroad.

SUMMARY Thermal and Chemical Hydrolysis
Technology Classification: Chemical
Current Technology Providers: Cambi (biosolids), BioRefinex (organic waste), Lystek (biosolids), BlueFire Renewables (biomass)
General Description of Processing Technology (overview): Pressure and heat are applied, similar to pressure cooking, resulting in sugars that can be digested using anaerobic digestion or refined using other processes. This process is seen as a pretreatment system to enhance anaerobic digestion of biosolids but could have other applications in the waste industry.
Inputs (acceptable feedstock composition): Currently biosolids but could be relevant to other materials containing cellulose (paper, paperboard, cardboard) and organics (meats, fats, feedlot mortality, etc.)
Size (range of existing facility sizes): This is an emerging industry in the waste field so the scale of facilities are generally small but its application to other industries (pulp/paper and petroleum) is larger and more common.
Environmental Implications (air, noise, water, GHG emissions): This is a preprocessing system to enhance anaerobic digestion of biosolids but could be applicable to processing meats, fats, etc.
Products / Materials / Energy Recovered: Petroleum like by-products.
Status: New and Emerging. There have been some demonstration and pilot-scale applications completed using mixed municipal solid waste and other select waste streams; however, there has been no widespread commercial application of this technology.
Reference Facility(ies)
Representative Existing Facilities: This technology is used in the biosolids processing field but is still in research and development. There are no known facilities operating on solid waste streams. [2]

2.1.3 Catalytic and Thermal Depolymerization

In catalytic or thermal depolymerization, the plastics, synthetic-fibre components and water in the municipal solid waste feedstock react with a catalyst under non-atmospheric pressure and temperatures to produce a crude oil. This crude oil can then be distilled to produce a synthetic gasoline or fuel-grade diesel. This process is somewhat similar to that used at an oil refinery to convert crude oil into usable products, including the use of distillation to segregate the desired hydrocarbon liquids (such as diesel fuel). Typical feedstocks proposed for depolymerization are plastics, waste oils, grease, and offal (i.e., processed animal soft tissue). Technology vendors representing this technology indicate that it can theoretically use MSW and biomass as feedstocks. This has not been shown as

[2] Niagara Region – Assessment of Alternative Waste Management Technologies, Technical Memo No. 2, January 2014, HDR.

feasible except at extremely small scale. There are two depolymerization methods that can be used to convert organic materials into fuel: thermal and catalytic.

Thermal Depolymerization

Thermal depolymerization utilizes temperature (temperature ranges from 1,000° to 1,400° Fairenheit) and pressure to crack the large hydrocarbon molecules within the feedstock. Once the hydrocarbon molecules are broken into shorter chains, additional refining steps are required to convert the molecules into oil. The high temperature and additional refining steps in the thermal process require the input of a significant amount of energy, as compared to the catalytic depolymerization approach. The energy balance data for thermal depolymerization of waste-derived organic materials are lacking with regard to commercial scale processing.

Catalytic Depolymerization

The catalytic depolymerization process uses lower temperatures (ranging from 500° to 700°F) and lower pressures than thermal depolymerization. In order to achieve adequate product yields and qualities at the lower temperatures and pressures, a catalyst is employed to aid in the process of breaking down or cracking the large molecules efficiently. Zeolite, silica-alumina, and bauxite are common types of catalysts used in the process. In a catalytic depolymerization process, the plastics, synthetic-fiber components and water in the feedstock react with a catalyst under non-atmospheric pressure and temperatures to produce a crude oil. This crude oil can then be distilled to produce a synthetic gasoline or fuel-grade diesel.

There are four major steps in a catalytic depolymerization process: Pre-processing, Process Fluid Upgrading, Catalytic Reaction, and Separation and Distillation. The Pre-processing step is where the feedstock is removed of contaminants and is sized. This process typically requires processing to produce a much smaller particle size with less contamination. The next step in the process is preparing this feedstock. The feedstock is mixed with water and a carrier oil (hydraulic oil) to create a sludge-type material. This sludge is sent through a catalytic turbine where the catalytic reaction under high temperature and pressure produces light oil. The light oil is then distilled to separate the synthetic gasoline or diesel oil. This catalytic depolymerization process is somewhat similar to that used at an oil refinery to convert crude oil into usable products. This technology is reportedly most effective with processing a waste stream with high plastics content and may not be suitable for a mixed MSW stream. The need for a high-plastics-content feedstock also limits the size of the facility.

There are no large-scale commercial Depolymerization facilities operating in North America that use a purely mixed MSW stream as a feedstock. There are some facilities in Europe and one in Mexico that utilize this or a similar process to convert waste plastics, waste oils, and other select feedstocks. One vendor claims to have a commercial-scale facility in Spain that has been in operation using MSW since late 2009; however operating data (including feedstock used) could not be obtained. Catalytic De-polymerization has been proposed in some locations for select portions of the waste stream with concentrated plastics content. It might be most effectively applied at a very large plastics manufacturing facility or similar industry that can become the source of the feedstock. Because such arrangements are very rare, limited interest in this technology has developed.

Benefits include the diversion of plastic and oil waste from landfill, the production of an oil or fuel product that can be used as fuel. Environmental risks are not well defined. Catalytic cracking could emit some hydrocarbons

from the process. There could also be some other risks resulting from the handling of the catalysts or solvents and related compounds that might be required for the process. Water and wastewater use is also not known.

SUMMARY Thermal and Catalytic de-polymerization
Technology Classification: Chemical
Current Technology Providers: None processing waste feedstock material
General Description of Processing Technology (overview): A thermally or catalytically enhanced thermo-chemical process under pressure and the absence of oxygen to break long-chain polymers composed of hydrogen, oxygen, and carbon into shorter chains of petroleum-like feedstock (referred to as a 'light crude oil'). Thermal de-polymerization occurs in higher ranges of temperature (1,000 to 1,400 F) compared to catalytic that employ a catalyst and can occur at lower temperatures (500 to 700 F).
Inputs (acceptable feedstock composition): Materials containing cellulose (paper, paperboard, cardboard) but also organics (meats, fats, feedlot mortality, etc.)
Scalability (range of existing facility sizes): This is an emerging industry in the waste field so the scale of facilities are generally small but its application to other industries (pulp/paper and petroleum) is larger and more common.
Environmental Implications (air, noise, water, GHG emissions): Insufficient information is available regarding potential for emissions.
Products / Materials / Energy Recovered: Petroleum like by-products.
Status: New and Emerging. There have been some applications using fractions of MSW and one reported commercial scale facility using MSW; however, there has been no widespread commercial application of this technology.[3]
Reference Facility(ies)
Representative Existing Facilities: This technology is used in the petroleum industry as a part of the oil distillation process. There are no known facilities currently operating on solid waste streams.

2.1.4 Waste-to-Fuel Technology

Waste-to-Fuel could be categorized as a type of gasification process however, due to its unique byproducts, we are including this discussion to clarify the process.

There are several proposed methodologies to convert MSW into fuels. The first step in the most prevalent MSW-to-fuel technologies requires the use of a process to generate a syngas, typically a thermal conversion process such as gasification. The syngas is then cleaned to remove impurities (tars, hydrocarbons, contaminants, etc.). The next step involves a Fischer-Tropsch (FT) process which is the key component required to convert gas to a liquid synthetic fuel. The FT process is defined as a collection of chemical reactions that converts a mixture of carbon monoxide and hydrogen into liquid long chain hydrocarbons. The chemical reactions produce a variety of hydrocarbon molecules with the more useful reactions producing alkanes. Most of the alkanes produced tend to be straight-chain molecules, suitable as diesel fuel. Use of the proper catalyst in the FT process is essential to garner the highest quality fuel while not deteriorating the catalyst. There are many forms of catalyst including

[3] Niagara Region – Assessment of Alternative Waste Management Technologies, Technical Memo No. 2, January 2014, HDR.

cobalt and ferrous based. Issues associated with using syngas from MSW gasification in the FT process include the contaminants in MSW syngas and low ratios of H_2 to CO. This FT process is usually followed by a hydro-cracking process. Hydro-cracking is required to break up the long-chain hydrocarbons into liquid fuels. The very long-chained hydrocarbons are waxes, which are solid at room temperature. Therefore, for production of liquid transportation fuels it is usually necessary to crack some of the FT products. Subsequent stages than can be applied as part of waste to fuels processes include: methanol synthesis; mixed alcohol synthesis; or syngas fermentation. Each process features different reaction pressures and temperatures, require different syngas composition, and use different catalysts.

Feedstock preparation, gasification, syngas clean-up and fuel synthesis are commercially viable at some scale using select feedstock materials such as biomass, coal or petroleum based materials. However, when using mixed waste streams as a feedstock, these systems as a whole are still in the demonstration or early commercialization stages. INEOS constructed the Indian River BioEnergy Center in Vero Beach, Florida and began processing biomass in anticipation of producing cellulosic ethanol at a commercial scale in late 2013. However, this facility encountered operational difficulties and ceased operation. The Enerkem facility in Edmonton Alberta, has constructed a waste to fuels facility as part of Edmonton's integrated waste management facility. Enerkem states that it will handle up to 100,000 metric tpy of carbon rich feedstock when operating at full capacity. The fuel feed for the Enerkem facility is produced through processing of various streams of materials recovered from the other facilities that form the full waste management complex for the city, processing both MSW and biosolids. Benefits include the potential production of an ethanol based fuel. Drawbacks include air emissions impacts associated with the thermal gasification and syngas conditioning process and the potential for only being able to produce fuel from a biomass only feedstock. In addition, there are solid and liquid wastes associated with this technology.

SUMMARY Waste to Fuel
Technology Classification: Thermal
Current Technology Providers: Enerkem
General Description of Processing Technology (overview): Feedstock preparation (screening, shredding), followed by gasification, syngas clean-up and fuel synthesis are commercially viable at some scale using select feedstock materials such as biomass, coal or petroleum based materials.
Inputs (acceptable feedstock composition): Woody biomass, and cellulosic material.
Size (range of existing facility sizes): Up to 100,000 tpy reported capacity for Enerkem facility in Edmonton.
Environmental Implications (air, noise, water, GHG emissions): The possibilities of significant environmental if this technology is developed fully. Environmental implications include air emissions from gasification.
Products / Materials / Energy Recovered: Petroleum like based fuels.
Status: Transitioning to Commercial Scale. Two commercial sized facilities have been developed, one of which is closed (Inneos). In general terms, this technology is developing from pilot to commercial scale but is more common for materials such as biomass, coal or petroleum based materials.[4]
Reference Facility(ies)
Representative Existing Facilities: Enerkem, Edmonton AB; Inneos, Florida - formerly operating but currently closed.

[4] Oregon Metro Solid Waste Plan Phase 3 Final Report, March 2015. HDR.

2.1.5 Pyrolysis

Pyrolysis is an emerging technology in MSW and biosolids management that has been found to minimize air emissions, while generating syngas that can be converted to energy and biochar, a soil amendment.

Pyrolysis is a thermal process where carbonaceous materials (waste materials such as woody wastes but also paper, food, sewage sludge or biosolids) are exposed to heat while being starved of oxygen, usually in the presence of a catalyst to enhance the process. The process results in the material degrading into a gaseous form called syngas that is then refined to remove impurities, synthetic oil obtained from the cooling of combustible vapours and an ash or biochar containing remaining carbon and inert materials. The ash or a biochar produced can be disposed of in landfills or potentially used as soil amendment. Pyrolysis is most commonly used on separated organic materials that allow for the recovered char to be used as a soil amendment.

Some high-temperature gasification facilities for MSW may employ a form of pyrolysis as part of the overall system, but not as the primary technology. For example the Chiba City Thermoselect High Temperature Reactor process combines slow pyrolysis with high-temperature gasification and ash melting.[5] Other demonstration facilities for MSW or components of MSW have been developed in jurisdictions outside North America.

While there are few examples of biosolid pyrolysis projects in North America, there is recognition that biosolids can serve as a renewable energy source to offset energy requirements at waste treatment facilities. Pyrolysis projects, such as those being investigated by the Bay Area Biosolids to Energy Coalition are aiming to provide viable, year-long alternatives to land application programs that go beyond biosolids-to-energy goals by also seeking to recycle biochar back into the environment. There are few pyrolysis projects at a demonstration or commercial scale applying pyrolysis to MSW or pre-processed MSW streams. A few large scale facilities in the US were not able to successfully operate (Baltimore, San Diego). A small German facility did operate for many years from the mid-1980s. Agilyx has a demonstration facility in Oregon which has applied pyrolysis to plastic waste.

SUMMARY Pyrolysis
Technology Classification: Thermal
Current Technology Providers: Agilyx, Mitsui; Compact Power; PKA; Thide Environmental; WasteGen UK; International Environmental Solutions (IES); SMUDA Technologies (plastics only); Utah Valley Energy.
General Description of Processing Technology (overview): Pyrolysis could be described as a form of gasification but employs a catalyst to enhance the process. Like gasification, pyrolysis is a thermal process where carbonaceous materials (waste materials such as woody wastes but also organics such as paper, food, sewage sludge or biosolids) are exposed to very high heat while being starved of oxygen. The process results in the material degrading into a gaseous form called syngas that is then refined to remove impurities.
Inputs (acceptable feedstock composition): Woody biomass, and cellulosic material (paper products, biosolids)

[5] City of Sidney, Advanced Waste Treatment Master Plan (March 2014)

SUMMARY Pyrolysis
Size (range of existing facility sizes): There are no known facilities operating. Facilities in the range of 4,000 to 36,000 tpy are reportedly under development.
Environmental Implications (air, noise, water, GHG emissions): Air emissions from waste conversion systems employing pyrolysis are primarily those discharged from the energy recovery device, which, for example, could be an internal combustion engine-generator set or a steam boiler.
Products / Materials / Energy Recovered: Syngas materials for further refinement into fuels, biochar.
Status: New and Emerging. Several projects employing a pyrolysis process have been developed over the years to treat MSW or specific feedstock materials typically found in MSW. Some of the facilities have processed MSW at the pilot-scale and at the demonstration-scale; however, none have been developed to a commercial scale in the United States.
Reference Facility(ies)
Representative Existing Facilities: No operating commercial facilites, some bench / research scale facilities.

2.1.6 Gasification Technologies

The gasification technologies represented in the RFEOI submissions included:

a) conventional gasification proposed by ICC, with the feedstock being Refuse Derived Fuel from pre-processing the MSW stream mixed with dried digestate from AD of organic materials; and
b) a form of advanced gasification proposed by Pivotal, including fast internally circulating fluidized bed (FICFB) gasification or circledraft technology with the feedstock being biomass sorted via manual and mechanical processing.

Another gasification technology which was not represented in the RFEOI submissions is Plasma Arc Gasification (or Plasma Gasification) which alternatively may be referred to as High temperature Gasification with ash melting/vitrification depending on its application.

Plasma Arc gasification has been used for a range of industrial disposal applications for mostly homogenous waste streams such as gasification of hazardous waste, auto shredder residues and other materials for some time. It has only been within the last 10 to 15 years that application of this technology to MSW or pre-processed MSW has been undertaken. Plasma arc technology uses carbon electrodes to produce a very-high temperatures arc ranging between 3,000 and 8,000 degrees celcius that “vaporizes” the feedstock. This creates a high temperature ionized gas (or “Plasma”). The heat of the plasma breaks down the feedstock to basic elemental compounds. The syngas created can be combusted and heat recovered in a HRSG or the syngas can be cleaned and combusted directly in an engine or gas turbine to produce energy and/or thermal energy. Inorganic material in the feedstock is melted to form a slag material. MSW should be pre-processed to remove bulky materials and inerts, while homogenizing the feedstock. Syngas clean-up systems and/or air pollution control systems are required to control emissions. There have been demonstration facilities using MSW in North America including the Plasco facility in Ottawa (now decommissioned), Alter NRG in Madison Pennsylvania, and PyroGenesis which has a demonstration unit on an airforce base in Florida.

Commercial operations of facilities in Japan include facilities that use mostly industrial waste or materials with high energy content. Many of the facilities in Japan are referred to as plasma direct melting reactors, with their

primary focus being to melt the ash remaining after gasification, in order to render the ash inert. One large facility intended to gasify MSW and recover energy had been proposed to be built in the Tees Valley in the UK, however, this project was cancelled. A smaller facility is under development near Birmingham, UK.

SUMMARY Plasma Gasification
Technology Classification: Thermal
Current Technology Providers: Alter NRG, Advanced Plasma Power, Thermoselect, Ebara, PyroGenesis
General Description of Processing Technology (overview): Plasma arc gasification uses electrical energy and extremely high temperatures (3,000 to 8,000°C) (5432 to 14,432 °F) to break down the organic portion of the waste into its elemental compounds and produce a syngas. Some plasma arc technologies use pure oxygen in the waste conversion process to improve the quality of the syngas. Once cleaned, the syngas can be combusted directly in an internal combustion engine, gas turbine, or for liquid fuel synthesis. Inorganic materials in the municipal solid waste are melted and then cooled and hardened to form a slag material which encapsulates pollutants.
Inputs (acceptable feedstock composition): High BTU Industrial Waste, Pre-processed MSW
Size (range of existing facility sizes): Modular units constructed at a pilot scale up to 100 tpd. There are larger units in development.
Environmental Implications (air, noise, water, GHG emissions): Similar to conventional gasification, the air emissions from plasma gasification systems are primarily discharged from the energy recovery device. The treatment of syngas produced from the plasma technology processing municipal solid waste for use in energy conversion equipment and emission control of syngas constituents has limited operating history. Solid residues from plasma gasification are in the form of a glass-like vitrified slag, which is claimed to be inert.
Products / Materials / Energy Recovered: Syngas, chemical by-products, vitrified slag.
Status: Emerging in regards to MSW applications outside of Japan. Have been used for commercial scale operations in Japan primarily for industrial materials.
Reference Facility(ies)
Representative Existing Facilities: Ebara Aomori facility in Japan, Thermoselect Chiba City Recycling Centre in Japan, Alter NRG Mihama-Mikata facility in Japan.[67]

2.1.7 Combustion and Energy from Waste (WTE, EfW or Mass Burn)

Combustion, (also waste-to-energy or energy-from-waste or mass burn) is a thermal process where carbonaceous materials (MSW, waste materials such as woody wastes but also paper, plastic, food, sewage sludge or biosolids) are exposed to very high heat with high levels of oxygen (burning). The exhaust from the burning process is treated through a series of emission control systems to remove particulates, dioxins, furans, sulfur and other pollutants. Heat from the process is used to produce steam and hot water which are used to produce electricity using a steam turbine. Steam or hot water from the system can also be used for heating

[6] Oregon Metro Solid Waste Plan Phase 3 Final Report, March 2015. HDR.
[7] City of Sidney, Advanced Waste Treatment Master Plan (March 2014)

purposes such as district heating schemes. Water used in the power generation process is recirculated through the system.

Combustion is thought by some as less environmentally friendly processing due to concerns regarding air emissions, and generation of an ash product which is most commonly landfilled. Recently, however, combustion is being viewed as a more attractive process by some jurisdictions as technical and process improvements have become available, such as more efficient heat recovery and power generation and significant improvements in air pollution control systems. Ash treatment and recovery systems have also been developed to recover solid materials from ash for beneficial use. EfW is the most common form of waste treatment in much of Europe, where many advancements have been made in the design and operation of the combustion units and air pollution control systems[8]. Modern combustion systems are being designed to achieve strict emission limits while also being energy efficient [9]. The most recent EfW facility in Canada was developed in the Regional Municipality of Durham, to process 125,000 tpy of residual waste (remaining after diversion) from the Regional Municipalities of Durham and York. This facility was commissioned in 2015 and is in full operation.

SUMMARY Combustion (Waste to Energy, Energy from Waste)
Current Technology Providers: Covanta, Babcock and Wilcox, Veolia
General Description of Processing Technology (overview): Waste to Energy and Energy from Waste facilites burn feedstock, using the heat to produce steam to power turbines to produce electricity. Often heat energy is recovered for industrial or district heating purposes.
Inputs (acceptable feedstock composition): MSW, biosolids
Scalability (range of existing facility sizes): Existing WTE facilities range from as small as 50 tons per day to over 1,000 tons per day.
Environmental Implications (air, noise, water, GHG emissions): The scientific community is mixed as to the environmental benefits of this technology. Although most of Europe embraces WTE as superior to landfilling, the US scientific community has concerns regarding air emissions, the resulting ash and water use.
Products / Materials / Energy Recovered: Electricity, commercial (high pressure) steam, district heat, metals, ash.
Reference Facility(ies)
Representative Existing Facilities: There are 82 operating facilities in the US. The nearest WTE facility is the Burnaby facility in BC. Newest Canadian facility is in Durham Region, ON.

[8] Waste to Energy, A Technical Review of Municipal Solid Waste Thermal Treatment Practices, prepared for the BC MOE, Stantec Ltd. (March 2011)

[9] World Energy Council, World Energy Resources, Waste to Energy (2016)

2.1 Beneficial Reuse of Biosolids Jurisdictional Review, Summary of Biosolids Management Technologies

This jurisdictional review identified a series of well-established biosolids management facilities and programs, as well as a series of emerging technologies with more limited use as of the time the review was completed. The report discussed examples of the techniques used by other jurisdictions across BC, which would fall under the BC Organic Material Recycling Regulations (OMRR) and across other jurisdictions with differing regulations. The technologies identified in the jurisdictional review are outlined in Table 2.

Table 2 Summary of Technologies Represented in the Biosolids Jurisdictional Review

Emerging Technologies	Number of Jurisdictions Cited in Review	Status of Technology/Facilities	End Product Produced
Biogas Utilization – Fuel	2	Operational	natural gas vehicle fuel / renewable natural gas
Thermal Hydrolysis	1	Design	Biogas, Class B Biosolids
Biological Hydrolysis	1	Operational	Biogas, Class A Biosolids
Biodiesel Production	1	Operational	Biodiesel, Class A and B Bisolids
Gasification	3	Operational / Pilot	Syngas, Ash/Biochar
Pyrolysis	2	Evaluation/Construction	Pygas, Biochar
Fluidized Bed Combustion	1	Operational	Heat & Steam to Energy, Ash

Established Class A Biosolids Management Technologies	Number of Jurisdictions Cited in Review	Percentage of Class A Biosolids Produced (Directed to System)	Beneficial Reuse of Biosolids
Anaerobic Digestion (Thermophilic, Mesophilic)	2	80 / 30	Application as fertilizer, range of uses including forest fertilization
Aerated Static Pile Composting	3	100 / 2	Application as compost, range of uses
RDF Lime-pasteurization	1	5	Application as Fertilizer, range of uses

Co-composting with Organic Waste	1	80	Compost, range of uses
N-Viro Alkaline Stablization / Lime Stabilization	4	50/75/100	Application as fertilizer, range of uses, biodiesel production
Covered Aerobic Static Pile Composting	1	100	Application as fertilizer, range of uses
Thermal Drying	2	100	Agriculture, cement kiln fuel

The emerging technologies identified in the jurisdictional review are much the same as those identified in Section 2.1 of this gap analysis, and generally can be applied to other solid waste feedstock as well as liquid waste streams.

The established biosolids management technologies, with the exceptions of RDF Lime-pasteurization and Alkaline or Lime Stabilization can also be applied to other solid waste feedstock and are represented in the technologies as identified in the CRD IRM RFEOI submissions.

The facilities and investigations represented in the jurisdictional review focused only on technologies/facilities in current or proposed use in North America. There are other facilities outside of North America that have applied other advanced technologies to successfully process biosolids. For example, in Balingen Germany there is a gasification facility that has been successfully expanded including a biosolids drying component and expansion of the gasification unit in 2011. This facility has been used to process biosolids imported from Alaska on a trial basis. A similar demonstration facility was developed in Mannheim Germany.

3. IRM Feedstock Analysis and Feedstock Combinations

The CRD has identified the following feedstock materials as being potentially available for an IRM solution:

1. 35,000 tonnes per year of Class A biosolids;
2. 120,000 to 135,000 tonnes per year of general municipal refuse;
3. 8,000 to 12,500 tonnes per year of controlled waste (including screenings and sludge from existing wastewater plants);
4. 15,000 to 20,000 tonnes per year of source separated household organics (kitchen scraps and compostable paper, not including yard and garden wastes); and,
5. 15,000 to 18,000 tonnes per year of yard and garden wastes.

In addition, the CRD has also maintained the option that the IRM facility could also accept up to 50% of the raw sewage sludge generated in the CRD, ranging up to 55,429 kg-TS/day (Peak 10-day year McLoughlin Residual Solids load).

As noted in the CRD IRM Facility Tour Plan (report under separate cover to the IRMAC), there are few facilities that currently process all of the potential solid and liquid waste feedstock of interest to the CRD. It is likely that an IRM solution would require co-location or a combination of technologies to address the full spectrum of CRD materials.

Table 3 presents a matrix of technologies and material streams that are currently being used in commercial operating facilities, to assist in understanding how the technologies could be applied to the CRD solid and liquid waste streams. In most cases, the feedstock processed by a commercial operation reflects whether there is a viable business case for directing that type of feedstock for processing, considering factors such as the operating and capital cost range for the technology and the market value for materials and/or energy that could be recovered. For example, it would be difficult to make a business case to direct low energy value waste streams to a thermal technology. It may be theoretically possible to process a type of feedstock with the technology, however the information gathered to-date for the IRM project does not indicate any commercial applications. Where a technology is not applicable at all due to the nature of the material stream, NA is indicated.

Table 3 Matrix of IRM Technologies and Potential Feedstock

Technology	Biosolids	Sewage Sludge	Municipal Solid Waste (MSW)	Source Separated Organics (SSO)	Leaf and Yard Waste (LYW)	Controlled Waste
Mechanical Sorting	NA	NA	Yes	Yes	NA	NA
Autoclave / Steam Classification	NA	NA	Yes	Yes	NA	NA
Composting	Yes	Yes	Organic Fraction Only	Yes	Yes	Organic Material Only
Dry or High Solids Anaerobic Digestion	Yes	Yes	Organic Fraction Only	Yes	Yes	Organic Material Only
Wet Anaerobic Digestion	Yes	Yes	Organic Fraction Only	Yes	Yes	Organic Material Only
Gasification	Yes, dried	Yes, dried	RDF recovered from mechanical sorting	No	No	No
Electro-thermal Gasification	No	No	No	No	No	No
Pyrolysis	No	No	Organic Fraction Only	No	No	No
Waste to Fuel	Yes, pre-processed with MSW	No	Organic Fraction Only	No	No	No
Combustion	Yes	Yes	Yes	No	No	Yes

Technology	Biosolids	Sewage Sludge	Municipal Solid Waste (MSW)	Source Separated Organics (SSO)	Leaf and Yard Waste (LYW)	Controlled Waste
Refuse Derived Fuel	Yes, dried	Yes, dried	High Btu fraction following mechanical sorting	No	No	Yes, pre-processed and/or dried materials
Thermal and Chemical Hydrolysis	Yes	Yes	Yes, Cellulosic materials only	No	No	No
Catalytic and Thermal Depolymerization	Yes	Yes	Yes, Cellulosic/ Organic materials only	No	No	No
Nutrient Recovery	Yes	No	No	No	No	No
Lime Pasteurization	Yes	Yes	No	No	No	No
Lime Stabilization	Yes	Yes	No	No	No	No

Table 3 clearly demonstrates that no one technology is capable on its own, of processing all of the CRD Solid and Liquid waste streams. At minimum, some form of pre-processing is required to select for the appropriate constituents feedstock to allow for efficient operation of the technology. For example this could come in the form of mechanical sorting of the MSW stream to select for the high energy fraction (paper, plastic), organic fraction (paper, food waste) or cellulosic fraction (paper, wood).

In addition, material streams like Source Separated Organics and Leaf & Yard waste, are not commonly directed to many of the technologies, as usually they are directed to a sub-set of these technologies (composting or AD) which can potentially be more cost effective and recover compost or soil amendments for beneficial use.

For a CRD IRM solution to be successful, it will require consideration of the appropriate combination of technologies and the appropriate combination of feedstock materials, considering:

a) The properties of the feedstock materials (chemical composition, heating value, moisture content etc.);
b) The quantities of the feedstock materials considering the quantities required to achieve economies of scale as well as the availability of these materials considering flows of materials that are controlled by and that are not controlled by the CRD;
c) Requirements for amendments and other supplemental materials (e.g. woody amendment materials);
d) The range of beneficial materials that can be recovered, and the markets for these materials;
e) The economic implications associated with applying specific technologies to this feedstock.

Each of these points is discussed in greater detail below.

In regards to the properties of the feedstock materials, the CRD commissioned a report completed in September 2016 by TWE, the *Gasification Technologies, Characterization of Waste Resources in the Capital*, to assess the properties of the CRD MSW stream (composition, energy content, biomass fraction, renewable energy content

and biogenic carbon content), in order to understand the energy recovery potential of these materials. This analysis was based upon a waste composition study undertaken for the CRD in 2009/2010. While this study provides a basis for understanding the general properties of the MSW stream and the potential applicability of primarily thermal technologies to MSW, it has some limitations given:

a) There have been changes to the waste programs in the CRD since the 2009/2010 waste composition study was undertaken, particularly with the food scrap ban, which would shift the compositional analysis, potentially reducing moisture content and increasing the energy value of the MSW stream.
b) This analysis did not address the composition of the other solid waste streams, nor the liquid waste stream.
c) The composition of the MSW stream and other solid waste streams could be expected to shift over time as a result of programs implemented by the CRD and member jurisdictions, and to reflect changes in waste generation rates based on changes in the marketplace.

Further analysis of the solid and liquid waste stream will be required to support the IRM Project Plan including the IRM procurement process, as outlined in the IRM Project Plan outline. Predictions regarding the change in generation rates and composition of the solid material streams would be supported by the CRD Solid Waste Management Plan (SWMP).

As reported by CRD Staff at the June 28, 2017 IRMAC meeting, of the total waste materials generated in the CRD estimated as approximately 208,000 tonnes per year combined, the CRD has control over approximately one third, including only 30% of the source separated organics stream and 15% of the MSW stream while controlling 100% of the yard waste stream and biosolids related streams. In order to achieve reasonable economies of scale for the majority of the IRM technologies identified, a larger portion of the MSW and/or source separated organics streams would be required. This could be achieved either through some form of regulatory control (flow control), or through functional competition of an IRM solution in comparison to other waste management facilities through market forces. The ability of an IRM solution to present a competitive solution cannot be determined until the IRM RFQ and Preliminary Business Case are completed as set out in the IRM Project Plan outline.

The same can be said regarding the need for supplemental materials, as these range significantly depending on the type of IRM processing technology. Processes like composting for example, may require bulking agent (woody materials) to achieve the appropriate carbon/nitrogen ratios and porosity for aerobic composting. Anaerobic Digestion processes may be improved or supplemented by clean, high energy commercial food waste streams. Many of the emerging technologies identified by respondents to the RFEOI indicated requirements for woody/cellulosic materials to supplement those found in the MSW stream. The IRM RFQ process would further determine, based on the responses and technologies identified, if there would be a need for the CRD or the respondents to source supplemental materials in order to implement an IRM solution. The preliminary Business Case would need to analyze the current market value of any supplemental materials and the issues that could arise in sourcing/securing these material streams.

The combination of appropriate IRM feedstocks, needs to consider the range of beneficial materials that could be recovered and the market value of these materials. Overall, when considering the range of products

(materials and energy) that could be recovered, it helps to think of the solid and liquid waste streams, not as 'waste' but as various forms of resources, some of which have a higher value and some that have a lesser value depending on the market. The decision for example as to whether it is reasonable to direct yard and garden waste to a dry anaerobic digestion facility or to a composting facility (along with other CRD waste streams) should reflect the ability to generate biogas from this material, and the value of that biogas to the value of the compost product should this material continue to be composted. The decision on whether the MSW stream should be mechanically processed to recover recyclable materials and/or an organic fraction for further processing and/or a solid recovered fuel, should reflect whether the effort to recover these materials is worth it based on the market for the final products. The IRM RFQ process will assist in this determination, along with the preliminary Business Case which will need to examine local market conditions.

As the IRM Project Plan proceeds, the economic implications associated with an IRM solution will need to be addressed. This would be addressed by the development of a preliminary Business Case based on the outcome of the RFQ and a final Business Case based on the outcome of the RFP. The Business Case for the project would consider:

a) Current and projected market values for recovered materials and/or energy as discussed above;
b) The assessment of project risks and evaluation of service delivery models, as generally direct capital and operating costs increase as the amount of risk allocated to the contractor increases. Risk allocation is reflected in the service delivery model chosen, with Design Build contracts allocating the most risk to the CRD and Design Build Finance Own Operate contracts allocating the most risk to the contractor;
c) Competitive market conditions in the surrounding area for solid waste processing. Essentially directing specific feedstock to an CRD IRM solution would be more economically viable if it is cost competitive with any other facilities that could process or dispose of the same materials (also considering haul costs);
d) The direct capital and operating cost for the technology or combinations of technologies that are identified by the respondents in the IRM procurement process. This would be identified generally as an outcome of the IRM RFQ, and specifically as an outcome of the IRM RFP process.

Ultimately, the decision regarding appropriate IRM feedstock combinations needs to be supported by the next steps in the IRM Project Plan.

4. Systems Integration

The IRM project is dependent upon and needs to be integrated with the plans and existing systems associated with the management of the CRD's solid and liquid waste stream. Decisions made during the IRM process, will affect the CALWMP and SWMP planning and implementation processes, and vice versa. This is discussed within the IRM Project Plan Outline.

For example, the outcome of the CALWMP RFP for a Residual Treatment Facility will determine the quantity and composition of the biosolids stream that could be directed to an IRM solution. The timing of implementation of an IRM solution, will impact upon the requirements for short-term biosolids storage. In addition, there may be

opportunities for integrating resource recovery for an IRM solution and the RTF, for example the implementation of technologies capable of recovering nutrients from the liquid fraction remaining after biosolids dewatering or use of biogas from the RTF to dry biosolids for IRM applications.

The existing solid waste management system and the changes that could result based on the SWMP process, will have an effect on the quantity and composition of solid material streams that could be directed to an IRM solution. They also represent opportunities for co-management or co-marketing of materials. For example biogas generated through anaerobic digestion of organics could be co-managed/co-marketed with landfill gas (LFG) and the availability of shared infrastructure and higher combined gas flows could improve the viability of both IRM and landfill related biogas recovery infrastructure.

Decisions regarding the technology or combination of technologies that would comprise an IRM solution, and the feedstock that would be directed to an IRM solution, must be integrated with the other concurrent IRM planning processes, and consider the effect on the CRDs overall liquid and solid waste management systems.

5. Conclusions and Next Steps

Generally with one exception, the range of established technologies capable of managing the CRD solid waste streams were represented in the CRD IRM RFEOI submissions. The one exception relates to WTE/EfW technology which is an established waste management practice in many jurisdictions. The technologies that were not captured in the RFEOI process, consist largely of emerging thermal technologies with few pilot or representative facilities of any scale currently in operation. The technologies identified in the RFEOI submissions also captured the range of established technologies identified in the separate biosolids jurisdictional review, and are capable of managing the range of solid and liquid IRM materials including Class A biosolids and/or sewage sludge. The emerging technologies identified in the biosolids jurisdictional review include many of the same emerging technologies identified in this Gap analysis.

It is clear based on the review of the technologies presented in the RFEOI submissions, the analysis of additional technologies not captured in the RFEOI process and the technologies identified in the jurisdictional review, that there is not one single technology applied at an operating facility that has managed the full range of IRM solid and liquid feedstock. It is anticipated that further steps in the IRM Project Plan, including the proposed RFQ process, will identify a viable sub-set of technologies that would be applicable to both the solid and liquid CRD waste streams that could be developed for the CRD by qualified companies. A successful IRM solution is most likely to consist of a combination of technologies at a single facility, or a combination of facilities, integrated into the CRD's overall system for solid and liquid waste management.

For a CRD IRM solution to be successful, it will require consideration of the appropriate combination of technologies and the appropriate combination of feedstock materials, considering:

a) The properties of the feedstock materials (chemical composition, heating value, moisture content etc.), which will be supported by the CRD Solid Waste Management Plan (SWMP).
b) The quantities of the feedstock materials considering the quantities required to achieve economies of scale as well as the availability of these materials considering flows of materials that are controlled by

and that are not controlled by the CRD. Economies of scale could be achieved either through some form of regulatory control (flow control), or through functional competition of an IRM solution in comparison to other waste management facilities through market forces. Flow control would be addressed through the assessment of policy/project implications in the SWMP.

c) Requirements for amendments and other supplemental materials (e.g. woody amendment materials). The IRM RFQ process would determine, based on the responses and technologies identified, if there would be a need for the CRD or the respondents to source supplemental materials in order to implement an IRM solution. The preliminary Business Case would need to analyze the current market value of any supplemental materials and the issues that could arise in sourcing/securing these material streams.
d) The range of beneficial materials that can be recovered, and the markets for these materials. The outcome of the IRM Facility Tour and IRM RFQ process will assist in this determination, along with the preliminary Business Case which will need to examine local market conditions.
e) The economic implications associated with applying specific technologies to this feedstock. . This would be addressed by the development of a preliminary Business Case based on the outcome of the RFQ and a final Business Case based on the outcome of the RFP

There is a real potential that the outcome of the initial steps of the IRM Project Plan, including the RFPQ and Preliminary Business Case, may indicate that either a phased solution or a multi-facility approach may be identified as more feasible approaches to implement an advanced IRM solution for the CRD. For example, it may be made clear that initially the focus of an IRM facility should be the management of biosolids and a smaller subset of other CRD materials, with the option that over time either a facility expansion or an additional facility could be developed to manage other CRD materials. A phased approach could be developed by the same or a different entity. Alternatively, it may become apparent that the most feasible IRM solution may include more than one facility at the outset, developed by different entities, managing separate CRD material streams.

Decisions regarding the technology or combination of technologies that would comprise an IRM solution, and the feedstock that would be directed to an IRM solution, must be integrated with the other concurrent IRM planning processes, and consider the effect on the CRDs overall liquid and solid waste management systems.

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APPENDIX B

Beneficial Reuse of Biosolids Jurisdictional Review

Final Report

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Down to Earth Biology

EDI ENVIRONMENTAL DYNAMICS INC.

EXECUTIVE SUMMARY

EDI Environmental Dynamics Inc. (EDI) was contracted by the Capital Regional District (CRD) to undertake a project entitled: Beneficial Reuse of Biosolids Jurisdictional Review to present examples of how other jurisdictions produce and use Class A biosolids.

The CRD is in the process of advancing efforts to design, construct, and operate a regional wastewater treatment plant. As the regulator for the project, the Province of British Columbia requested the CRD to conduct a jurisdictional review "of how similar-sized and larger municipalities within British Columbia, North America, and further abroad, successfully and beneficially reuse biosolids." This jurisdictional review was undertaken to support a more informed biosolids option assessment for CRD wastewater treatment and Integrated Resource Management projects, and meet the Province of BC request. As specified in the letter from the Province dated November 18, 2016, the beneficial reuse option selected by the CRD for their treated biosolids must meet the requirements for beneficial use specified in the Canadian Council of Ministers of the Environment 'Canada-Wide Approach for the Management of Wastewater Biosolids'.

This jurisdictional review identified a series of well-established programs, some of which have been in existence for decades. The review also identified a series of emerging techniques being advanced. Earlier this year, the theme for the Water Environmental Federation (WEF) Residuals and Biosolids Conference held in Washington State was, 'The Future of Biosolids and Bioenergy'. The conference included presentations on new technology and emerging trends in biosolids management in North America. A number of case studies demonstrating emerging technologies and trends presented at the conference, are summarized in Table 1.

Biosolids are processed, reused, or disposed of in a variety of ways worldwide. The most prevalent biosolid management option in many regions of the world, including North America, is land application (GMSC and UN-Habitat 2008, BCWWA 2016, EPA 2017). Biosolids can be applied to land for a variety of purposes, such as aiding plant growth on agricultural or forestry lands, improving soil health in land reclamation (e.g., mining) and restoration projects, and providing landfill closure material. The processing of biosolids for land application is highly variable, including aerobic or anaerobic digestion, alkaline stabilization, and thermal drying.

This report presents examples of the techniques being used by other jurisdictions, starting closest to the CRD, and expanding outwards. This approach enables the discussion of biosolids generation and management techniques that fall under the British Columbia Organic Material Recycling Regulations (OMRR), and similar regulatory regimes, expanding to areas whether the regulations may be different.

In this jurisdictional review, information was compiled for 15 jurisdictions with established biosolids programs. Jurisdictions were selected with the intent to present a diversity of Class A biosolids product processing types, end uses, and marketing strategies used in North America. British Columbian jurisdictions include some of the larger communities in the province and aim to highlight the different Class A processing and beneficial use options used. Other Canadian jurisdictions presented highlight well-established Class A biosolids programs of similar or larger-sized cities located across the country. Jurisdictions presented from the United States of America (USA) were selected based on factors such as

regional proximity, coastal location, biosolids processing techniques and end uses, and the availability of information. For each jurisdiction, Table 2 provides a summary of the biosolids product name, treatment process, project initiation date, applicable regulations, and use of the biosolids.

Table 1. Jurisdictional summary of emerging trends and technologies in sewage sludge and biosolids management discussed. Includes case studies presented at the 2017 WEF Residuals and Biosolids Conference.

Jurisdiction	Emerging Trend	Project Stage	End Products Produced	Beneficial Uses
Grand Junction, Colorado	Biogas utilization – fuel	Operational	Natural gas vehicle fuel	Compression of renewable natural gas to fuel 46 city vehicles including garbage trucks and dump trucks.
City of Portland, Oregon	Biogas utilization – fuel	Construction summer 2017	Renewable natural gas, Class A Biosolids fertilizer	Export of renewable natural gas, compressed natural gas for municipal vehicle fleet, and agricultural fertilizer.
City of Calgary, Alberta	Thermal hydrolysis	Design phase	Biogas, Class B Biosolids	Increased biosolids processing capacity, increased biogas production, and land application of Class B biosolids as fertilizer.
Avonmouth, England	Biological hydrolysis	Operational	Biogas, Class A Biosolids	Increased biosolids processing capacity, increased biogas production, sale of excess electricity generated from biogas to the grid, and agricultural fertilizer.
City of Raleigh, North Carolina	Biodiesel production	Operational	Class A and B Biosolids, Biodiesel	Use of Class A and B biosolids to improve growth of sunflower and soybean crops to be converted to biodiesel to fuel farm equipment on location.
Anchorage, Alaska	Gasification	Pilot study	Syngas, Ash	Energy savings of biosolids disposal costs, reduced greenhouse gas emissions, and significant waste volume reduction.
City of Lebanon, Tennessee	Gasification	Operational	Syngas, Biochar	Energy savings, reduced greenhouse gas emissions, cost savings associated with waste transportation, significant waste volume reduction, and marketable soil amendment product.
District of Delta Diablo, California	Gasification	Evaluation and site selection	Syngas, Ash	Syngas converted to enough energy to make facility self-sufficient, reduced greenhouse gas emissions, and significant waste volume reduction.
District of Delta Diablo, California	Pyrolysis	Evaluation and site selection	Pygas, Biochar	Pygas converted to enough energy to make facility self-sufficient, reduced greenhouse gas emissions, significant waste volume reduction, and valuable soil amendment.
Silicon Valley Clean Water, California	Pyrolysis	Construction	Pygas, Biochar	Pygas converted to enough energy to make facility self-sufficient, significant waste volume reduction, reduced greenhouse gas emissions, and valuable soil amendment.
Cleveland, Ohio	Fluidized bed incineration	Operational	Heat and Steam to Energy, Ash	Heat captured from process drives energy generation through steam turbine, process supported by energy generated, reduced greenhouse gas emissions, and waste volume reduction.

Table 2. Summary of Class A biosolids management programs discussed in jurisdictional review.

Jurisdiction	Product Name	Biosolids Treatment	Program Initiation	Percentage of Class A Product Produced	Applicable Regulations	Beneficial Reuse of Biosolids
British Columbia						
Metro Vancouver Regional District	Nutrifor	Thermophilic anaerobic digestion	1991	80	BC OMRR, Federal Fertilizers Act	Mine reclamation, landfill closure and reclamation, regional reclamation projects, regional landscaping projects, forest fertilization, and ranch land fertilization.
City of Kelowna / City of Vernon	Ogogrow	Aerated static pile composting	1995 (2006)	100	BC OMRR, Federal Fertilizers Act	Commercial landscaping, residential gardening, nurseries and orchards, and landfill closure.
Comox/Strathcona Regional District	SkyRocket	Aerated static pile composting	2007	100	BC OMRR, Federal Fertilizers Act	Commercial landscaping, residential gardening, nurseries and orchards, slope stabilization project, and local reclamation projects.
Nanaimo Regional District	-	Mesophilic and Thermophilic anaerobic digestion	1991	30	BC OMRR, Federal Fertilizers Act	Forest fertilization.
Saanich Peninsula	PenGrow	RDF Lime-pasteurization	2008 to 2011	5	BC OMRR, Federal Fertilizers Act	Residential gardening and landscaping.
Other Canadian Jurisdictions						
City of Edmonton, AB	Second Nature	Co-composting with residential organic waste	2002	80	Federal Fertilizers Act; Provincial Application	Horticulture, agriculture, nurseries, commercial landscaping, residential gardening, city reclamation and enhancement projects.
Niagara Region, ON	Niagara N-Rich	N-Viro alkaline-stabilization	2007	50	ON Nutrient Management Act; Federal Fertilizers Act	Agricultural fertilizer.
City of Toronto, ON	-	Thermal drying; N-Viro alkaline-stabilization	2007	75	ON Nutrient Management Act; Federal Fertilizers Act	Agricultural fertilizer, mine reclamation.

Jurisdiction	Product Name	Biosolids Treatment	Program Initiation	Percentage of Class A Product Produced	Applicable Regulations	Beneficial Reuse of Biosolids
Greater Moncton, NB	Gardener's Gold	Composting - GORE Cover System	2008	100	CAN/BNQ 0413-200/2005; Federal Fertilizers Act	Commercial landscaping, municipal parks and horticultural activities, residential gardening.
City of Halifax, NS	Halifax N-Rich	N-Viro alkaline-stabilization	2007	100	Federal Fertilizers Act	Agricultural fertilizer and municipal horticultural activities.
United States of America						
King County, WA	GroCo	Aerated static pile composting	1976	2	US EPA Part 503 Biosolids Rule, Washington State Compost Standards	Residential gardening and landscaping, commercial landscaping, and forestry road reclamation.
City of Tacoma, WA	TAGRO	Duel digestion, composting	1990	100	US EPA Part 503 Biosolids Rule, Washington State Compost Standards	Urban community gardens, residential gardening, commercial landscaping, forest fertilization, and agriculture.
Pierce County, WA	SoundGRO	Thermal drying	2006	100	US EPA Part 503 Biosolids Rule, Dept.of Agriculture – Commercial Fertilizer	Agriculture, commercial and residential landscaping.
City of Raleigh, NC	Raleigh-Plus	Lime-stabilization, composting	2006	90	US EPA Part 503 Biosolids Rule	Agriculture, commercial landscaping, residential gardening, and biodiesel production.
Boston, MA	Bay State Fertilizer	Thermal drying	1991	100	US EPA Part 503 Biosolids Rule, Dept.of Agriculture – Commercial Fertilizer	Agriculture and fuel for cement kilns.

Broad biosolids management trends occurring elsewhere in the world, including the European Union (EU), Australia, New Zealand and Japan were also reviewed and presented as high-level summaries. Despite support from the European Commission on recycling biosolids to land, provided they do not pose any health or environmental threats, the acceptance of biosolids land application among different European countries varies considerably. The dominant methods of biosolids treatment/utilization in the EU includes application to agricultural lands (e.g., United Kingdom, Spain), composting and other land application options (e.g., Finland), landfilling (e.g., Greece, Malta), and incineration (e.g. Netherlands) (Fonts et al. 2012, Evan 2012, LRCS 2016). Overall, approximately 37% of biosolids are recycled to agricultural land in the EU; however the application rates range between member countries from the United Kingdom at 92% to the Netherlands and Greece with very minimal to no land application (Evans 2012, Panter and Barber 2017). Other European countries, outside of the EU, also highlight the range of biosolids management strategies utilized on the continent, from Norway which land applies 80% of biosolids produced, to Switzerland, which primarily incinerates biosolids due to a ban on agricultural land application (Evan 2012).

Australia supports the land application of biosolids and beneficially reuses approximately 64% of biosolids through agricultural land application annually, with 23% used in composting, forestry and land reclamation projects and 11% disposed of in landfill or stockpiled (ANZBP 2016a). New Zealand's most prominent biosolids management strategy is currently landfilling (61%), however biosolids vermicomposting has increased steadily in recent years (Quintern and Morely 2017). Japan, on the other hand, relies heavily on thermal processing, particularly incineration, for biosolids management as it is a densely populated country with comparably little opportunity for biosolids land application (GMCS and UN-Habitat 2008). The country has instead focused on generating energy as a beneficial use of biosolids processing (GMCS and UN-Habitat 2008).

This report is not intended to provide recommendations for the CRD or the Province of BC, but simply provide examples of biosolids approaches being used by other jurisdictions. A detailed reference list and websites are provided for readers to further explore specific examples. It should be noted that while recent and relevant information from a broad range of jurisdictions is presented, any claims these jurisdictions have made and results reported, have not been substantiated.

Overall, there are many useful examples of the biosolids treatment processes and applications being used by jurisdictions across BC, the rest of Canada, the US, and further afield internationally. These jurisdictions demonstrate a range of ideas that the CRD may wish to further investigate.

ACKNOWLEDGEMENTS

Most of the information for this jurisdictional review was compiled through a review of online and written sources. Telephone communication was undertaken with a select number of biosolids producers for clarity.

We would like to thank the individuals contacted by telephone who shared their time and knowledge with the study team to enhance the information presented in this report.

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1 INTRODUCTION

EDI Environmental Dynamics Inc. (EDI) was contracted by the Capital Regional District (CRD) to undertake a project entitled: Beneficial Reuse of Biosolids Jurisdictional Review to present examples of how other jurisdictions produce and use Class A biosolids.

The CRD is in the process of advancing efforts to design, construct, and operate a regional wastewater treatment plant. As the regulator for the project, the Province of British Columbia requested the CRD conduct a jurisdictional review "of how similar-sized and larger municipalities within British Columbia (BC), North America, and further abroad, successfully and beneficially reuse biosolids." This jurisdictional review was undertaken to support a more informed biosolids option assessment for CRD wastewater treatment and Integrated Resource Management projects, and meet the Province of BC requirement. As specified in the letter from the Province dated November 18, 2016, the beneficial reuse option selected by the CRD for their treated biosolids must meet the requirements for beneficial use specified in the Canadian Council of Ministers of the Environment 'Canada-Wide Approach for the Management of Wastewater Biosolids'. At the request of Province of British Columbia, the study team worked through the CRD with requests for information.

Biosolids management is a global issue, and different approaches are being used around the world. This report presents examples of the techniques being used, starting with jurisdictions closest to the CRD, and expanding outwards. This approach enables the discussion of biosolids generation and management techniques that fall under the BC Organic Material Recycling Regulations (OMRR), and similar regulatory regimes, expanding to areas whether the regulations may be different.

This report begins with an overview of biosolids in Section 2, followed by a summary of the BC OMRR and the Canadian Council of Ministers of the Environment (CCME) guidance document for the use of municipal biosolids in Section 3.

Biosolids processing and beneficial reuse is an evolving field, with new approaches, techniques, and technologies continuously emerging. Section 4 presents a summary of emerging trends, primarily related to biosolids to fuel and energy.

The jurisdictional review, focused on Class A biosolids programs, is presented in Sections 5 and 6. The results are written in paragraph form, rather than table format, to share more complete examples. The results are presented by region, including:

- British Columbia
- Canada
- United States, and
- International

The information presented in this report was compiled from available online sources, including websites, and the academic literature. These sources are presented in Section 8. Some telephone-based discussions were undertaken, to confirm information, and gain further detail.

Throughout the report, metric measurements of the volumes processed and products produced are presented when they were available. However, due to the different processes used, wet and dry conversions factors, and the use of Imperial measures in some jurisdictions, not all measures are metric.

This report is not intended to provide recommendations for the CRD or the Province of BC, but simply examples of approaches being used by other comparable jurisdictions. A detailed reference list is provided for readers to further explore specific examples. However, it should be noted that while recent and relevant information from a broad range of jurisdictions is presented, any claims made and results reported have not been substantiated.

1.1 JURISDICTIONAL REVIEW APPROACH

The approach for the jurisdictional review was to identify municipalities within British Columbia, other parts of Canada, North America, and globally that successfully and beneficially reused biosolids, primarily through Class A programs.

The jurisdictions selected are intended to present a diversity of biosolids treatment types, end uses and marketing strategies, focusing primarily on Class A programs. As some of the jurisdictions reviewed process and beneficially reuse multiple biosolids products, including Class B biosolids, these products are also discussed where applicable. Case studies in British Columbia focus on some of the larger communities in the province, and highlight the different processing and beneficial use options for Class A products use in the province. Other Canadian jurisdictions presented aimed to highlight well-established Class A biosolids programs of similar or larger sized jurisdictions located across the country. Jurisdictions in the United States were selected based on regional proximity or coastal location, diversity of biosolids processing techniques and end uses, and availability of information.

The inclusion of jurisdictions with well-established Class A programs that are evolving their programs through biosolids product enhancement or biosolids-to-energy options was also a consideration for the review. For all jurisdictions, the availability of information related to the biosolids program was an important deciding factor for inclusion.

Broad biosolids management trends occurring elsewhere in the world, including the European Union, Australia, New Zealand and Japan were reviewed. The information presented is a high level summary, as differences in classification and regulatory regimes make comparisons with North American jurisdictions more challenging.

The 2017 WEF Residuals and Biosolids Conference Proceedings were also reviewed to identify jurisdictions in North America that are currently investigating or implementing emerging biosolids processing technologies and beneficial use options.

Overall, information for this report was gathered from a variety of sources, including:

- Online searches and literature reviews of known, established Class A biosolids programs
- Review of information from municipal wastewater treatment plants, wastewater treatment associations, and biosolids land application programs. Key words included, but were not limited to: biosolids, beneficial use, Class A, biosolids compost, soil amendment, fertilizers, wastewater treatment plant, agricultural land application, energy recovery, biogas, pyrolysis, gasification and biochar
- Proceedings of the 2017 WEF Residuals and Biosolids Conference, Seattle Washington
- Beneficial Use of Municipal Wastewater Residuals - Biosolids (Vasileski 2007)
- A Review of the Current Legislative Framework for Wastewater Biosolids (CCME 2010)
- Land Application of Biosolids – Issue Analysis Paper and Position Statement (BCWWA 2016)
- Guidance Document for the Beneficial Use of Municipal Biosolids, Municipal Sludge and Treated Septage (CCME 2012)
- Biosolids Risk Assessment and Literature Review Update (Golder Associates 2014)
- Applicable Provincial and Federal Review

2 BIOSOLIDS BACKGROUND

2.1 WHAT ARE BIOSOLIDS

Biosolids are nutrient-rich organic materials derived from the treatment of sewage at a wastewater treatment facility (MoE 2017, USEPA 2017). Biosolids originate as sewage sludge which is the major solids component that results from the wastewater treatment process. Sewage sludge is commonly processed into biosolids using elevated temperature and biological processes (i.e., aerobic and anaerobic digestion) over an extended duration to stabilize the organic material and significantly reduce pathogen content and vector attraction (BCWWA 2016, MoE 2017). Biosolids may be dewatered to various degrees prior to reuse to achieve the following types: thickened (12% solid content), dewatered (18 to 30% solid content) and dried (50 to 90% solid content) (BCWWA 2016).

There is variation worldwide, and even within countries, in how biosolids are classified. The terms sewage sludge and biosolids are often used interchangeably, but some jurisdictions and regulations have distinguished biosolids from raw sewage sludge in that biosolids undergo additional treatment and processing prior to reuse (e.g., MoE 2017). For the purposes of this review, the term biosolids is used in the more restrictive definition, and refers to sewage sludge that has been treated. This review aimed for the consistent use of these terms throughout the document, however where unclear, the terminology used by the literature source was retained.

In Canada, provinces and territories have defined different classes or categories of biosolids based on various quality criteria, including heavy metal load and pathogen reduction techniques (CCME 2012b). In British Columbia, depending on the type and extent of treatment, biosolids can be produced as either Class A or Class B. British Columbia's Organic Matter Recycling Regulations (OMRR) outlines biosolids class requirements through quality criteria for pathogens, specifically fecal coliforms, and trace elements (MoE 2017). Class A biosolids undergo more extensive treatment and stabilization, targeted at pathogen removal, compared to Class B biosolids (e.g., anaerobic digestion, alkaline stabilization). Class A biosolids products are also lower in trace metal content due to the addition of additives during the treatment process such as lime, sand, or wood waste (Stantec 2011). As Class A biosolids are subject to more stringent quality criteria, they have less restrictive land application requirements than Class B biosolids due to their lower risk (BCWWA 2016, MoE 2017).

2.2 BIOSOLIDS PROCESSING AND BENEFICIAL REUSE

Biosolids are processed and managed in a variety of ways worldwide. The most prevalent biosolids management option in many regions of the world, including North America, is land application (GMSC and UN-Habitat 2008, BCWWA 2016, EPA 2017). Biosolids bound for land application can be processed in variety of ways, including aerobic or anaerobic digestion, alkaline stabilization and thermal drying. Biosolids are applied to land for a variety of different beneficial purposes, such as aiding plant growth on agricultural

and forestry lands, improving soils health in land reclamation (e.g., mining) and restoration projects, and providing landfill closure material to reduce methane emissions. Biosolids can also be used as an ingredient in soil conditioning products such as composts and landscaping soils, which are commonly used in urban landscaping, domestic gardening and municipal parks (CCME 2012b).

Anaerobic respiration, a common biosolids processing option in land application programs, produces biogas that can also be can be captured and used in heating or electrical production at wastewater treatment facilities, thereby generating an additional beneficial use stream (Vasileski 2007, NACWA 2010).

Another common biosolids management option is incineration. The ash generated through biosolids incineration is commonly landfilled, but can be used as a fertilizer supplement or in industrial processes, such as cement manufacturing (CCME 2012b). Dried biosolids can also be used as a combustible fuel (i.e., coal substitute) in power and cement plants (GMSC and UN-Habitat 2008, CCME 2012b, Evan et al. 2012).

Gasification and pyrolysis process are beginning to be used as the desire to recover greater amounts of energy from sewage sludge and biosolids treatment grows. These processes significantly reduce biosolids volume, produce fewer emissions than incineration, generate process gas that can be captured and converted to energy, and produce an ash/biochar with potential for beneficial reuse as a soil amendment (CCME 2012b, Liu et al. 2017).

Combustion processes (incineration and gasification) are also considered a beneficial reuse of sewage sludge and biosolids by the CCME if the process meets relevant jurisdictional air quality standards, there is a positive energy balance through the combustion of the residuals, there is significant ash recovery and utilization, and there is low stack emissions of nitrous oxide and other contaminants (CCME 2012b).

Table 3 presents a summary of biosolids processing and reuse options.

Table 3. Review of biosolids processing and reuse options.

Management option	Description
Energy capture	Biogas generated during the anaerobic digestion (~60% methane) of sewage sludge in the production of biosolids can be captured and used in boilers at facilities, converted to energy using combined heat and power engines, or cleaned and converted to natural gas (NACWA 2010). Gasification and Pyrolysis also produce process gas (syngas and pygas) that can be captured and converted into usable energy or fuel (NACWA 2010, CCME 2012b).
Gasification	Thermochemically converts biosolids at elevated temperature (500-1,500°C) into ash and process gas (referred to as 'syngas') consisting of hydrogen gas, carbon monoxide, and methane with minor contributions of carbon dioxide and nitrogen gas. Syngas can be captured and converted into energy, or further refined for use in gas engines or in the production of synthetic biofuels. The ash generated can have value as a soil amendment or can be landfilled. In North America, gasifiers typically utilize additional feedstocks in combination with biosolids (CCME 2012b, NACWA 2010).
Pyrolysis	Thermochemical decomposition of biosolids at elevated temperatures (500-800°C), in the absence of oxygen, into process gas (referred to as 'pygas'), py-oil and biochar. Pygas can be captured and converted to energy, while biochar can be used as a valuable soil amendment (NACWA 2010, Liu et al. 2017).
Biodiesel production	Biosolids are spread onto soils used to grow oil-seed crops that are converted into biodiesel. Biosolids application improves soil productivity and enhances plant growth and yield, thereby improving biodiesel outputs (City of Raleigh 2017b).

Management option	Description
Agriculture	Biosolids are spread or incorporated through disking or sub-surface injection into agricultural soils used to grow food crops or livestock forage materials. This use improves soil productivity and thus enhances plant growth, reducing the need for chemical fertilizers (CCME 2012b). Class A and Class B biosolids are used, ranging from thickened Class B (13% dry solids) to dried Class A pellet products (90% dry solids).
Horticulture - Compost	Dewatered raw sludge or digested biosolids are composted, typically with other organic material, such as wood chips or food waste, to produce a product that is used for a variety of applications, including urban landscaping, domestic and community gardening, and municipal park application. Composting can be conducted in open air, in-vessel, or under synthetic covers. The systems can be static, or dynamic, where the compost is turned to redistribute moisture, re-establish porosity, and introduce oxygen into the system (CCME 2012b).
Forestry	Biosolids are spread on plantations, cut blocks, and woodlots to enhance tree growth rates and biomass, increasing the likelihood of natural tree seeding through improved soil quality and increased water holding capacity, and improved long-term productivity through increasing organic matter concentration (Nanaimo Biosolids 2017a).
Land reclamation	Biosolids used in reclamation projects to aid in developing productive soils with improved nutrients and water holding capacity. The application of biosolids increases organic matter and nutrient content of otherwise organic and nutrient-poor mineral soils (Larney and Angers 2012). They act as a tool to re-vegetate, reduce the bioavailability of toxic substance, re-generate the soil layer and improve slope stability (CCME 2012b). In BC, biosolids are commonly used in mine reclamation projects where they are often mixed with tailings. Biosolids are also used in the reclamation of gravel pits and degraded industrial sites.
Incineration	Combustion of biosolids as a means to reduce volume (up to 75%). Incineration of sewage sludge or biosolids occurs in two steps, drying the solids and the combustion of the volatile fraction of the solids. Combustion can only occur once sufficient water has been removed. The incineration process converts sewage sludge or biosolids into ash that is usually landfilled, but can also be used as a component in cement manufacturing (Vasileski 2007, CCME 2012b).
Landfill disposal	Disposal of municipal solid waste in landfills. There is increasing pressure to phase out the disposal of biosolids in landfills, due to concerns about leachate and greenhouse gas emissions, as well as concerns that limited space is being taken up by a product with beneficial reuse potential. However, biosolids and biosolids products can be beneficially used as a landfill cover material which can significantly reduce landfill methane emissions (Metro Vancouver 2016).

As of 2008, GMSC and UN-Habitat found that application of biosolids to land was the dominant biosolids management option in use in the highest-income countries, and was steadily increasing worldwide. A literature review of the beneficial uses of municipal biosolids completed by Vasileski (2007) found that approximately 75% of examples applied biosolids to land, including agriculture, land reclamation, forestry, composting, and landscaping, while 12% incinerated biosolids and 7% disposed of biosolids in landfills.

In Canada, the CCME has developed a 'Canada-Wide Approach for the Management of Wastewater Biosolids' (CCME 2012a) and a supporting 'Guidance Document for the Beneficial Use of Municipal Biosolids, Municipal Sludge and Treated Septage' (CCME 2012b). Currently, approximately 50% of biosolids in Canada are applied to land (CWWA 2012), while the remainder are incinerated or landfilled (GMSC and UN-Habitat 2008). Wastewater residual management is regulated on a provincial/territorial basis, with the type of regulatory mechanism varying across the country (CCME 2012b).

Land application of biosolids is not currently permitted in Newfoundland and Labrador, while only biosolids meeting Category A requirements, as outlined in the Guidelines for Compost Quality (2005), can be land applied in New Brunswick (CCME 2010). The land application of biosolids to fertilize fruit,

vegetables and pasture land (current season), including home gardens, is prohibited in Quebec unless certified by the Bureau de normalization du Quebec (BNQ). Conversely, other provinces, including Alberta, British Columbia, Ontario, and Nova Scotia permit the land application of Class A and B biosolids and compost in accordance with applicable regulations (CCME 2010). Further, Quebec has enacted a green tax on each ton of sewage sludge/biosolids that is landfilled or incinerated, while Nova Scotia has prohibited the landfilling of organic material (CCME 2010). The disposal of biosolids is becoming less accepted throughout Canada as landfill tipping fees increase, landfill availability decreases, and an understanding that disposal does not capitalize on the resources contained in biosolids grows (CCME 2012b).

Similar to the CCME, the US EPA has stated that biosolids are an important resource that can, and should be safely used for purposes such as soil conditioning in agriculture and horticulture, and for reclaiming and re-vegetating areas disturbed by mining and waste disposal activities (USEPA 1994, USEPA 2017). The National Academy of Sciences has reviewed current practices, public health concerns, and regulator standards, and has concluded that "the use of these materials in the production of crops for human consumption when practiced in accordance with existing federal guidelines and regulations, presents negligible risk to the consumer, to crop production, and to the environment"(USEPA 2017). Biosolids are regulated under the EPA Part 503 Biosolids Rule (USEPA 2017). Approximately 50% of all biosolids in the US are applied to land, with land application occurring in all 50 states (GMCS and UN-Habitat 2008, USEPA 2017). Land applied biosolids are used on less than one percent of the nation's agricultural land (USEPA 2017). Aside from land application, approximately 22% of sewage sludge/biosolids are incinerated and 17% are disposed of in landfills, with the remainder going to other uses (GMCS and UN-Habitat 2008).

Although land application is supported at the federal level in the US, is it banned or limited in a number of counties (Deslauriers 2017, Slaughter 2017). In Northern California for example, between 50% and 90% of the biosolids produced are either used as alternative daily cover at a landfill or disposed of at a landfill depending on weather conditions. California is now requiring increased waste diversion from landfills, with recent legislation being passed that requires 75% diversion of organic waste (including biosolids used as alternative daily cover) from landfills by 2025 (Deslauriers 2017). In the US, there has been recent litigation that supports the land application of biosolids in California, Pennsylvania, Virginia, North Carolina, and Maryland where courts have upheld the primacy of state over local biosolids regulations (Slaughter 2017).

The opinion of the European Commission is that the use of biosolids on agricultural soils as a fertilizer is the best environmental option provided that it does not pose any threat to the environment, as well as to animal and human health (Smith 2009). Despite the support for recycling biosolids to land, the acceptance of this practice among different European countries varies considerably. The dominant methods of biosolids treatment/utilization includes land application to agricultural lands (e.g., United Kingdom, Spain), composting and land application (e.g., Finland), landfilling (e.g., Greece, Malta), and incineration (e.g. Netherlands) (Fonts et al. 2012, Evan 2012, LRCS 2016). Overall, approximately 37% of biosolids are recycled to agricultural land, however the value ranges between member countries from the UK at 92% to the Netherlands and Greece with very minimal to no land application (Evans 2012, Panter and Barber 2017). During the past decade, the UK has shifted more and more towards the land application of anaerobically digested biosolids and has closed many incineration and thermal drying facilities (Panter and

Barber 2017). Conversely, the Netherlands has made regulatory requirements for metal concentrations in biosolids bound for land application so stringent that it is almost impossible for municipal biosolids to comply, thereby freeing up land for the large quantities of livestock manure produced in the country (Evan 2012). Consequently the Netherlands incinerates most of its biosolids at facilities both within and outside of the country (GMSC and UN-Habitat 2008, Wiechmann et al. 2013).

Australia beneficially reuses approximately 64% of biosolids through agricultural land application annually, with 23% used in composting, forestry and land reclamation projects and 11% disposed of in landfill or stockpiled (ANZBP 2016a). Conversely, Japan relies heavily on thermal processing, particularly incineration, for biosolids management as it is a densely populated country with comparably little opportunity for biosolids land application (GMCS and UN-Habitat 2008). The country has instead focused on generating energy as a beneficial use of biosolids processing (GMCS and UN-Habitat 2008)

Although there is fair amount of support internationally for the land application of biosolids, there are also concerns about the potential effects of contaminants in biosolids on human health and the environment. Due to these concerns, some jurisdictions have chosen to incinerate or landfill their biosolids so as to avoid the potential risks associated with land applying biosolids. Switzerland, for example, banned the use of biosolids in agriculture in 2005 due to concerns over potentially toxic substances and harmful micro-organisms (Smith 2009, Evan 2012). Similarly, the Capitol Regional District in BC ended the production, storage and distribution of biosolids for land application at all regional facilities and parks and removed support for agricultural land application due to concerns that farmland could be polluted by pharmaceuticals and heavy metals (CRD 2011a).

First Nations and other residents of the Nicola Valley, BC, have also raised concerns over the potential for contamination of the Nicola River and a community well from biosolids use in rangelands and compost operations. In 2015, the five First Nations of the Nicola Valley signed a moratorium on the importation and land use of biosolids within the valley pending the outcome of a scientific review (refer to Section 5.1.1).

In Canada, the CCME encourages jurisdictions to consider adopting a continuous improvement philosophy and remain up-to-date with respect to biosolids research. This includes the consideration of new information, emerging technologies and greenhouse gas implications in the decision-making process to ensure a robust selection of appropriate technology and opportunities for beneficial use (CCME 2012b). In the US, the National Biosolids Partnership (NBP) has developed a voluntary Biosolids Management Program which is based on internationally recognized standards for an Environmental Management System (similar to ISO 14001; WEF 2017). The Program requires continuous improvement to develop, implement, and monitor environmentally sustainable practices and assists wastewater organizations in ensuring that they are efficient, responsive and protective of human and health and the environment. Organizations that have chosen to become certified by the NBP collectively manage more than 12% of the biosolids in the country (WEF 2017).

2.3 OVERVIEW OF BENEFITS AND CONCERNS RELATED TO BIOSOLIDS USE

Biosolids are nutrient-rich organic material that can be utilized as a soil conditioner or fertilizer to improve physical, chemical, and biological properties of soils (Lu et al. 2012). Biosolids can improve overall soil quality, including soil tilth, water storage capacity, nutrient retention, soil carbon sequestration, and improve conditions for soil biota (BCWWA 2016, Lu et al. 2012). Besides improving soil quality, biosolids application can supplement or replace commercial fertilizers, as biosolids additions can increase total soil nitrogen concentration and extractable phosphorus in comparison with fertilizers (Brown et al. 2011, Lu et al. 2012). As organic matter can be lost through land management processes such as livestock grazing, agriculture, and forestry, applying biosolids provides a way to put organic matter and nutrients back into the system. Alkaline-stabilized biosolids can also be used as liming material in agricultural settings to alleviate soil acidity (NEBRA 2004, Lu et al. 2012).

The utilization of biosolids in amending degraded soils, such as mine tailings, disturbed urban soils, and landfill cover soils to establish vegetation is increasing (Lu et al. 2012). The high organic matter content in biosolids can also be utilized to remediate sites previously contaminated with trace metals by binding and converting the metals to less soluble fractions (Basta et al. 2001, Brown et al. 2003). Biosolids are used by land managers throughout the world in agriculture, forestry, and mining as they have been shown to improve crop yield, forage quality, and vegetation establishment.

Although the benefits of applying biosolids to land are well understood, there are also potential risks. Most of these risks, such as those associated with nutrients, metals, and pathogens are well studied and understood, and are managed through storage, application, and monitoring regulatory compliance (BCWWA 2016, CCME 2012b). In BC, efforts to limit exposure to potentially harmful substances, includes requiring oversight by a qualified professional, minimizing public access to the treated areas, assigning setbacks from water sources, and mandatory wait periods for product harvest or grazing post- application for Class B biosolids (MoE 2017; refer to Section 3.1 for further information on BCs OMRR).

There are some potential risks however, such as those associated with emerging substances of concern (ESOC) that continue to be an evolving area of research (Hydromantis 2010, LRCS 2016). As such, these contaminants in sewage sludge and biosolids have become a focus of research in Canada and abroad. ESOCs include hormones, edocrine-disrupting chemicals, and pharmaceuticals and personal care products (PPCPs), and legacy organic contaminants include substances such as dioxins, polycyclic aromatic hydrocarbons (PAHs) and phthalates. These substances are largely introduced in municipal waste streams from anthropogenic sources. A growing body of evidence indicates a wide range of contaminants are ubiquitous in municipal biosolids at low concentrations (Hydromantis 2009, 2010, USEPA 2009).

Due to the growing interest in ESOCs in biosolids, the CCME commissioned a literature review to document the occurrence of a wide range of contaminants in biosolids, as well as a sampling study to focus on treatment process effectiveness in lowering concentrations of ESOCs (Hydromantis 2009, 2010). Contaminants considered by the review included industrial chemicals, flame retardants, hormones, and PPCPs, among others. The study tested biosolids produced at 11 different sites across Canada and found that 14 of 71 pharmaceutical, alkylphenolic, and fragrance compounds tested for were found in detectable

concentrations in more than 75% (greater than 9 of 11 sites) of the treated biosolids samples likely to be applied to land (Hydromantis 2010). The type and concentrations of contaminants identified during the study were similar to results found during the 2009 US Targeted National Sewage Sludge Survey (Hydromantis 2010). They also found biological treatment processes to be more efficient in reducing the concentration of ESOCs than non-biological processes. Of the biological treatment processes investigated, aerobic composting was more effective in reducing the concentration of ESOCs than mesophilic anaerobic digestion, which was more effective than autothermal aerobic digestion. Of the physical processes, the N-Viro alkaline stabilisation process appeared to most effective (Hydromantis 2010). A review of other studies suggests that biosolids treatment processes can decrease concentrations of certain contaminants; however some contaminants can persist or increase in concentration (Hydromantis 2009, CCME 2012b). A sampling study to measure legacy organics and emerging substances of concern is also being completed as part of the review of BCs OMRR, and is expected to be released in the summer of 2017 (MoE 2017).

A recent review by Ryerson University investigating the risks associated with land application of biosolids found that, in general, currently available evidence suggests that the risk posed by ESOCs can be considered low for the general public, particularly when compared to the risk posed in different contexts (e.g., human exposure to flame retardants is more likely to occur from a domestic source than from agricultural products grown in biosolids-amended soil). The review found that ESOCs had little to no negative impact on test plants, insects, bacteria and fungi present in agricultural land. The review also acknowledges the lack of data in this area of study and that the potential impact to public and environmental health is still not well understood (Ryerson University, 2015, BCWWA 2016).

Continued research is likely to contribute to a better understanding of the risks associated with ESOCs and legacy organics from the land application of biosolids, as well as an understanding on how treatment processes can reduce their concentrations. Another important aspect in the reduction of contaminants in biosolids is source reduction initiatives. Currently, source control and treatment initiatives are not generally in place for these contaminants, with the exception of pharmaceuticals, where some jurisdictions have developed pharmaceutical take-back programs (CCME 2012b). The British Columbia Medications Return Program, administered by the Health Products Stewardship Association, for example, provides a means for citizens to return unused and expired medication, reducing disposal into the wastewater stream (HPSA 2014, LRCS 2016).

The Capital Regional District has established a Regional Source Control Program to augment their sewer use bylaw. The CRD has developed several industry-specific Codes of Practice to improve the quality of industrial wastewater discharges into the municipal wastewater collection system, such a Code of Practice targeting the dental industry which requires the installation of dental amalgam separators in dental offices to reducing mercury loading (CCME 2012). King County is another jurisdiction with a source control program that requires industries to remove potentially toxic materials from their wastewater before discharging it to the sewer system (King County 2016a). Controlling contaminants at the source, where possible, is an effective way to improve the quality of biosolids.

3 BIOSOLIDS POLICY AND REGULATIONS

3.1 PROVINCIAL REGULATIONS

In BC, the land application of municipal biosolids is regulated by the British Columbia Ministry of Environment (MoE) through the Organic Matter Recycling Regulations (OMRR). The OMRR was enacted in 2002 to regulate, in part, the production, distribution, sale, storage, use, and land application of biosolids and compost, and is enabled under the *Environmental Management Act* (administered by the MoE) and the *Public Health Act* (administered by the Ministry of Health) (CCME 2010). Land applied biosolids within the Agricultural Land Reserve are considered through the *Agricultural Land Commission Act* (BCWWA 2016).

The purpose of the OMRR is to facilitate the recycling of organic material through land application and composting while protecting human health and the environment. During development of the regulation, a significant amount of knowledge and risk assessment information developed from other jurisdictions was used, including the US EPA biosolids risk assessment. The OMRR is a results-based regulation that provides a set of standards that users must abide by to be considered in compliance (CCME 2010, BCWWA 2016).

The MoE has produced a number of guidance documents to assist in ensuring compliance, including the Compost Facility Requirements Guideline (2004) and the Land Application Guidelines for the Organic Matter Recycling Regulation and the Soil Amendment Code of Practice: Best Management Practices (2008). As noted in Section 2, there are other management options for biosolids, including use in waste-to-energy processes (e.g., biogas capture and utilization) which are not covered under the OMRR. Typically, the authorization of these activities is captured under site-specific authorizations under the *Environmental Management Act* (BCWWA 2016).

Under OMRR, MoE requires a Land Application Plan (LAP) for the land application of biosolids. The LAP must describe the application site, the quality of the receiving soils, the class of biosolids being applied, the rate of biosolids application, and applicable setback distances. Additional information required includes biosolids stockpiling, site signage, and environmental monitoring requirements. Post application soil quality standards contained in the regulation are based on the land use (e.g., agricultural land, industrial land), soil pH, and other site-specific factors unique to the application site. The OMRR follows the 'professional reliance' model, therefore a Qualified Professional (QP) is required to produce and validate the LAP. A LAP is required for Class A and B biosolids and Class B compost, while Class A compost and Biosolids Growing Medium (Topsoil products) do not require a LAP (CCME 2010, BCWWA 2016).

Prior to the application of biosolids, notification must be given to the BC Ministry of Environment Director (except for Class A composts and growing medium), the medical health officer (before land application to agricultural land or in a watershed), and the Provincial Agricultural Land Commission (before land application within the agricultural land reserve). Upon review of the LAP, site-specific standards or management practices or other conditions may be specified by these parties. The landfilling and/or

incineration of biosolids requires approval from the MoE Environmental Protection Division (CCME 2010).

The MoE is currently undertaking a comprehensive review of the OMRR, for the following purposes: a) to ensure the regulation remains protective of the environment and human health by reflecting advances in science and current practices, b) to support MoE's targets for reduction of organic waste disposal, and c) to align with BC's goal to reduce GHG emissions from waste (MoE 2017). Topics to be considered during the review include the opportunity for increased public transparency, improved facilitation of organics recycling, notification requirements for First Nations, and increased clarity regarding regulatory requirements (MoE 2016a). MoE invited feedback from stakeholders, First Nations, and interested parties on a set of proposed policies to update the regulation. MoE expects to amend and implement the revised regulation in 2017 (MoE 2016a).

In light of recent concerns over the impacts of land applied biosolids, MoE assembled a technical working group to conduct a scientific review of the subject. The scientific review resulted in a literature review and soil sampling study, both released in 2016 [A literature review of risks relevant to the use of biosolids and compost from biosolids with relevance to the Nicola Valley, BC (LRCS 2016); Biosolids Sampling Project – Results and Analysis (MoE 2016b)]. MoE is currently conducting a biosolids sampling study to measure various potential contaminants including legacy organics and ESOC, which is anticipated for release in 2017.

The MoE is evaluating the option of requiring that wastewater treatment plants perform periodic testing of their biosolids for select contaminants, including legacy organics and ESOCs (MoE 2017). MoE is also conducting a risk assessment on the potential effects of biosolids land application on wildlife, including birds, and large mammals (MoE 2017). The results of the scientific review will inform the current review of the OMRR regulation.

3.2 FEDERAL POLICY

The Canadian Council of Ministers of the Environment (CCME) is comprised of the environment ministers from federal, provincial, and territorial governments. The CCME provides national guidelines for the beneficial use of biosolids through the Canada-wide Approach for the Management of Wastewater Biosolids. The Approach and the supporting "Guidance Document for the Beneficial Use of Municipal Biosolids, Municipal Sludge and Treated Septage" presents best management practices and encourages the beneficial use and sound management of municipal biosolids across the country (CCME 2012a). The management principles central to the approach are:

- Municipal biosolids, municipal sludge, and treated septage contain valuable nutrients and organic matter that can be recycled or recovered as energy.
- Adequate source reduction and treatment of municipal sludge and septage should effectively reduce pathogens, trace metals, vector attraction, odours, and other substances of concern.
- The beneficial use of municipal biosolids, municipal sludge, and treated septage should minimize net greenhouse gas emissions.

- Beneficial uses and sound management practices of municipal biosolids, municipal sludge, and treated septage must adhere to all applicable safety, quality, and management standards, requirements, and guidelines (CCME 2012a).

The CCME developed Guidelines for Compost Quality in 2005. The compost guidelines include two compost categories (A and B), which are based on safety criteria, including foreign matter, maturity, pathogens and pathogen indicators, and trace elements. The CCME guideline allows for the unrestricted use of compost that meets Category A criteria, whereas Category B compost has a restricted use allowance and may require additional control when deemed necessary by a province or territory. The compost guidelines apply to compost produced from any organic feedstock as determined by regulatory agencies (CCME 2010).

The Fertilizers Act and Regulations, administered by the Canadian Food Inspection Agency (CFIA), regulates the sale and import of biosolids products intended for use as a fertilizer or soil amendment. However, it does not regulate the production, use (including land application), disposal, or non-sale distribution (e.g., give away programs) of fertilizers and soil supplements, including biosolids products (CCME 2010).

Within Canada, provinces manage the maintenance and operation of wastewater treatment and/or composting facilities, and also the processing, use, and disposal of biosolids including land application, through provincial/territorial acts and regulations. For further information on the regulations of other provinces and territories refer to the CCME document, "A Review of the Canadian Legislation Framework for Wastewater Biosolids" (2010).

4 EMERGING TRENDS IN BIOSOLIDS REUSE

Policies and regulations regarding the land application of biosolids have been established in many regions of the world, including Canada, the US, and the United Kingdom. In countries where land application of biosolids is a common reuse option, there is an increasing shift towards the production of higher quality biosolids products, particularly transitioning from Class B to Class A biosolids programs. This is because Class A biosolids programs show more promise in meeting sustainability and public outreach goals in increasingly sensitive political climates, while providing more versatile distribution options (Clark et al. 2017, Newell 2017). Class A biosolids programs can take many forms, with products ranging from compost to dried pellets (refer to Section 5 for Class A biosolids program case studies).

There is a growing desire by many municipal wastewater treatment utilities to not only generate biosolids products for beneficial reuse, but to also make wastewater treatment plants energy neutral. This desire is fueled by the increased cost of power and fuel, as well as changing targets and stricter regulations for greenhouse gas emissions. The use of anaerobic digestion to process biosolids is becoming increasingly common throughout the world (Vasileski 2007, Deslauriers 2017). The biogas generated through anaerobic digestion is also increasingly being captured and converted to energy, for use by wastewater treatment plants, or fuel (e.g., compressed renewable natural gas) (Vasileski 2007, Deslauriers 2017, Panter and Barber 2017). Additionally, thermal processing options such as gasification and pyrolysis, which are being used in countries such as Germany and Japan, are now emerging processes in North America. These biosolids processing options produce process gas that can be converted into energy, while producing a potentially beneficial biochar or ash product and fewer emissions than incineration (CCME 2012b).

In 2017, the theme for the Water Environmental Federation (WEF) Residuals and Biosolids Conference held in Washington State was, 'The Future of Biosolids and Bioenergy'. The conference included presentations on new technology and emerging trends in biosolids management in North America. Case studies presented at the conference are summarized below to highlight how jurisdictions are integrating emerging technologies into their biosolids programs.

4.1 BIODESIEL PRODUCTION

In recent years, there has been increasing interest in biodiesel as a renewable alternative to fossil fuels. Biodiesel is produced from either animal or vegetable fats, which are converted to a combustible methyl ester fuel by a process known as transesterification (Mekhilef et al. 2011, Crawford et al. 2012). Commonly, plant species with a high content of oil in the seed (oilseeds) such as soy and canola are used as biodiesel feedstocks. There is interest from some municipal biosolids programs to use biosolids fertilizers to grow biodiesel crops to fuel municipal vehicle fleets or farm equipment. Fuel crop production on valuable agricultural land however, is not without some controversy (Pimental et al. 2009). Research into methods to produce biodiesel without occupying arable land is ongoing (Crawford et al. 2012).

4.1.1 CITY OF RALEIGH, NORTH CAROLINA

The City of Raleigh Public Utilities Department's Neuse River Resource Recovery Facility provides wastewater treatment to Raleigh and six surrounding communities. The Neuse facility produces approximately 40 dry tons of aerobically digested biosolids per day (McDilda 2009, City of Raleigh 2016a). Approximately 10% of the aerobically digested biosolids remain as Class B biosolids and are liquid land applied; about 55% are converted to a Class A biosolids fertilizer, named Raleigh-Plus, through a lime-stabilization process; and the remaining 35% are mixed with woodchips and composted by an independent company (McDilda 2009). Refer to Section 5.3.4 for a detailed summary of the City of Raleigh's biosolids beneficial reuse program.

In 2010, the City of Raleigh expanded their biosolids program to incorporate the production of biodiesel to fuel farming equipment (City of Raleigh 2016b). The City received funds under a state grant ("Priority 2: Civic and Small-scale Biofuels") to better understand the costs and benefits associated with biofuel production on municipal lands. A pilot study was initiated in 2010 to determine if sunflower was a viable crop for the production of biodiesel. The City planted 27 acres of sunflowers fertilized with effluent irrigation and Class A and B biosolids applications. The City produced 4,762 litres of biodiesel from processing the sunflower seeds, though third party, Piedmont Biofuels Inc. (City of Raleigh 2016b). An important lesson learned was the unanticipated cost of crushing seed and lack of available local processors and associated transportation costs. It was originally thought that a biodiesel processor would be built in an existing building at the Neuse facility, however escalating costs for retrofitting a building with the necessary utilities combined with transportation costs resulted in the decision to pursue a mobile processor (City of Raleigh 2016b).

The City purchased a 46-foot-long trailer and installed a mobile biodiesel production system. The City, through a competitive bid process, awarded New Earth Fabricators a contract for the design, fabrication, and necessary training for a mobile processor. The Mobile Biofuel Processor cost approximately US $178,350, excluding staff resources, and was funded through an initial state grant and additional funding from the City's Sustainability Fund and Public Utilities Department (City of Raleigh 2016b). The trailer can produce biodiesel on-site in any location and is also useful as a demonstration tool for educational purposes (City of Raleigh 2016b).

Currently, the department uses between 49,000 and 95,000 litres of diesel fuel annually to power the equipment it uses to farm land (Rodgers 2016). The City did a study in association with the Biofuel Center of North Carolina, NC State, and some other partners which estimated that with the City's current farming practices and crop production they are capable of producing 74,950 litres of biodiesel per year. The City did a study in association with the Biofuel Center of North Carolina, NC State, and some other partners which estimated that with the City's current farming practices and crop production they are capable of producing 74,950 litres of biodiesel per year.

During the summer of 2016, staff at the Neuse facility expected a 3,000 bushel sunflower harvest for the fall, with a soybean harvest to follow. Soybeans were expected to be pressed and converted into biodiesel as early as spring 2017 (City of Raleigh 2016c). The city is looking forward to increased production of biofuel

over time for use in their farming equipment. The city provides biodiesel program updates to interested citizens through the City of Raleigh's Biosolids Program Facebook page (City of Raleigh 2016c).

4.2 BIOGAS UTILIZATION

The anaerobic digestion of sewage sludge to produce stabilized, low pathogen content biosolids is a common pre-treatment at wastewater treatment plants worldwide (Vasileski 2007). Following anaerobic digestion, biosolids can be dewatered and land applied or directed into further biosolids processing options such as thermal drying, composting or alkaline stabilization. Over the past decade, biogas utilization from the anaerobic digestion process has become a high priority and major component of energy recovery in both large-scale and small-scale wastewater treatment facilities. Initially, the utilization of biogas energy recovery focused on combined heat and power (CHP) systems, also known as co-generation (NACWA 2010). However, advances in gas cleaning technologies are now providing an alternative to electricity and heat generation in the form of renewable natural gas (RNG) production (Le et al. 2017). In North America, there are a number of projects underway that convert excess biogas, not required for the energy needs of the facility, into RNG for sale to a gas utility or use in natural gas fuelled vehicles. In addition to the examples below, refer to Section 5.3.4 for the City of Raleigh's biogas utilization plan.

4.2.1 CITY OF PORTLAND, OREGON

Portland's Columbia Boulevard Wastewater Treatment Plant has been in operation since the early 1950's and now serves most of Portland, with a population of more than 600,000 people (City of Portland 2017a). Since 1990, the city has applied biosolids to dryland pasture, dryland small grains, and irrigated small grains at Madison Ranches near Echo, Oregon. In 2010, the city also began applying some of its biosolids on farmland near Wasco in Sherman County. The farmers pay a fee for the biosolids and these funds support biosolids studies at Oregon State University (City of Portland 2017a). Portland uses anaerobic digestion to stabilize their biosolids (15 days at 95°C) prior to land application. Through the anaerobic digestion process, the Plant produces 600 million cubic feet of biogas annually (55-65% methane content) (City of Portland 2017b, Han et al. 2017). Currently, more than three quarters of the biogas is captured and beneficially used, while the remaining amount is flared. Biogas is used in boilers for digester heating and various heating uses onsite (16%), in co-generation systems to offset power usage (41%), and is sold untreated to a nearby roofing manufacturing facility (20%) (Han et al. 2017).

The City of Portland has a goal to become a leading city in green energy and sustainability. One initiative the City has committed to is using biogas capture and beneficial use from wastewater treatment. In 2009, the Plant installed two 850 kilowatt GE/Jenbacher engine-generators (co-generation) with a total generating capacity of 1.7 megawatts, which now supplies approximately 40% of the plant's electrical needs (City of Portland 2017b). The biogas used for co-generation is treated to remove hydrogen sulfide, moisture, and siloxane, to meet required engine specifications. In 2011, Portland participated in an Oregon Department of Energy biogas feasibility study, which evaluated the feasibility for biogas use at wastewater treatment plants in Oregon (Han et al. 2017).

The recommendations for the Columbia Boulevard Wastewater Treatment Plant were to consider adding co-generation capacity and also consider producing renewable Compressed Natural Gas (Han et al. 2017). These recommendations were used in the development of the Biogas utilization/upgrade project, which started in 2013, originally as a cogeneration expansion project, with the intention of evaluating other options for biogas use. Over time, the project became a Renewable Natural Gas (RNG) to vehicle fuel project due to the economics and benefits of offsetting fossil based vehicle fuel (Han et al. 2017).

The overall goals for the Biogas utilization/upgrade project included devising a plan that:

1. made best beneficial use of remaining biogas
2. maximized ratepayers' benefits
3. optimized return on investment with best balance of risk and reward, and
4. aligned with the City's goals, policies, and Climate Action Plan (Han et al. 2017).

With these goals in mind, the City hired a consulting firm to perform a triple-bottom line analysis (financial, environmental, and social) for various alternative uses of the biogas, including co-generation expansion, biogas treatment for vehicle use, biogas treatment for sale to industry, and biogas use in biosolids drying. The analysis indicated that the best beneficial use of the flared biogas is for it to be used for vehicle fuel. A regional factor that affected the analysis was that Oregon's electrical grid emission intensity is low due to availability of hydropower and renewables, thus renewable energy though co-generation was not as compelling, compared to renewable fuel (Han et al. 2017).

After determining the direction of the project, many challenges still remained as there is currently no infrastructure and market for RNG in the Pacific Northwest. Early concepts included building commercial fueling stations and trucking RNG to retailers and wholesalers, however there were too many associated logistical and access challenges (Han et al. 2017). The City approached a local distribution company, NW Natural, for a partnership on pipeline injection and RNG delivery. Once RNG is injected into the NW Natural pipeline, it can be transported though a vast pipeline network, including out of state. It is anticipated that RNG will be sold to out-of-state markets initially as there is no RNG vehicle fuel market or infrastructure in Oregon. However, the city plans to develop a local market over time to keep the consumption of renewable and sustainable energy local (Han et al. 2017). To this end, the City is going to build a Renewable Compressed Natural Gas (RCNG) fueling station onsite for some vehicles in its fleet. The City is also considering organic wastes, primarily food waste, as additional feedstocks to augment biogas production, which will improve the project return on investment (Han et al. 2017).

The project is expected to cost US $11 million (City of Portland 2015). In 2015, the City secured an ODOE Alternative Vehicle Fuel Infrastructure tax credit for approximately US $1.6 million to offset costs. It is anticipated that construction of the biogas treatment facility will start in summer 2017, with RNG available in the fall 2018 (Han et al. 2017).

4.2.2 GRAND JUNCTION, COLORADO

The Persigo Wastewater Treatment Plant, jointly owned by the City of Grand Junction and Mesa County, Colorado, serves a population of approximately 60,000 people. The Plant treats approximately 31 million litres of wastewater daily through two anaerobic digestion tanks (primary and secondary treatment) (City of Grand Junction 2016). Until recently, biogas captured from the anaerobic digestion process was flared. In 2014, after many years of planning, city officials contracted BioCNG LLC to design, build, and operate a system to capture, collect, and purify biogas to create renewable natural gas (RNG) for use as vehicle fuel (City of Grand Junction 2016). As part of the project, BioCNG also designed and installed an option to preferentially use biogas in the WWTP digester boiler instead of natural gas, thereby saving on treatment plant operating costs, while also producing a low emissions vehicle fuel (Tetra Tech 2017).

The biogas-to-fuel project, Colorado's first, began operations in the spring of 2015. Approximately 1,740 gasoline litre equivalents are produced daily and piped 10 kilometers to an existing Compressed Natural Gas (CNG) fueling station (City of Grand Junction 2016). The CNG fuel, which achieves greenhouse gas emission reductions of 80% or more compared to gasoline or diesel, is then used to fuel municipal natural gas vehicles. As of summer 2016, 46 vehicles were being powered by the natural gas fuel including garbage trucks, dump trucks, pick-ups, and sedans, as well as 10 Grand Valley Transit regional buses, which already had natural gas engines installed (City of Grand Junction 2016). It is estimated that the project will eliminate the equivalent of approximately 636,000 litres of gasoline and diesel per year. The primary drivers for the project were fuel savings and the long-term fixed costs of renewable CNG fuel versus diesel and environmental credits generated under the EPA's Renewable Fuel Standard. The total project cost, including the installation of the needed pipeline infrastructure, was approximately US $2.8 million with an estimated payback period of seven to nine years (City of Grand Junction 2016, Day 2016). The project was funded in part by a $500,000 state grant from the Colorado Department of Local Affairs (Day 2016). The utility will charge US $1.50 per gallon to the city until the project is paid off, after which the price will be renegotiated to provide long-term savings at a stable price (Day 2016). In 2015, the project received a Natural Gas Vehicles for America Industry Achievement Award (Tetra Tech 2017).

A biosolids composting pilot program began in 2000 to divert biosolids produced through anaerobic digestion at the Persigo Plant from the local landfill. The program experienced some initial challenges, but after visiting other successful composting facilities, arrived at a productive composting formula (MCPC 2001). Mesa County ran the biosolids composting program from 2005 to 2010, when the program was discontinued because of problems with public perception, odour complaints, and a lack of market for the compost (McIntyre 2015, Mesa County 2017).

4.3 THERMAL HYDROLYSIS / BIOLOGICAL HYDROLYSIS

The desire to improve wastewater treatment plant operational sustainability has also led some utilities to explore options to increase the biogas generation from their anaerobic digesters. A number of pre-treatment processes can be used in conjunction with anaerobic digestion to improve digestion performance and enhance energy recovery from biogas (Peters et al. 2017, Theodoulou et al. 2017). Thermal hydrolysis, for example, is a two-stage pre-treatment process combining high-pressure boiling of wastewater sludge followed by a rapid decompression. The combined action makes the sludge more biodegradable, increases digester organic loading rates, produces more biogas, increases the de-waterability of the sludge, and sterilizes the sludge improving pathogen reduction (Peters et al. 2017).

4.3.1 CALGARY, ALBERTA

Bonnybrook Wastewater Treatment Plant is the largest of Calgary's three wastewater treatment plants, with capacity to treat the wastewater from approximately one million people (City of Calgary 2017). Over the past few decades, Calgary's population has steadily increased. To address this growth, the City must expand its wastewater treatment capacity. Currently, the treatment plant manages sewage sludge through mesophilic anaerobic digestion to produce stabilized biosolids and biogas. The digested biosolids are stored in storage lagoons during the year and used in the Calgro Class B biosolids agricultural land application program during the summer months (Peters et al. 2017). Biosolids generation at the Plant is estimated to increase from the current volume of 18,000 to 23,000 tonnes dry solids per year to 35,000 tonnes dry solids per year by 2030 to 2035. However surrounding agricultural lands can only accept biosolids at a rate of 11,500 to 22,000 tonnes dry solids per year. The City is currently constructing a dewatering facility at the Bonnybrook Plant and an off-site composting facility to address the shortfall between biosolids generation and Class B biosolids land application capacity (Peters et al. 2017). Biogas generated through digestion is captured and used in a combined heat and power (CHP) system to generate energy for the plant (Peters et al. 2017).

As part of the City's planned plant expansion, increased sludge handling capabilities are required in part due to the greater volume of waste solids generated by the expanded plant. A number of alternatives for solids stream treatment were considered during Conceptual Design phase and evaluated using a triple-bottom-line assessment (Peters et al. 2017). Economic and non-economic considerations were included in the assessment, including reliability, operations and maintenance factors, and future proofing (ability to move to a Class A biosolids product in the future). Three solids handling alternatives were short-listed, including:

1. conventional mesophilic anaerobic digestion
2. acid gas digestion, and
3. thermal hydrolysis of the secondary sludge.

Of these options, thermal hydrolysis process (THP) of secondary sludge presented the most significant advantages in increasing solids treatment capacity for the plant (Peters et al. 2017).

One of the key reasons that thermal hydrolysis of secondary sludge was chosen, instead of thermal hydrolysis of both primary and secondary sludge, is that Class A biosolids are not currently required for land application programs in Calgary (Peters et al. 2017). Additionally, thermal hydrolysis of secondary sludge only requires a smaller, less costly facility while still realizing most of the benefits of thermal hydrolysis of the plant's sludge. These benefits include reduced sludge viscosity, pathogen reduction, increased volatile solids reduction, increased biogas production and, increased de-waterability of digested sludge. An additional key advantage is the elimination of the need for future digesters when considering expansions over the short and longer term (Peters et al. 2017). The addition of the process allows two small digesters and one large digester at the plant to be put into retirement which could accommodate future loads as the city grows. The thermal hydrolysis option is also readily reconfigurable to produce Class A biosolids should regulations for land application change, thereby providing process flexibility. Following a thorough analysis of potential venders, Cambi (CambiTHP) was selected as the successful thermal hydrolysis supplier. While there are many thermal hydrolysis systems in operation in the world, particularly in Europe, there are no comparable references in Canada. Detailed design of the project began in August 2016 and is expected to be completed in the summer of 2017 (Peters et al. 2017).

4.3.2 AVONMOUTH, ENGLAND

Biological hydrolysis is an anaerobic digestion enhancement technology, primarily used in England, that can be retrofit into existing wastewater treatment plants or included in the construction of new plants to increase anaerobic digester efficiency. Primary motivators for plants to install biological hydrolysis systems include:

1. maximizing digester efficiency, allowing for plant capacity expansion with existing anaerobic digestion infrastructure,
2. increasing biogas production with existing infrastructure to produce electricity through combined heat and power systems to supply plant electricity needs, and
3. producing an enhanced biosolids product that achieves up to a six-log reduction in pathogen content (Theodoulou et al. 2017).

The Avonmouth Wastewater Treatment Plant implemented biological hydrolysis in 2008. Prior to the installation, the plant was treating its own sewage sludge and sludge from neighbouring facilities. However only 51% of the total sewage sludge treated was anaerobically digested (Theodoulou et al. 2017). A series of upgrades at the plant, including the biological hydrolysis system installation, resulted in the entire sludge volume being treated through existing anaerobic digestion infrastructure in addition to the co-digestion of 40,000 wet tonnes per year of pre-processed food waste. The biological hydrolysis system enables close to double the digester organic loading rate than their previous system.

The increase in sludge digestions, paired with the addition of the digestion of 40,000 wet tonnes of food waste per year, resulted in a tripling of the biogas produced (Theodoulou et al. 2017). This increase was aided by the fact that the biogas yield from food waste is between 1.5 to 2 times higher than that of

municipal sewage sludge. The increased biogas production enables the plant to make up to 5.75 MW of renewable energy through its combined heat and power engines. For example, prior to the biological hydrolysis install, the plant digested 18,360 dry tonnes of sludge per year and produced 1,900 kW of renewable electricity. After the install, the plant digested 36,000 dry tonnes of sludge and 40,000 tonnes of food waste per year and produced 5,750 kW of renewable electricity (Theodoulou et al. 2017).

In this example, the addition of biological hydrolysis in the plant's treatment process enabled the plant to import both additional wastewater sludge and food waste into the anaerobic digestion process stream using existing infrastructure. The digestion of the additional organics produced sufficient biogas to convert enough renewable electricity to supply the electrical requirements of the plant, leaving some excess, which is sold to the national grid (Theodoulou et al. 2017). The biological hydrolysis process also aids in pathogen load reduction in the resulting biosolids. As is the prevalent practice in Britain, biosolids produced through the biological hydrolysis and anaerobic digestion treatment process are dewatered and beneficially reused through agricultural land application.

4.4 GASIFICATION

There is growing interest in gasification as a means to significantly reduce biosolids volume while producing renewable energy and reducing fossil fuel consumption. The gasification of sewage sludge or biosolids produces syngas which can be converted into an energy source and ash/char, while producing significantly fewer emissions than conventional combustion processes, such as incineration (NACWA 2010). The ash or a biochar produced can be disposed of in landfills or potentially used as soil amendment (CCME 2012b). The use of gasification at wastewater treatment facilities is relatively new in North America, with a number of pilot studies undertaken since 2003 and continuing to present day (Jones 2017). Although a few exclusive sewage sludge gasifiers are in use (e.g., Balingen, Germany), most gasification systems utilize multiple feedstocks, such as biosolids, wood waste, and residential solid waste (e.g., City of Lebanon, Tennessee).

4.4.1 ANCHORAGE, ALASKA

The John M. Asplund Wastewater Treatment Facility located in Anchorage, Alaska treats wastewater from the City of Anchorage, sewage sludge trucked in from other nearby treatment plants, and the wastes from nearby fish processing plants (Jones 2017). The Facility processes dewatered primary sludge in a multi-hearth incinerator, which is fired with natural gas, and the resulting ash is disposed of in landfill. Due to the facility's age, the Anchorage Water and Wastewater Utility will soon be deciding on whether to replace several worn incinerator components, or to replace the incinerator entirely.

Under the US Sewage Sludge Incineration Rule (SSI Rule), upgrading or installing a new incinerator will trigger more stringent stack exhaust emissions standards (Jones 2017). The manpower and emissions testing associated with achieving compliance with the existing air emissions permit for the incinerator already represents a significant cost to the utility, and those costs are only expected to increase under more stringent emissions standards.

As a result, the city began looking at treatment alternatives to incineration. Other common treatment options, such as anaerobic digestion and composting, are not practical for Alaska due the cold climate and remote community locations (Jones 2017). To this end, the city is considering sewage sludge gasification as a viable alternative to incineration, which is not subject to the SSI Rule. Gasification provides a treatment alternative that reduces waste volume to a similar extent as incineration, while also producing cleaner air emissions and syngas that can be used to generate heat and electricity for the treatment facility (Jones 2017).

In the pursuit of gasification as an alternative to incineration, the City of Anchorage is conducting a full scale trial on an operational gasifier in Balingen, Germany (fluidized bed gasifier) to measure the yield of syngas and heat energy per pound of Anchorage biosolids (Jones 2017). For the study, the Utility rented a pilot scale multi-tray dryer from Wyssmont, which processes dewatered sludge cake and produces a product that is 90% dry solids. Once dried, the sludge was loaded into plastic lined supersacks and shipped to Germany. A team of engineers from Anchorage are currently in Germany conducting the gasifier testing (Jones 2017). It was decided that full scale testing was the most appropriate way to predict the performance of a sewage sludge gasifer processing Anchorage's sewage sludge. The testing will quantify the energy generation potential of the gasifier and provide a better understand of emission characteristics. This data will be used in the development of economic and practical recommendations regarding the installation of a gasifier at the treatment facility (Jones 2017).

Currently, there are no gasifiers in the United States that operate only on sewage sludge. Other operational gasifiers require the addition of other feedstock materials, such as wood waste, waste plastics, or solid waste (Jones 2017). The successful implementation of a sewage sludge gasifier in Anchorage would be expected to offer significant energy savings, while producing cleaner air emissions. It would also provide a North American example for other municipalities looking to eliminate their incinerators in favour of gasification.

> **Balingen, Germany:** The fluidized-bed gasification demonstration plant, manufactured by Kopf, was constructed in 2002 at Balingen's Wastewater Treatment Plant to process digested sludge and recover energy. The fluidized-bed gasifier operates only on sewage sludge (Jones 2017). In 2010, the plant was rebuilt to accommodate a larger throughput (Judex et al. 2012). Kopf gasification technology combines a solar drying unit, fluidized bed gasification unit, gas engine unit for energy recovery, and post combustion chamber for burning excess syngas. The solar drying unit dries wet digested sludge to a solid content of between 70 and 85% over two to eight weeks, depending on weather. The Balingen Plant processes approximately 160 to 180 kg of dry digested sewage sludge per hour, and produces approximately 85 kg of ash and 300 m^3 of exhaust per hour. Approximately 0.5 kWh of electricity is produced per kg of total solids processed, with 0.1 kWh per kg of total solids processed used for the gasification process and the remaining 0.4 kWh is used by the plant (USEPA 2012). Ash generated during the gasification process is used as a bed material or is used in a variety of other ways such as road filling (Judex et al. 2012).

4.4.2 CITY OF LEBANON, TENNESSEE

The City of Lebanon, Tennessee, is located 40 km east of Nashville and has a population of approximately 28,600 people. As an expansion of the city-wide 'Think Green - Think Clean Initiative', the City of Lebanon has recently completed the construction of a waste-to-energy system sited at the City's wastewater treatment plant (City of Lebanon 2017, Snyder 2017). The new system will consolidate three waste streams, including biosolids, wood waste, and used tires, and convert it into electricity for use at the treatment plant. The new waste-to-energy system combines a biomass gasification system with thermal oxidation and an Organic Rankine Cycle (ORC) power generator to produce electrical power with emission levels comparable to natural gas combustion (Snyder 2017).

The downdraft gasifier used in the system was designed, engineered, and installed by Aries Clean Energy (formerly PHG Energy), a Tennessee-based company. The gasifier can accommodate a broad range of feedstock giving the City flexibility in handling its waste streams over its 25 year operating life. Initially, the feedstock for the system will be 10% biosolids, 10% tires, and 80% wood waste (Snyder 2017). The thermal oxidizer used in the system includes an attached hot water heater that transfers the energy from the thermal oxidizer's exhaust flue stream into a closed loop circulating stream of hot water. The hot water stream carries the heat energy into the ORC generator, where it drives the ORC's closed-loop power generation (Snyder 2017). Aside from the syngas, the gasification process also creates biochar. Approximately 32 tons of biosolids, tires, and wood waste will be processed daily, producing approximately 1.6 tonnes of biochar (Snyder 2017).

Prior to the completion of the waste-to-energy project, the City disposed of approximately 3 tons of anaerobically digested biosolids per day through land application and disposed of 27 tons per day of wood waste at the regional landfill. At these volumes, more than 1,680 round trips per year were needed to dispose of these waste streams via truck (Snyder 2017). The City's wastewater treatment plant also used energy from a municipal electrical distribution utility at an average cost of $0.10/KW. The new waste-to-energy system should conservatively generate 748MW-hrs annually, yielding approximately US $75,000 per year in electrical energy savings. The shutdown of the advanced thermophilic anaerobic digestion system will also contribute an additional US $175,000 per year in electricity savings. It is expected that US $248,000 per year will be saved through removal of costs associated with landfill tipping fees, labour, and fuel costs required for biosolids land application. The City also plans to add an additional revenue stream, through marketing the biochar as a soil amendment (Snyder 2017).

Overall, the waste-energy gasification project is expected to provide the City of Lebanon with a net savings of US $300,000 annually, and at least US $6 million during its operational lifetime, through avoiding costs and gaining operational efficiencies, while simultaneously meeting the goals of the Tennessee Department of Environment and Conservation Energy Program (Synder 2017).

4.4.3 DISTRICT OF DELTA DIABLO, CALIFORNIA

The District of Delta Diablo provides water resource recovery services for the City of Antioch, the City of Pittsburg, and the unincorporated community of Bay Point, California, serving a population of close to 200,000 (Delta Diablo 2017). The District treats sewage sludge generated through the wastewater treatment process via anaerobic digestion and centrifuge dewatering prior to land application as a biosolids fertilizer.

The district is the lead agency of the Bay Area Biosolids to Energy Coalition (Delta Diablo 2017). One of the main goals of the Bay Area Biosolids to Energy Coalition is to harness the energy in the biosolids and convert it to electricity and other useful energy products (Delta Diablo 2017). To this end, Delta Diablo, in partnership with Mt. Diablo Resource Recovery, is in the process of evaluating Aries Clean Energy's (formerly PHG Energy) downdraft gasification technology to determine project size, phasing, optimal feedstock ratios, and needed support infrastructure (Deslauriers 2017). The technology is similar to that used by the City of Lebanon, Tennessee. The District is evaluating project locations and working towards obtaining an air permit for the gasification technology (Deslauriers 2017). It is estimated that total project costs, from planning and design to construction will be approximately US $10 million.

Initially, the Gasifier system will process 7,750 tons of wood waste per year (1 truck/day) and 2,480 wet tons per year of biosolids (25% of Delta Diablo biosolids) and the syngas generated will be converted into approximately 467 KW of electricity. The energy generated by the gasification process, paired with the energy generated through anaerobic digestion, will eliminate the need for additional energy inputs at the treatment plant and will reduce greenhouse gas emissions by 85% (Bay Area Biosolids 2016a, Deslauriers 2017). The process will reduce biosolids volume by up to 93% and will produce a char product (Bay Area Biosolids 2016).

4.5 PYROLYSIS

Pyrolysis is an emerging technology in biosolids management that has been found to minimize air emissions and remove pathogens and pollutants, while generating syngas that can be converted to energy and biochar, a soil amendment (Liu et al. 2017). While there are still few examples of biosolid pyrolysis projects in North America, there is recognition that biosolids can serve as a renewable energy source to offset energy requirements at waste treatment facilities. Pyrolysis projects, such as those being investigated by the Bay Area Biosolids to Energy Coalition are aiming to provide viable, year-long alternatives to land application programs that go beyond biosolids-to-energy goals by also seeking to recycle biochar back into the environment (Deslauriers 2017).

4.5.1 DISTRICT OF DELTA DIABLO, CALIFORNIA

The District of Delta Diablo provides water resource recovery services for a population of approximately 200,000 people (Delta Diablo 2017). The District is the lead agency in the Bay Area to Biosolids Coalition, a collaborative effort to create options for local sustainable biosolids management (Delta Diablo 2017). In addition to investigating gasification as a biosolids management option (refer to Section 4.4.3), Delta Diablo, in partnership with Mt. Diablo Resource Recovery, is also evaluating Anaergia's pyrolysis technology to determine sizing, phasing, and needed support infrastructure (Anaeriga 2016, Deslauriers 2017).

The goal of the Delta Diablo pyrolysis project is to divert food waste from the landfill and convert it into clean energy and fertilizer using co-digestion, biosolids drying, and low temperature pyrolysis (Anaeriga 2016). An Anaergia's Organics Extrustion Press would sort food waste from municipal solid waste at Mt. Diablo Resource Recovery, creating a clean and digestible feedstock for anaerobic digestion. This feedstock would be trucked to Delta Diablo where it would be co-digested with municipal wastewater sludge to create biogas and biosolids (Anaeriga 2016).

Biogas produced during the anaerobic digestion process would be captured and converted to electricity. The digested biosolids would be processed through a low temperature dryer/pyrolysis system to produce a Class A biochar fertilizer product and bio oil. The bio oil would be fed back continuously to the digesters to create additional energy or stockpiled to generate energy during peak demand periods (Anaeriga 2016).

The project is anticipated to process 33 tons of anaerobically digested biosolids per day and 80 tons of food/organic waste per day into a Class A high-nutrient biochar fertilizer product and 2.2 MW of electricity. This would result in diverting 22,880 tons of food and organic wastes from landfills, reducing greenhouse gas emissions, and producing enough electricity to take Delta Diablo off the grid (Anaeriga 2016, Deslauriers 2017).

4.5.2 SILICON VALLEY CLEAN WATER, CALIFORNIA

Silicon Valley Clean Water is a Joint Power of Authority governed by four jurisdictions (Redwood City, West Bay Sanitary District, City of San Carlos, City of Belmont) that serves more than 200,000 people and businesses (SVCW 2012). Silicon Valley Clean Water's Wastewater Conveyance System takes wastewater from each jurisdiction collection system and transfers it to the wastewater treatment plant located in Redwood City. The plant processes sewage sludge generated during wastewater treatment though anaerobic digestion, producing biosolids. The biogas produced during the digestion process is captured and converted into electricity used by the plant (SVCW 2012).

Biosolids are dried by either rotary press or solar drying and used as an agricultural soil conditioner, a feedstock for composting, or daily cover at a landfill (SVCW 2012). The Silicon Valley Clean Water is a member agency of the Bay Area Biosolids Coalition which has a goal of better harnessing the energy in the biosolids and converting it to electricity and other useful energy products. To this end, Silicon Valley Clean Water has partnered with BioForceTech Corporation to develop a clean, green, sustainable method of handling biosolids using biosolids drying and pyrolysis. Goals of the project include maximizing energy

potential from biosolids, reducing biosolids transportation by 90%, and producing a high value biochar soil amendment (Bay Area Biosolids 2016b).

After more than two years of successful pilot studies, a 10-year service agreement was executed between Silicon Valley Clean Water and BioForceTech Corporation in 2016, for the construction of a full-scale facility that will treat 7,000 wet tons of biosolids per year (Bay Area Biosolids 2016b; BioForceTech 2017). The estimated cost for the project, from planning to construction and start-up is US $9.9 million. The facility is under construction and start-up is anticipated in spring 2017, when approximately half of the biosolids produced by the treatment plant will be delivered to the new facility (Deslauriers 2017). Once delivered, the biosolids will be dried using BioForceTech's innovative BioDryer process, which requires 70% less heat energy and 50% less electrical energy than a gas dryer. Afterwards, the dried biosolids will be processed via pyrolysis which produces syngas and biochar as byproducts, decreasing biosolids volume by up to 90% (BioForceTech 2017, Deslauriers 2017). The syngas will be captured and converted into heat and electricity for the facility, while the biochar is anticipated to be sold in bulk as a soil amendment (BioForceTech 2017).

4.6 INCINERATION

Incineration is commonly thought of as an environmentally unfriendly biosolids processing option due to high energy input requirements, high greenhouse gas emissions, and an ash product which is most commonly landfilled, thereby not returning useful nutrients in biosolids back to the environment. Recently, however, incineration is being viewed as a more attractive process by some jurisdictions as technical and process improvements become available, such as more efficient heat recovery and power generation. Modern incineration systems are being designed to achieve strict emission limits while also being energy efficient (Hancock et al. 2017, CIMA 2016a).

The City of Toronto has recently chosen to replace their aging incineration facility at the Highland Creek Treatment Plant with new Fluidized Bed Incinerators paired with state-of-the-art emissions scrubbing technology (refer to Section 5.2.3; CIMA 2016a).

4.6.1 CLEVELAND, OHIO

The Southerly Wastewater Treatment Center, owned and operated by the North East Ohio Regional Sewer District, serves more than 600,000 people living in the greater Cleveland area. Prior to recent upgrades at the center, four multiple hearth incinerators, powered by natural gas, were used to incinerate the District's biosolids (Hancock et al. 2017). In the early 2000's, the District decided that it wanted to replace its multiple hearth incinerators with three Fluidized Bed Incinerators coupled with a heat recovery system. The new system would also include a new chemical conditioning system and nine new high solids dewatering centrifuges. In 2008, the district assembled an expert panel to review and provide comment on their Residuals Study (2005) and Biosolids Handling and Incinerator Project Proposal (2007) (NEORSD 2008). The panel believed that fluidized bed incineration with waste heat recovery was the most viable, cost-

effective, and environmentally friendly long-term biosolids management option for the District (NEORSD 2008, Hancock et al. 2017).

The District estimated that a fluidized bed incineration system with waste-heat recovery would result in US $1 million in savings per year compared to the existing system by reducing the natural gas consumption by 98%. Initial construction costs were estimated to be between US $90 - $120 million. It was expected that selling electricity to a utility at $0.03/kwh would result in a payback period of 20 to 25 years (Hancock et al. 2017). During the design process, it was decided to add a steam turbine with power-generation capability to the system. The waste heat produced during the fluidized bed incineration would heat water to generate steam, which would power a turbine. It was estimated the turbine could generate approximately 3 MW of electricity, enough to satisfy the electrical needs of the new incineration system. This energy-recovery system added approximately $20 million to the project costs, however the payback period for the project was estimated to be 11 years when using the generated power on-site, instead of selling it to a utility (NEORSD 2008, Hancock et al. 2017). A $0.07/kWh savings was projected based on using power generated by the turbine on-site, instead of purchasing power from a utility (Hancock et al. 2017).

The project at the Southerly Center was designed to be completed in several phases, beginning in 2009 (NEORSD 2008). The new biosolids incineration system became fully operational in 2016. The Center now has three fluidized bed incinerators with three heat recovery systems producing superheated steam to generate power through a steam turbine, which is designed to handle two incinerators due to one incinerator being on stand-by during normal operation (Hancock et al. 2017). The turbine generates 2.4 MW when two incinerators are in operation with a 11,975 kg/hr (26,400 lb/hr) steam flow. Each fluidized bed incinerator has the capacity to incinerate 100 dry tons of biosolids per day. Flue gas from the incinerators after being used in steam generation is discharged into a wet scrubber to remove particulate and acid gases (e.g., SO2). Clean flue gas discharged from the wet scrubber flows through a mercury removal system prior to discharge (Hancock et al. 2017). Ash generated through the incineration process is landfilled (Dominak 2010).

The three fluidized bed incinerators were started, commissioned, and underwent performance testing between 2014 and 2016. All three incinerators satisfied the emission requirements listed in the air permit and project specifications. In 2015, the incinerators were retrofitted with the mercury removal system (SPC Gore technology) supplied by EnviroCare International to meet the Maximum Achievable Control Technology (MACT) emission limit (Hancock et al. 2017).

Table 4 Jurisdictional summary of emerging trends and technologies in sewage sludge and biosolids management, focused on case studies presented at the 2017 WEF Residuals and Biosolids Conference.

Jurisdiction	Emerging trend	Project Stage	End Products Produced	Beneficial Uses
Grand Junction, Colorado	Biogas utilization – fuel	Operational	Natural gas vehicle fuel	Compression of renewable natural gas to fuel 46 city vehicles including garbage trucks and dump trucks.
City of Portland, Oregon	Biogas utilization – fuel	Construction summer 2017	Renewable natural gas, Class A Biosolids fertilizer	Export of renewable natural gas, compressed natural gas for municipal vehicle fleet, and agricultural fertilizer.
City of Calgary, Alberta	Thermal hydrolysis	Design phase	Biogas, Class B Biosolids	Increased biosolids processing capacity, increased biogas production, and land application of Class B biosolids as fertilizer.
Avonmouth, England	Biological hydrolysis	Operational	Biogas, Class A Biosolids	Increased biosolids processing capacity, increased biogas production, sale of excess electricity generated from biogas to the grid, and agricultural fertilizer.
City of Raleigh, North Carolina	Biodiesel production	Operational	Class A and B Biosolids, Biodiesel	Use of Class A and B biosolids to improve growth of sunflower and soybean crops to be converted to biodiesel to fuel farm equipment on location.
Anchorage, Alaska	Gasification	Pilot study	Syngas, Ash	Energy savings of biosolids disposal costs, reduced greenhouse gas emissions, and significant waste volume reduction.
City of Lebanon, Tennessee	Gasification	Operational	Syngas, Biochar	Energy savings, reduced greenhouse gas emissions, cost savings associated with waste transportation, significant waste volume reduction, and marketable soil amendment product.
District of Delta Diablo, California	Gasification	Evaluation and site selection	Syngas, Ash	Syngas converted to enough energy to make facility self-sufficient, reduced greenhouse gas emissions, and significant waste volume reduction.
District of Delta Diablo, California	Pyrolysis	Evaluation and site selection	Pygas, Biochar	Pygas converted to enough energy to make facility self-sufficient, reduced greenhouse gas emissions, significant waste volume reduction, and valuable soil amendment.
Silicon Valley Clean Water, California	Pyrolysis	Construction	Pygas, Biochar	Pygas converted to enough energy to make facility self-sufficient, significant waste volume reduction, reduced greenhouse gas emissions, and valuable soil amendment.
Cleveland, Ohio	Fluidized bed incineration	Operational	Heat and Steam to Energy, Ash	Heat captured from process drives energy generation through steam turbine, process supported by energy generated, reduced greenhouse gas emissions, and waste volume reduction.

5 BENEFICIAL BIOSOLIDS REUSE – CASE STUDIES

5.1 BRITISH COLUMBIA

5.1.1 METRO VANCOUVER

Metro Vancouver has managed biosolids for beneficial use in the lower mainland since 1991, serving 23 municipal members and a total population of 2.4 million people. The Annacis Island Treatment Plant, the region's largest secondary treatment plant, processes approximately 80% of the region's biosolids (Metro Vancouver 2016). Following initial wastewater treatment at the plant, primary and secondary sludges are mixed and treated through thermophilic anaerobic digestion (55°C) for 22 days and dewatered in a centrifuge. The resulting biosolids (26-30% solids) are stored in hoppers until transferred to application sites (Force 2015).

The biosolids produced meets Class A standards and are used in a variety of land applications under the brand name Nutrifor. Metro Vancouver also produces a smaller amount of Class B biosolids through mesophilic digestion, at the region's Lulu Island and Lion's Gate treatment plants (Force 2015). Throughout the treatment process, Metro Vancouver tests the wastewater that will be turned into Nutrifor for metals and pathogens (Metro Vancouver 2016). Once Nutrifor is produced, it is tested again before leaving the facility to be sure it meets regulatory standards. Nutrifor conforms to BC OMRR regulations and the Fertilizers Act administered by the CFIA (Metro Vancouver 2016).

Metro Vancouver uses Nutrifor at its own facilities and parks and also partners with regional districts, mine operators, forestry workers, and others around British Columbia (Metro Vancouver 2016). Metro Vancouver has delivered more than one million tonnes of Nutrifor to a variety of different sites since it began producing biosolids (Ford 2016a). For more than 20 years, a large proportion of the biosolids produced have been delivered to BC mines for reclamation, where biosolids are typically mixed with overburden or tailings to improve soil productivity (refer to mining project example below).

Nutrifor products are also used in other regional reclamation projects. For example, Nutrifor products were used to help convert a 12 hectare gravel-pit in Abbotsford into a recreational park with hiking trails, lake, and marshy pond. The site is located over a sensitive aquifer; therefore Metro Vancouver conducted studies and continued monitoring to protect sensitive environmental site conditions. Studies indicate that the use of biosolids during reclamation had no negative effects on groundwater or surface water (Metro Vancouver 2016). Metro Vancouver also produces a biosolids landscaping soil (Nutrifor Landscaping Soil) made of biosolids, woodchips and sand, which has been used in numerous projects, including improvements to the Sea to Sky Highway and regional landscaping (Metro Vancouver 2016).

Nutrifor has been used in many landfill closures, including several landfills in the Thompson-Nicola region, resulting in a reduction of methane emissions (Metro Vancouver 2016). Nutrifor is also currently used in

forest fertilization projects. In the past, Nutrifor products were used as a fertilizer for rangelands; however high resource costs, including monitoring, has eliminated that use in recent years (Golder Associates 2014).

Concern from the public and First Nations over the use of Metro Vancouver biosolids in rangeland fertilization and compost programs has arisen in recent years. First Nations and local residents in the Nicola Valley raised environmental and health concerns regarding the land application of biosolids. In 2015, the First Nations of the Nicola Valley enacted a moratorium on the importation of biosolids from the Lower Mainland and the Okanagan into the Nicola Valley until a stringent scientific review had taken place (CBC News 2015a, 2015b, Merritt Harold 2016, LRCS 2016; refer to Nicola Valley example below).

Although Metro Vancouver uses a variety of beneficial use options, it is becoming increasingly challenging to find places and programs to use its biosolids. Metro Vancouver practices source separation of food and yard wastes, therefore compost, which also needs space for land application, is becoming increasing abundant in the region. Additionally, it is anticipated that biosolids production in the region will increase substantially in 2020 and 2030 due to planned upgrades at the Lions Gate and Iona Island Wastewater Treatment Plants to secondary treatment (Ford 2016b). As a result, Metro Vancouver is currently conducting a feasibility study for a Biosolids Drying Facility at Annacis Island. The aim would be to dry biosolids using excess heat produced by cogeneration engines during the treatment process and then use the dried biosolids in a variety of ways, including as a fuel source (Ford 2016a, 2016b). Metro Vancouver is also working on a pilot hydrothermal processing facility project, which would convert sewage into biocrude, instead of biosolids, that would then be sold to an oil refinery (Saltman 2017).

Metro Vancouver's biosolids program received the 2010 Award of Excellence in Biosolids Management from the Northwest Biosolids Management Association and Pacific Northwest Clean Water Association. The region was recognized in 2012 by the National Biosolids Partnership for its work to align its biosolids management with the partnership's code of good practice (Metro Vancouver 2016).

Mine reclamation example using Nutrifor: Highland Valley Copper (Teck Resources)

Located near Logan Lake in south-central British Columbia, the Highland Valley Copper Mine is the largest active open-pit copper mine in Canada and among the largest copper mines worldwide. The mine has operated under different ownership structures since 1963, and is currently owned by Teck Resources. The site consists of 6,000 ha of disturbed land and reclamation has been conducted progressively during the life of the mine. Currently, more than 2,300 ha have been revegetated, representing approximately one-third of the site's total disturbance area.

Multiple area-specific reclamation and land use objectives are being targeted at the mine site including agriculture/rangeland, forest land, wildlife habitat, and aquatic habitat. Where possible, restorative actions are being applied that promote natural succession of native species through broadcast seeding and planting. An insufficient quantity of topsoil was salvaged to adequately cover the disturbed landscape; therefore, most revegetation efforts were being applied directly on tailings and overburden materials that have low organic content and limited mineral nutrients (Gardner et al. 2010, 2012).

Over the past 18 years, the mine's reclamation program has applied 380,000 wet tonnes of biosolids (primarily Class A biosolids originating from Metro Vancouver, as well as some Class B biosolids) to cover more than 700 ha of disturbed or reclaimed land (Teck 2012). In collaboration with Thomson River University and other collaborators, past and present research trials have proven beneficial for optimizing site preparations and application rates, and documenting both short- and long-term ecological performance. Soil, vegetation, and water quality monitoring programs are also in place to verify environmental compliance for metal exposure and run-off.

Application of biosolids has resulted in improved revegetation response, especially with agronomic grasses (J. Dickson, Pers.Comm.). Because end land use objectives have shifted toward enhancing natural/native biodiversity composition – reflecting a global trend in ecological restoration (MacDonald et al. 2016) – reclamation trials are currently combining and incorporating other surface preparations and treatments (e.g., application of coarse woody debris, biochar) to further facilitate the growth of native trees and shrubs. The Highland Valley Copper Partnership was awarded the 2008 British Columbia Jake McDonald Mine Reclamation award for reclamation achievement by the BC Technical and Research Committee on Reclamation.

Highland Valley Copper has temporarily discontinued its biosolids program due to concern expressed by Indigenous communities of the Nlaka'pamux Nation over stockpiling procedures and potential risk to the down-stream environment. An ongoing dialogue with the First Nations as well as additional research and monitoring actions are being used to explore and address these concerns and resume biosolids use.

Rangeland fertilization and composting in the Nicola Valley:

The Valley is home to five First Nations (Nooaitch, Lower Nicola, Shackan, Coldwater, and Upper Nicola bands), several large ranches, and the City of Merritt, which has a population of approximately 7,000 people (LRCS 2016). Biosolids have been used in the Valley to fertilize rangelands and reclaim mine sites for many years. In 2013 and 2014, for example, 31,000 dry tonnes of biosolids were incorporated into the remediation of mine sites and over 37,000 dry tonnes of biosolids that were utilized through agricultural land uses. The majority of these biosolids from Metro Vancouver, much of which was Class A biosolids (LRCS 2016).

In 2014, local First Nations became aware that biosolids were being deposited and stored at a composting facility in the Sunshine Valley. The facility is close to the Nooaitch Band's reserve and the Nicola River, which the Nooaitch, as well as other First Nation communities, draw water from. It was also identified that a second biosolids storage location was planned in the Dry Lake area, a 320-acre parcel of land that is near a 44-lot rural subdivision and a community well (CBC News 2015a). First Nations expressed concerns about the effects of biosolid land application on human health and the environment, particularly the potential for water contamination. First Nations and a local group of concerned citizens called 'Friends of the Nicola Valley' began protesting the deposition of biosolids and for several months maintained a blockade preventing trucks carrying biosolids from entering the area (CBC News 2015a). In May, 2015, the five Nicola Valley First Nations chiefs and their

supporters protested at the B.C. legislature, calling on the government to stop the importation of biosolids into the region. The First Nations signed their own moratorium on the land use of all biosolids pending a scientific review (CBC News 2015b, Merritt Harold 2016).

In June 2015, the Province announced it would conduct a scientific review on the use of biosolids in the Nicola Valley. The scientific review was intended to focus on: 1) developing a monitoring and testing regime for biosolids in the Nicola Valley, 2) reviewing the effectiveness of the current requirement for a Land Application Plan, and 3) reviewing research on how biosolids impact wildlife and determining if any monitoring or testing is required. Information gained through the review process was to inform future measures to address issues and concerns regarding biosolids identified by the Nicola Valley First Nations and local residents (BC Gov News 2015). The following October, the provincial government and the five Nicola Valley First Nations signed an agreement (termed a 'collaborative engagement protocol'), to enable First Nations oversight and participation in the scientific review. In March 2016, a report titled 'A literature review of risks relevant to the use of biosolids and compost from biosolids with relevance to the Nicola Valley, BC' was prepared by Land Resource Consulting Services for the B.C. Ministry of the Environment, as part of the scientific review process, to evaluate the state-of-science in support of an assessment of the risk associated with the land application of biosolids in the Nicola Valley. An aim of the report was to identify knowledge gaps, provide recommendations and highlight best practices to reduce risk, such as the establishment of an organic contaminant monitoring program for biosolids being applied in the valley (LRCS 2016).

In April 2016, the five band chiefs of the Nicola Valley First Nations walked away from the scientific review after they felt that their participation in the study was relegated to the status of 'observers' (Merritt Harold 2016). An agreement regarding the land use of biosolids in the valley between the First Nations and the government has yet to be reached.

5.1.2 CITY OF KELOWNA/CITY OF VERNON

The City of Kelowna began producing and marketing biosolids compost in 1995 (G. Light, Pers.Comm.). Nearly a decade later, Kelowna partnered with the City of Vernon to create a regional compost facility capable of meeting the needs of both municipalities. The regional compost facility, located on the outskirts of Vernon, opened in 2006, and uses an advanced aerated static pile composting method. This method enables biosolids to be converted into Class A compost in approximately 80 days (City of Kelowna 2017a). Biosolids from the region's wastewater treatment facilities arrive by truck to the compost facility and are mixed with wood waste comprised of wood chips or hog fuel and wood ash. The facility uses batch mixers (Supreme Enviro Processor 900) to prepare the initial mix for active composting. Each batch contains 3,500 kg of biosolids, 15.25 m^3 of wood waste, and 350 to 500 kg of ash (G. Light, Pers.Comm). Once cured, the compost is screened to remove excess wood waste and tested for pH, metals, and pathogens, in compliance with provincial and federal guidelines. The resulting Class A compost is marketed under the brand, Ogogrow, as a soil amendment. Ogogrow conforms to BC OMRR regulations and the Fertilizers Act administered by the CFIA (City of Kelowna 2017a).

Ogogrow is sold in bulk quantities to local landscapers, nurseries, orchardists, and retail outlets. The cities have decided to work with compost distributors and landscape supply centers rather than being a direct competitor (G. Light, Pers.Comm.). The program has one costumer that typically comprises 50% of all sales (G. Light, Pers.Comm.). Ogogrow is often used to dress lawns, as a mulching medium or soil additive for flower beds and other landscaping uses, and is being used to cap the regional landfill (City of Kelowna 2017a, Nair 2017). Ogogrow sold out annually until 2011, when the facility started adding more wood to reduce odours (G. Light, Pers.Comm.).

The product is available at the Regional Compost Facility, the Glenmore Landfill, and at most nursery outlets in Kelowna for $31.43 per yard or $4.19 per bag (City of Kelowna 2017a). Product revenues are returned to the program to assist in the long-term economic sustainability of the facility. Since Kelowna's composting program partnered with the City of Vernon, they have sold approximately $550,000 worth of Ogogrow per year, which accounts for approximately 23% of the operating costs, noted as $2,350,000 per year (G. Light, Pers.Comm.).The facility has a biosolids processing capacity of 36,400 tonnes annually and typically produces approximately 28,500 tonnes of Ogogrow per year (City of Kelowna 2017b, G. Light, Pers.Comm.).

The product has developed a loyal customer base over the last decade and has been successful in the horticultural, landscaping, and home-use compost markets. However, recent increases in the region's population have resulted in the production of more compost than can be sold in existing markets. The City of Kelowna is currently undertaking a strategic review of their biosolids management program and is investigating technical solutions to address their growing compost surplus (Nair 2017, G. Light, Pers.Comm.). Solutions being reviewed include enhanced marketing, expansion into the regional reclamation market, thermal drying, chemical treatment, the addition of an anaerobic digester at the regional wastewater treatment facilities to decrease biosolids volume, and expansion of the composting facility. The cities have also considered incineration, but deemed that option too expensive (G. Light, Pers.Comm.). An online survey of possible waste management options was launched to include participation from Okanagan residents (City of Kelowna 2017c).

5.1.3 COMOX/STRATHCONA REGIONAL DISTRICT

Comox Strathcona Regional District opened their regional composting facility, located in Cumberland on Vancouver Island, in 2007. Before arriving at the regional composting facility, primary and secondary solids are blended and dewatered via centrifuge at the regional wastewater treatment plant. At the facility, the dewatered sewage sludge is treated to a Class A compost, marketed as a soil amendment under the name SkyRocket. The compost is produced using aerated static composting bunkers with a mix of 2.5 tonnes bulking agent (combination of yard waste and recycled overs) and 1.6 tonnes of dewatered sludge per batch. The mixture is adjusted as required during the various seasons to achieve a moisture content of 55-60% (Elliot 2009, Z. Berkey, Pers.Comm.). Clean and untreated wood is diverted from the regional landfill for use in the compost. Once mixed, the -sludge and wood waste are composted in aerated bunkers for 4 weeks, after which they are screened to half an inch to remove large woody pieces before being further cured and stored in windrows for up to 12 weeks (Elliot 2009, Z. Berkey, Pers.Comm.). SkyRocket is

routinely tested for pathogens, pH, metals, and coliforms content. The Class A compost conforms to the BC OMRR and the Fertilizers Act administered by the CFIA (CVRD 2017).

SkyRocket compost is primarily sold to residential customers and local compost retailers, where it is typically blended with additional products prior to re-selling (Z. Berkey, Pers.Comm.). Over the last few years, a large portion of SkyRocket compost has been purchased by the landfill where is has been used as part of their capital project to decommission the existing landfill. In the past, SkyRocket has also been used in local land reclamation projects (e.g., reclamation of a local coal slag pile), slope stabilization projects, and in Ministry of Transportation roadside tree planting projects (Vasileski 2007, CVRD 2016). The compost is available from the Comox Valley Waste Management Centre and ranges in price from $10 to $21 per m^3 depending on the amount purchased (CVRD 2015). In 2016, the compost facility processed 5,284 metric tonnes of dewatered sludge and generated $42,635 in revenue from compost sales (Z. Berkey, Pers.Comm.). The 2016 operating cost of the compost facility was $396,425 (Z. Berkey, Pers.Comm.).

During the early years of production, the Regional District focused on public engagement to build support for the product within the community. Public outreach efforts included installing a demonstration garden at the Compost Education Center that provided comparisons of plant growth using different composts and topsoil types (Elliot 2009). The district also organized public plant measuring events, free compost bag giveaways, and local sales (e.g., "fill a truck for 20 bucks"). Although the sale of SkyRocket is relatively successful, the Regional District is still only able to remove about a quarter of the compost produced annually through residential and commercial sales (Z. Berkey, Pers.Comm.). Despite public education efforts, there was some initial push-back from the local community regarding the compost's safety for use in food gardening due to potential substances, such as ESOCs, that are not currently tested for (S. Valdal, Pers.Comm.). As a result, the program no longer endorses the use of SkyRocket on food gardens. Residential use has been growing however, largely by word-of-mouth (S. Valdal, Pers.Comm.).

As the current landfill closure project is nearing completion, the Regional District is in the process of working on additional communications and outreach to improve sales. They are also in the detailed design process for a compost facility expansion and are looking at continuing with aerated static pile composting, but may include mass bed curing as part of the process (Z. Berkey, Pers.Comm.).

5.1.4 REGIONAL DISTRICT OF NANAIMO

The Regional District of Nanaimo (RDN) has been beneficially using biosolids in agriculture, landfill closures, mine reclamation, and forestry applications since 1999 (Nanaimo Biosolids 2017a). Forestry became the primary use in 2003 with the start of Vancouver Island University's (VIU) Forest Fertilization Program at Woodlot 020, located in the Flynfall Creek watershed. Through this program, the vast majority of the region's biosolids are diverted from the landfill through land application to improve tree growth (Nanaimo Biosolids 2017a). The RDN has four Pollution Control Centers, two of which process biosolids, including the Greater Nanaimo Pollution Control Center (GNPCC) and the French Creek Pollution Control Center (FCPCC). The GNPCC produces Class B biosolids through chemically enhanced primary treatment, stabilization via mesophilic anaerobic digestion (30 days at 38˚C), and centrifuge dewatering. The FCPCC

produced Class A biosolids through a trickling filter/solids contact secondary treatment process, stabilization using autothermal thermophilic aerobic digestion (10-12 days at 65˚C) and centrifuge dewatering (Nanaimo Biosolids 2017b). Once produced at the two facilities, biosolids are mixed with sand and are transported to the woodlot for stockpiling and application (Nanaimo Biosolids 2017b). The biosolids are tested regularly for metals and pathogens, in accordance with the BC OMRR (Nanaimo Biosolids 2017a, 2017b).

In 2013, a biosolids management program agreement was signed between the RDN, VIU, and the residuals consulting firm SYLVIS, to manage the region's biosolids though to 2017. Under the agreement, the RDN generates the biosolids, VIU maintains a research-focused role, and SYLVIS assumes operational responsibilities for biosolids application (Nanaimo Biosolids 2017a, SYLVIS 2017a). The program received the Northwest Biosolids Management Association's Excellence in Biosolids Management Award in 2013, for demonstrating a successful collaboration between a private company, a research institution, and a regional biosolids generator (Nanaimo Biosolids 2017a). The program produces approximately 4,200 tonnes of biosolids annually. In 2016, 3,046 tonnes of biosolids were delivered to the VIU woodlot from GNPCC and 1,278 metric tonnes were delivered from the FCPCC (Nanaimo Biosolids 2017b).

VIU's Forest Fertilization Program was initiated to assess the beneficial use of biosolids in BC's coastal forest ecosystems (Nanaimo Biosolids 2017a). The woodlot is owned by TimberWest, and leased to VIU. The forest is composed of Douglas fir, lodgepole pine, and red alder, and historically had poor soil conditions that were limiting tree growth. The woodlot is an important educational tool for VIU, with students engaged in various research activities related to all aspects of biosolids forest applications, as well as developing and practicing skills in surveying, timber cruising, and ecological assessment (Nanaimo Biosolids 2017a, 2017b). Since biosolids applications began, VIU researchers have documented dramatic increases in tree growth at the woodlot site, ranging from 50% to 400%. Ground water studies have also found that biosolids applications have not impacted groundwater quality in wells located in the region (Nanaimo Biosolids 2017a, 2017b). Biosolids applications are completed in accordance with the Land Application Plan, including setbacks from potable water sources, water bodies, roads, and highways (Nanaimo Biosolids 2017a, 2017b).

As woodlots are also popular outdoor recreation areas (primarily mountain biking and hiking) the program does restrict public access to application areas and posts signs and maps on roads and paths and uses online advising the public where biosolids have been applied. VIU works with the local mountain bike club to avoid the mountain bike trail network (Nanaimo Biosolids 2017a, 2017b). The RDN host regular Open Houses for the public at its Pollution Control Centres to provide an opportunity to tour the facilities, learn about recent upgrades, and ask questions (Nanaimo Biosolids 2017a).

5.1.5 CAPITAL REGIONAL DISTRICT – SAANICH PENINSULA

In 2008, following the completion of a successful pilot study, the Saanich Peninsula Wastewater Treatment Plant began its biosolids beneficial use program. The plant, which serves the municipalities of North Saanich, Central Saanich, and Sidney produced a Class A biosolids product named PenGrow for use as a soil amendment in residential gardening and landscaping. The plant used a propriety lime-pasteurization process called RDP, which stabilizes dewatered undigested sewage sludge by raising the pH to 12.5 through lime addition and pasteurizing by heating biosolids above 70°C for 30 minutes. The resulting product was then cured for a minimum of four to six weeks. The resulting Class A PenGrow product conformed to BC OMRR regulations and the Fertilizers Act administered by the CFIA (CRD 2009).

The initial PenGrow pilot study included 20 homeowners who used the biosolids product on their lawns and gardens. Homeowner feedback was positive, which resulted in the establishment of a PenGrow self-help station at the regional Hartland landfill. Based on the success of the pilot program, the plant initially planned to produce 300 tonnes of PenGrow and distribute it to the public for free from the landfill, before potentially expanding to include distribution at three municipal public works yards (SPWWTP 2009). The biosolids product was well received. However, some issues were identified during the early stages of production, including limited product availability, and a dislike of the product's colour. The lime pasteurization process causes the biosolids to appear light in colour which gardeners found off-putting (CRD 2009). Due to the lack of available space for storing and curing the product at Hartland landfill, the production of PenGrow never exceeded 180 tonnes per year. Therefore, the majority of the dewatered sludge produced by the plant (approximately 3,000 tonnes) were landfilled. The program did steadily grow over time, with over 1,000 customers using the product during its last year (CRD 2011b).

In the summer of 2011, the PenGrow Program was put on hold following a decision by the regional government, the Capital Regional District (CRD), to end the production, storage, and distribution of biosolids for land application at all CRD facilities and parks, including the Hartland landfill (CRD 2012a). The ban was based on concerns that farmland and the food grown on it could be polluted by pharmaceuticals and heavy metals in biosolids (CRD 2011a). Following the decision, the Saanich Peninsula Wastewater Commission tried unsuccessfully to find an alternative beneficial use for its biosolids through a nationally advertised expression of interest aimed at companies involved in biosolids management and utilization (CRD 2012a). Since the PenGrow program was halted, all sewage sludges generated by the plant have been disposed of as controlled waste at the Hartland landfill (CRD 2012b).

5.2 OTHER CANADIAN JURISDICTIONS

5.2.1 CITY OF EDMONTON, ALBERTA

In Edmonton, approximately 22,500 tonnes of biosolids are composted or applied to land annually. The majority of Edmonton's biosolids are produced by the Gold Bar Wastewater Treatment Plant which stabilizes biosolids through conventional mesophilic anaerobic digestion (EPCOR 2017, Szoke and Suarez 2017). A portion of the biogas generated by the digestion process is captured and used in the boiler system to heat the plant's buildings and digesters (EPCOR 2017). Following treatment, the stabilized biosolids are handled by the City of Edmonton's Waste Management Branch, who either apply the biosolids on agricultural fields through the NutriGold program or use it as an input for the city's co-composter (EPCOR 2017). The NutriGold Program was first established in 1978 and has since applied over 496,000 dry tonnes of Class B biosolids to local farmland to reduce the use of chemical fertilizers. The Edmonton Compost Facility, a biosolids and organic waste co-composting operation, was opened in 2002. The facility is the largest of its kind in North America (occupies an area of 38,690 m^2) and can process up to 200,000 tonnes of residential waste and 25,000 dry tonnes of biosolids each year (City of Edmonton 2017a). The facility co-composts de-watered biosolids together with residential solid waste or woodchips to produce a Class A compost product, marketed under the brand Second Nature. The compost conforms to the Fertilizers Act administered by the CFIA.

Second Nature is sold as a horticultural and agricultural product and is used by farmers, nurseries, landscapers, city parks, and roadside enhancement projects. Second Nature is also sold directly for residential use at many local gardening stores (e.g., Canadian Tire). Three grades of compost are available for purchase, including: a finely screened turf-grade product for lawns and sports fields; a garden mix grade designed to help bind the soil, provide better aeration and provide stable, long term nutrient release; and an erosion control grade that can be applied as a blanket or in filter socks (Inglis Environmental 2017).

The NutriGold and the co-composting programs have been successful, however due to logistical constraints and increasing biosolids production, they do not currently use the total annual production (SYLVIS 2013a). The City of Edmonton hired a consultant, SYLVIS, to investigate new biosolids land application options for the region. SYLVIS identified mine reclamation (refer to example below), marginal land improvement, and biomass production as potential options to augment the city's beneficial use programs. A two-year demonstration project at the Alberta Pacific Forest Industries (Al-Pac) poplar plantation site was designed to determine the effect of biosolids applications on poplar growth. Tree mensuration, soil, and water monitoring data from the project indicated that application of biosolids to marginal land to improve poplar growth (biomass) was a productive use of biosolids (SYLVIS 2013b). Additionally, another demonstration project has applied biosolids to vacant land with poor soil conditions, adjacent to the Beaver Regional Landfill, to grow a short-rotation willow crop (willow coppice) which is intended to provide a secure source of woodchips for the city's composing program while increasing in-situ organic soil development through willow root mass production. The program was initiated in 2013 with biosolids land application, followed by willow planting in 2014 (Beaver Municipal Solutions 2013, Breau 2013).

In addition to diversifying land application programs, the City will be adding an Anaerobic Digestion Facility at the Edmonton Waste Management Centre in 2018 (City of Edmonton 2017b). The Anaerobic Digestion Facility is a partnership between the City of Edmonton and the University of Alberta and will expand the City's organic waste processing capacity, while producing biogas to create renewable energy in the form of electricity and heat (City of Edmonton 2017b). Additionally, the Gold Bar Wastewater Treatment Plant recently completed a review of Biogas-to-Energy technologies that could increase the plant's operational efficiency through future plant upgrades (Szoke and Suarez 2017). Currently, biogas not used in the Plant's boilers is flared, and represents an opportunity to integrate a more cost-effective technology. The review found that a reciprocating engine generator combined heat and power (CHP) solution to be the best Biogas-to-Energy technology for implementation at the plant. Other alternatives considered included cleaning biogas to produce biomethane for use in natural gas for use in fleet vehicles and liquefied renewable natural gas for efficient storage, transportation, and export (Szoke and Suarez 2017).

Mine reclamation example: Genesee Mine (Westmoreland Coal Company)

Located in Warburg, central Alberta, the Genesee Mine is an active surface strip coal mine which has been operating since 1988 by Westmoreland Coal Company and Capital Power Corp. The mine site consists of approximately 7,250 ha of permitted operating area and averages 5 million tonnes of annual production.

Multiple reclamation end land use objectives are being targeted at the mine site, depending on location, including agricultural cultivation and rangeland, forest land, wildlife habitat, and aquatic habitat. So far, approximately 600 hectares have been reclaimed.

In 2010, SYLVIS Environmental, in collaboration with EPCOR, was retained by the Edmonton Waste Management Centre of Excellence (EWMCE) to assess application options for Edmonton region biosolids. The Genesee Mine was selected as a research trial area to demonstrate biosolids application, originating from EPCOR's Clover Bar Waste Management Facility, and scalability in post-mining land reclamation. One of the initiatives of the two-year project was to demonstrate the use of biosolids as a temporary topsoil substitute on areas of the mine where agricultural crops had been seeded directly in subsoil (SYLVIS 2017b; NRCan 2017).

Genesee Mine was awarded the 2008 Alberta Chamber of Resources Major Reclamation Award for achievement in land reclamation. The site has been used for soil assessment field training by the Faculty of Extension at the University of Alberta in collaboration with Paragon Soil and Environmental Consulting.

5.2.2 NIAGARA REGION, ONTARIO

Ontario's Niagara Region is a regional municipality that encompasses five cities, five towns, and two townships, with a population of 430,000 residents (Walker Industries 2014a). Approximately 10 years ago, the Region undertook a biosolids master planning project to diversify biosolids use. Up to that point, Class B biosolids were entirely liquid land-applied to farmland as a fertilizer, following treatment via anaerobic digestion at the region's many wastewater treatment plants (Niagara Region 2017). A joint venture between Walker Environmental Group and N-Viro Systems Canada was chosen by the region to construct and operate a centralized biosolids processing facility (Gunn 2015, Houle 2015). The Thorold Biosolids Facility became fully operational in 2007 (Walker Industries 2014a, Gunn 2015).

Approximately half of the Class B liquid biosolids produced by the region are still land-applied at Ministry of Environment approved agricultural sites (Houle 2015). The remainder is mechanically dewatered and converted into a Class A biosolids soil amendment product at the Thorold Facility using the patented N-Viro alkaline-stabilization process (Niagara Region 2017). The facility buys its alkaline agent, a byproduct of cement production, from a regional cement plant that was previously landfilling the substance (Gunn 2015, Houle 2015). During the biosolids product curing process, samples are taken every hour to test for pH and pathogens. The product is also tested biweekly for all restricted heavy metals and pathogens (Gunn 2015). The process yields a Class A biosolids product marketed under the name Niagara N-Rich. It is approved for use as a fertilizer or soil amendment by the CFIA.

Niagara N-Rich is sold to large farm fertilizer distributors who sell the Class A biosolid product and the direct application service to farmers in Ontario. Most of the product is sold to neighboring regions where the province's large cash-crop farms are located. Niagara N-Rich is well received by consumers for agricultural use and has required little marketing to date (Gunn 2015). The facility is also working with a contractor, a mining company, and university researchers to look for more uses for the product, such as mine reclamation and reforestation (Gunn 2015).

The facility processes 26,000 tonnes of treated Class B biosolids annually, most of which are from the region, and produces approximately 35,000 tonnes of the Class A Niagara N-Rich soil amendment per year (Walker Industries 2014a). The product is sold for approximately $10 per tonne (Gunn 2015). In 2014, Walker Environmental acquired N-Viro and became the sole owner of the facility, operating under a contract with the regional government. The Niagara Region pays Walker Environmental to process the Class A biosolids; however they split the net revenue from sales of the N-Rich product. The operation received the Exemplary Biosolids Management Award from the Water Environment Association of Ontario in 2014 (Walker Industries 2014a).

5.2.3 CITY OF TORONTO, ONTARIO

All of Toronto's biosolids are treated at two facilities. The Ashbridges Bay Treatment Plant treats approximately 78% of the city's biosolids and the Highland Creek Treatment Plant treats the remainder (City of Toronto 2017a). The Ashbridges Bay Treatment Plant is the largest secondary wastewater treatment plant in Canada, servicing an area of approximately 25,000 ha, and a population of 1,524,000 people (Toronto Water 2016).

In 2007, the City commissioned a pelletizer facility to begin production of a Class A biosolids fertilizer product, as part of a beneficial biosolid use program diversification effort aimed at lowering operation costs and addressing environmental constraints (Toronto Water 2015). Prior to the upgrade, the facility's management strategy included incineration and land application of Class B biosolids. The Highland Creek Treatment Plant currently incinerates all of its biosolids. The ash produced by the incineration process is disposed in a landfill or recycled in cement manufacturing (City of Toronto, 2017b).

At the Ashbridges Plant, the solids generated through primary and secondary wastewater treatment are anaerobically digested in the mesophilic temperature range (34-38°C for 23 days) and dewatered by centrifuge. The biogas produced during digestion is captured and is used to heat the Plant which aids in reducing operating costs. The resulting biosolids (approximately 27% dry solid) are either transferred to the pelletizer facility onsite, transferred to another jurisdiction for lime stabilization treatment (e.g., Niagara Region), or loaded into trucks for disposal via the Class B land application program (Toronto Water 2016, 2017). The pelletizer facility uses the Seghers indirect drying system, referred to as the Pelletech Process, which involves heating biosolids in a dryer to evaporate water content to produce a finished Class A biosolid product that is at least 90% dry solid (RVA 2017). The resulting Class A biosolids pellets are dust-free, low-odour, and have a long storage life (City of Toronto 2017b). The operation and maintenance of the pelletizer facility and marketing of pellets is managed by an outside contractor, Veolia Water. The City has been testing biosolids for nutrient, metals, and pathogens at the Ashbridge plant on a regular basis for more than a decade and consistently meets regulatory standards. Toronto's biosolid products and land application programs conform to Ontario's Nutrient Management Act and the Fertilizers Act administered by the CFIA (City of Toronto 2017c).

Biosolids generated at the plant are managed by the City in a number of ways, including agricultural land application and mine reclamation. Up until 2015, a portion of the City's biosolids were also landfilled, however efforts to eliminate that disposal option have been successful (Toronto Water 2016). In 2016, the plant managed a total of 147,733 wet tonnes of biosolids. Fourty-nine percent of biosolids were processed by the pelletizer and sold as a Class A biosolids fertilizer. Twenty-four percent of biosolids (Class B) were sent to approved agricultural land application sites in Ontario. Twenty-six percent of biosolids were further treated through alkaline stabilization off-site by licensed external biosolids service providers and used as a Class A soil amendment (e.g., Niagara Region). The resulting two percent of biosolids were used at mine reclamation sites in the province (Toronto Water 2017).

Upgrades required at the Highland Creek Treatment Plant recently prompted a study of viable biosolids management options, including: 1) conversion to fluidized bed incineration, 2) construction of a truck

loading facility and added digester capacity to haul biosolids off-site for beneficial use and/or disposal, and 3) construction of an on-site biosolids dryer to produce and transport pellets for beneficial use (CIMA 2016a, 2016b). Public comments collected during the study showed strong support for modernizing the existing incineration facility, strong opposition to additional truck traffic, and concerns about the health impacts of land application of biosolids or biosolids pellets. The study also found that the modern state-of the-art incineration option would be the lowest emitter of greenhouse gases, would have the lowest noise, odour, and traffic impact on the community, and would have the lowest capital and operating costs (CIMA 2016). Taking all aspects of the study into consideration, fluidized bed incineration with state-of-the-art emissions scrubbing technology was identified as the preferred approach for the future of the facility (CIMA 2016). Ash generated by the new incineration facility would continue to be hauled off-site for disposal in the City's Green Lane Landfill, however it is noted that ash reuse is viable option to be assessed during implementation. The new facility would also take advantage of the fuel value of feed materials, recovering energy to generate electricity, mechanically drive blowers or for process, and building heat at the plant (CIMA 2016a, 2016b).

5.2.4 GREATER MONCTON, NEW BRUNSWICK

In 2008, the Greater Moncton Sewerage Commission, serving the communities of Moncton, Dieppe, and Riverview, opened a biosolids composting facility to provide a more environmentally sustainable method of biosolids disposal than its existing landfilling practice. In 2014, the commission changed its legal corporate name to the Greater Moncton Wastewater Commission (GMWC) (TransAqua 2016). The composting process used by the GMWC combines bottom aeration and a proprietary cover system referred to as the GORE Cover System. The compost produced at the facility is made using biosolids and by-products from the forestry industry (bark, sawdust, and wood chips), as well as hay, straw, and silage from the farming community and green waste from yard cleaning (TransAqua 2017a). The initial mixture is two parts of green waste to one part of biosolids by volume. The composting process takes approximately one year and compost stockpiles are screened and tested for metals and pathogens prior to sale (TransAqua 2017a, K. Rice, Pers.Comm.). Prior to arrival at the composting facility, sewage sludge is treated at the wastewater treatment facility into lime-stabilized biosolids, which involves conditioning with liquid lime, dewatering by high-speed centrifuges, followed by the addition of dry lime (TransAqua 2017a). In 2016, 11,311 tonnes of biosolids were shipped to the Composting Facility for processing. The composting system produces Type "AA" compost in accordance with the BNQ (Bureau de normalisation du Québec) CAN/BNQ 0413-200/2005, 2005 edition and also fully complies with the established limits of Category A Compost set by the CCME (TransAqua 2017a).

The resulting compost is used in the production of a number of products marketed under the brand name, Gardener's Gold (compost mulch, compost soil conditioner and topsoil) which are used by the general public, landscapers, nurseries, and local municipalities (TransAqua 2017b). The compost is made available to the public free of charge from self-loading bins. If customers require a small tractor to load their truck or trailer, a $15 per cubic yard fee is paid. The compost is also sold to landscapers and is provided to the Greater Moncton area municipalities for their horticultural activities.

In 2014, it was determined that commercialization of the compost was not feasible, as the capital investment for a bagging building and a bagging operation, based on the current market sale of the final product, was not a reasonable return on investment (K. Rice, Pers.Comm.). Recent examples of use the compost include the Dieppe and Riverview walking trails, the new City of Moncton track and field events field, and the Hildegard storm-water detention basins project. In 2016, 7,700 tonnes of Class A compost was produced and made available for sale, with public and commercial vendors being the primary users (TranAqua 2016).

The original system had a capacity to process 10,000 tonnes of biosolids mixed with 10,000 tonnes of wood waste for a total of 20,000 tonnes of input materials per year. An additional third concrete composting pad and an expansion of the asphalt curing pad was completed in 2016 to increase capacity for an additional 5,000 tonnes of biosolids and 5,000 tonnes of wood waste per year that will accommodate additional biosolids from the incorporation of a secondary treatment process in 2020, in compliance with new federal regulations (TransAqua 2016, 2017c). The new compost pad incorporates a new control and tracking system which will ensure full traceability of every compost lot that is put out to the market and facilitate data gathering of the product.

Since composting was initiated, the GMWC has distributed all of its compost products locally. Last year, 2016, was the best year to date with respect to participation from the public, commercial users, and municipalities (TransAqua 2016). No public opposition to the final compost product has been recorded (K. Rice. Pers.Comm.). The compost program, however, is a major expense to the city and is not expected be cost effective. Revenue for 2017 is projected at $56,000 while the annual operation costs, not including depreciation, is estimated to be $875,390. Since 2005, there has been approximately $15 million in capital investment, with the current value of the assets at just over $10 million (K. Rice, Pers.Comm.). TranAqua is currently measuring greenhouse gas emissions from the Wastewater Treatment Facility and Compost Facility to see if the treatment program is carbon neutral or even carbon rich as it pertains to a potential cap and trade system in New Brunswick. There have been requests from private companies to submit proposals to take over management of the facility, but the Commission has been happy to date with the program from the beneficial reuse angle and giving back to the community (K. Rice, Pers.Comm.). TransAqua is developing a Biosolids Management Strategy in 2017 where the Commission Board will determine to stay with the existing model or look at going in a different direction (K. Rice, Pers.Comm.).

5.2.5 HALIFAX, NOVA SCOTIA

Halifax's Biosolids program was initiated as a part of the Harbour Solutions Project in 2003. Until the opening of the Halifax Biosolids Processing Facility at Aerotech Park in 2007, the city sent approximately 90% of its sewage into the harbor. The facility is owned by Halifax Water and operated by Walker Industries (previously N-Viro Systems Canada Limited) (Hydromantis 2011). Municipal anaerobically digested and de-watered biosolids produced by Halifax Water's three wastewater treatment facilities (approximately 8,500 dry tonnes per year) are processed at the Biosolids Processing Facility using the patented N-Viro alkaline-stabilization process (Walker Industries 2014b). During the process biosolids are mixed with quick lime and cement kiln dust. The process yields a Class A biosolids product marketed under the name Halifax N-Rich

(Walker Industries 2014b). It is approved for use as a fertilizer product under the Fertilizers Act administered by the CFIA (City of Halifax 2014).

Halifax N-Rich is primarily sold to large farm fertilizer distributors (e.g., Truro Agromart) who sell the product as a soil amendment/fertilizer and liming agent to farmers in Nova Scotia (NEBRA 2014). In Nova Scotia, biosolid products are applied to pastureland and used in the production of animal feed like corn, soybean, cereals, and forages (CCME 2012b, Arora and Harz 2014). The Halifax N-Rich soil amendment product is of particular benefit as a liming agent as the soils in the region are acidic and the pH must be raised for crops to be successful. Farmers have found the product to be an economical and beneficial alternative to chemical fertilizers for appropriate crops (NEBRA 2014). Halifax N-Rich is also used by sod farmers who have reported that its use has resulted in improved germination and growth of the sod (CCME 2012b). The product is also used on Halifax Regional Municipality (HRM) properties as a soil amendment.

Halifax Water has faced some challenges with public perception (NEBRA 2010, Hydromantis 2011). In August 2010, a topsoil mixture of Halifax N-Rich, soil, and compost was used along a Halifax street resulting in a number of odour complaints. The complaints triggered Halifax Regional Council to place a moratorium on the use of the N-Rich product on HRM properties, and to request that Halifax Water conduct an independent third party review of the N-Viro soil amendment process (Hydromantis 2011). The review found Halifax's biosolids program was suitable in meeting all regulatory requirements (Hydromantis 2011) and the moratorium on biosolid use was lifted in October 2011 (Herald News 2011). Recommendations from the review included the establishment of tests on municipal property using N-Rich to track potential odour formation or dissipation, pH neutralization rates, effects on vegetative growth, to demonstrate to the public the safety and effectiveness of the product, and to establish a more enhanced public outreach program (Hydromantis 2011).

There has been considerable effort to improve the understanding and reputation of the N-Viro process and resulting N-Rich soil amendment by Halifax Water and Walker Industries, who acquired the operation in 2014. As a result, there has been little negative publicity in recent years (Walker Industries 2017). The facility processes up to 30,000 tonnes of biosolids annually and produces approximately 42,000 tonnes of Halifax N-Rich per year (Walker Industries 2014b). The product has found a loyal agricultural client base, resulting in pre-sales of the product before it is produced (Walker Industries 2017).

5.3 UNITED STATES OF AMERICA

5.3.1 KING COUNTY, WASHINGTON

The King County biosolids program began in 1973 and has since served as a leader in biosolids recycling in the United States. All of the biosolids generated by the region are processed to either Class A or B biosolid quality and applied to land through various partnerships and programs (King County 2016b). The regional wastewater treatment plants separate solids from wastewater and treat them through an anaerobic digestion process lasting several weeks. Biogas produced by the digesters is recovered and used as a source of energy for the treatment plants. Following digestion, the biosolids are de-watered in a centrifuge, producing a Class B biosolids product marketed under the brand name Loop. King County conducts monthly monitoring of nutrients, trace metals, organic pollutants, and pathogens in the product (King County 2016b).

In 1976, King County also began processing a Class A biosolids product named GroCo. King County currently contracts Sawdust Supply, a local company, to produce GroCo compost. At the composting facility, GroCo is produced by mixing one part Loop biosolids with three parts sawdust from local lumber mills. The mixture is piled into mounds and turned as needed during the year-long compost process. Every batch of compost is laboratory tested for nutrients, trace metals, organic pollutants, and pathogens to ensure it meets Class A Exceptional Quality standards for biosolids products and Washington State standards for composts (King County 2016b).

King County produces approximately 120,000 tons of Loop each year, the majority of which is used as fertilizer and soil amendment for agricultural crops in eastern Washington or commercial forests in east King County (King County 2016b). In 2011, 74% of Loop biosolids were used in farming, 25% were used in forestry, and just over 1% was used to produce GroCo (King County 2012). King County has a number of stable, long-time agricultural partners, who use Loop to grow a variety of crops including Boulder Park Inc., the largest farmer-owned biosolids cooperative in the country. Loop is also used to fertilize forest plantations in east King County (King County 2012, 2016b). King County's forestry projects are part of a program, initiated by the non-profit Mountains to Sound Greenway Trust, to protect and enhance forests and wildlife habitat along the scenic I-90 corridor east of Seattle. Forest sites are managed in accordance with state biosolids management guidelines, including monitoring of soils and streams. GroCo compost also has a loyal following of gardeners and landscapers that use it as a soil and lawn conditioner (King County 2016b). The product has also been used in the reclamation of forestry roads and landings (Vasileski 2007). GroCo is both bagged for individual sale and sold in bulk at the compost facility.

Since their biosolids program began, King County has worked extensively with local universities to develop and test biosolid processing and recycling methods. Numerous studies using Loop and GroCo have been completed, including peer-reviewed published studies, which have contributed to the development of new markets, testing/application methods and best management practices (King County 2012, 2016b). For example, forestry studies completed at the University of Washington have researched tree growth, soil enhancement, reclamation of degraded lands and carbon sequestration, attempting to understand the benefits of biosolid use in the forest environment (King County 2012, 2016b). Agriculture-based studies by

Washington State University have focused on building soil productivity, supporting local agriculture, protecting water quality, and facilitating organic waste recycling. Other studies include a partnership between Natural Selection Farms and the University of Washington which investigated the effectiveness of biosolids fertilizer for growing canola for biofuel production (King County 2012, 2016b). Recently, GroCo compost has also been studied as a potential beneficial component in urban bio-retention systems. Preliminary studies at the University of Washington have demonstrated that a combination of biosolids compost, woody debris, and drinking water treatment residuals can be effective at capturing and holding storm water and removing contaminants (King County 2012, Jay and Brown 2017).

A tenet of King County's biosolid management program has been to regularly re-evaluate the most appropriate strategies for biosolids management. In 2009, an analysis of alternative uses and market opportunities for biosolids in King County found that land application and composting was still the most cost-effective and reliable option (King County 2012, King County 2016b). The County, however, is committed to identifying and evaluating new and emerging technologies. For example, the wastewater treatment division participated in a Water Environment Research Foundation pilot study investigating combining organic wastes, such as food waste or restaurant grease, with sewage sludge ("co-digestion") to enhance biogas production. The County is also planning to track other promising technologies including biomass gasification, biochar production, and thermal hydrolysis (King County 2012).

5.3.2 TACOMA, WASHINGTON

Tacoma began producing biosolids products at their wastewater treatment plant in the early 1990's using a Duel Digestion System, comprised of aerobic thermophilic and anaerobic mesophilic digestion phases (Mendrey 2014). The Dual Digestion process produces methane, which is captured and used to heat the treatment plant. Between 1990 and 2003, Tacoma produced a Class A biosolids product marketed under the name TAGRO. With input from key customers, TAGRO Mix was developed as a soil amendment, consisting of 50% biosolids, 25% sawdust, and 25% screened sand (City of Tacoma 2017). In 2003, the treatment process was improved by introducing three levels of temperature phasing during the anaerobic digestion phase which eliminates virtually all odours from the resulting biosolids. This innovation led to the development of new TAGRO products, including a topsoil and mulch, which quickly expanded the local biosolid product use market (Eschborn et al. 2007). TAGRO topsoil, which is designed for both indoor and outdoor use, is a blend of 20% biosolids, 20% maple sawdust and 60% aged bark. TAGRO Liquid, a liquid product designed for use on agricultural and forestry lands, is also produced. All TAGRO products are rated as Class A Exceptional Quality by the U.S. Environmental Protection Agency (City of Tacoma 2017).

Tacoma's approach for the first ten years of the TAGRO program was to provide a public service. TARGO Mix was frequently given away to customers, with a charge for loading and delivery. With the introduction of the additional odour-free biosolids products in 2003, the program took on a more business-focus approach with the ultimate goal of becoming a profit center (Eschborn et al. 2007). As planned, the biosolids program is now operated as an independent profit center within the utility. Sales of TAGRO products have increased yearly, while associated costs of managing Tacoma's biosolids have decreased. The utility is not yet at a break-even point, but product sales substantially offset the costs of biosolids handling,

production, and transportation such that the city has one of the lowest net costs for biosolids management in the Country (Eschborn et al. 2007, Brown et al. 2017). The City processes about 4,000 dry tons of biosolids per year, with biosolid product revenue generating more than US $850,000 in 2015 (Brown et al. 2017).

TAGRO products are used by local landscapers, farmers, forestry professionals, and the public. TAGRO products are commonly used by residents in home and community gardens. A demonstration garden at Tacoma's Central Wastewater Treatment Plant aims to show visitors how TAGRO products can benefit vegetable gardens (City of Toronto 2017). Most of the harvested produce from the garden has been donated to local food banks (Hodges Snyder et al. 2016). TAGRO is also used in both large and small community parks, as well as on sports fields, golf courses, and other public sites. Tacoma also provides educational opportunities through presentations with schools; civic and community groups; business groups; and garden clubs. TAGRO Mix sells for $10 per cubic yard and TAGRO Potting Soil sells for $30 per cubic yard or $15 for ½ cubic yard. A few buckets or containers full of potting soil can be purchased for $5, for customers who only need a small amount (City of Tacoma 2017). TAGRO products have a loyal following, with more than 4,500 customers using the product each year. In 2015, TARGO products were sold out by early summer (Brown et al. 2017).

Tacoma's biosolids program has won numerous awards since it began, including first and second place awards for the best biosolids program in the country (1995, 1996, and 1998) and the Technology Innovation or Development Activities Award (2004) from the Environmental Protection Agency (City of Tacoma 2017).

Urban horticulture example: Tacoma's Community Garden Project

Tacoma's success in building TAGROs use and reputation locally was in part due its use in the community garden development program. In 2007, the city made a goal to expand the existing community garden network (Brown et al. 2017). Available city-owned land was offered to potential gardeners with the materials needed to build the gardens provided free of charge. This included water for irrigation, construction materials to build raised beds, TAGRO potting soil and/or yard waste compost to fill the beds, and mulched wood to cover garden paths. The program, now called Harvest Pierce County (www.harvestpiercecounty.org), currently supports 46 gardens in the City of Tacoma, 18 of which have been set up on publically owned lands, and an additional 30 gardens in surrounding Pierce County (Hodges Snyder et al. 2016). This represents an increase of approximately 70 gardens since the program began. Harvest Pierce County provides dedicated staff and a wide range of programs, classes, resources, and giveaways to support the gardens (Hodges Snyder et al. 2016). As the community garden project grew, Tacoma also experienced increased sales of TAGRO products. The use of TAGRO products in community gardens provides opportunity for residents to experience the products resulting in positive word-of-mouth reviews and higher residential use (Brown et al. 2017).

5.3.3 PIERCE COUNTY, WASHINGTON

In 2001, Pierce County's Unified Sewer Plan set a goal to eliminate the land application of Class B biosolids (Northwest Biosolids 2015). The County's decision to transition to a Class A biosolids program developed from a growing appreciation of sustainability principles in local leadership combined with concerns related to the long-term risk management and poor public perception of Class B biosolids (Newell 2017). Up to that point, all of the County's biosolids were treated through anaerobic digestion to a Class B product standard and applied to land. Initially, Class B biosolids were transported to a strip mine for land reclamation purposes, however, use shifted over time towards agricultural application (Newell 2017). In 2006, Pierce County launched its new biosolids management program, with the opening of a new drying facility.

The facility, built next to the wastewater treatment plant for a cost of US $19 million, uses a drying and pelletization process to produce a Class A biosolids product marketed under the name SoundGRO. The plant receives anaerobically digested and dewatered biosolids from the wastewater treatment plant and processes them using an Andritz drum dryer. The drying drum consists of three concentric cylinders which the pellets pass through consecutively. After emerging from the drying process, the pellets (93% dry solid) are sorted, cooled and stored until needed (Pierce County 2017a). The entire treatment process is enclosed and biogas generated during anaerobic digestion is captured and reused by the facility. SoundGRO meets US EPA standard for Class A Exceptional Quality biosolids. It is also registered as a commercial fertilizer with the Department of Agriculture, which has enabled sales to other regions and states (Pierce County 2017a, Newell 2017).

SoundGRO is marketed for use in commercial, industrial, and residential landscapes. It is a dry pelletized product, similar to commercial fertilizers, making it different from other common biosolid products produced and sold in Washington (e.g. TAGRO and GroCo). SoundGRO is a slow release fertilizer with a low salt-index compared to chemical fertilizers; therefore it requires fewer applications per year and can be applied at any time of year, even during dry conditions (Pierce County 2017b). SoundGRO is well received by customers and sells out on a yearly basis. It is available for purchase in 1-tonne totes and individually wrapped bags. Large purchases are sold for US $85.95 per 1-ton tote, which includes pallet and loading costs. Individually wrapped bags are made available through a number of regional garden and hardware stores (Pierce County 2017b). Pierce County produces approximately 2,500 dry tons of SoundGRO fertilizer annually, generating approximately US $200,000 in sales revenue (Newell 2017).

5.3.4 CITY OF RALEIGH, NORTH CAROLINA

In 2002, the City of Raleigh's biosolids management program and its Neuse River Wastewater Treatment Plant underwent scrutiny due to program deficiencies, including an over-application of biosolids on city-owned farmland, resulting in fines and a loss of public trust (City of Raleigh 2016a). Following an in-depth review of the facility, the City decided to become a National Biosolids Partnership demonstration agency, and committed to the development and implementation of an Environmental Management System (EMS) for biosolids. Prior to the development of the EMS in 2006, Class B biosolids was the only product produced at the facility and land application was the only dispersal method used. A key in re-building a successful biosolids management program in the city has been the decision to diversify biosolids products and distribution. The City currently produces three biosolid products, a Class B product for agricultural land application, a Class A biosolids fertilizer, and a Class A compost (City of Raleigh 2016a).

The City of Raleigh Public Utilities Department's Neuse facility provides wastewater treatment to Raleigh and six surrounding communities. The Neuse facility produces approximately 40 dry tonnes of aerobically digested Class B biosolids per day (City of Raleigh 2016a). Approximately 10% of the aerobically digested solids remain as Class B biosolids and are liquid land applied. About 55% are converted to a Class A biosolids fertilizer, named Raleigh-Plus, through a lime-stabilization process. Raleigh-Plus is produced by dewatering digested biosolids (22% dry solids) using belt presses and mixing them with lime kiln dust using a Cemen Tech mixer (McDilda 2009). Laboratory tests are completed on both Class A and Class B biosolids to ensure regulatory compliance and to assist in application of the product at agronomic levels (McDilda 2009). The remainder of the Class B biosolids are transported to an independent operator that mixes the biosolids with woodchips to produce a Class A compost product (McDilda 2009).

The majority of Raleigh County's biosolids beneficial reuse is agricultural based. Class B biosolids are typically produced by the facility in the spring when farmers are preparing to plant corn, soybeans, and grain sorghum (McDilda, 2009, City of Raleigh 2017). The Class B biosolids are applied to approved private agricultural fields through ground injection or surface spraying and disking into the soil (McDilda 2009). Raleigh-Plus is sold and distributed primarily to farmers; however the product is also used on the Neuse facility grounds and on other institutional lands. The City's program delivers and provides farmers a pull-behind spreader to apply Raleigh-Plus as part of a low cost lease program (McDilda 2009). In 2016, the Neuse facility distributed 41,000 tons of Raleigh Plus to 102 farmers in 27 counties along with application on City of Raleigh permitted land (City of Raleigh 2017). Raleigh-Plus and Class B biosolids are also used to grow sunflowers and soybeans bound for the City's biodiesel program (refer to Section 4.1.1). The Class A compost product, produced by the composting facility, is distributed in bulk to local markets (City of Raleigh 2016b).

The Raleigh Public Utilities Department is aiming to improve its historical record as the largest energy user in the city, with the largest carbon footprint. In 2015, the City changed the name of the Neuse River Wastewater Treatment Plant to the Neuse River Resource Recovery Facility, reflecting the long term goal of converting the facility from an energy sink into an energy producer (Knight et al. 2017). Currently, biosolids generated during the treatment process are managed through a range of product streams with different characteristics and different levels of stabilization. The City is planning to change its biosolids management

program by consolidating the existing stabilization processes into a single stabilization process utilizing thermal hydrolysis pre-treatment (CambiTHP) coupled with mesophilic anaerobic digestion to produce a Class A product from all of its residuals (Bullard et al. 2017). With the addition of anaerobic digestion, potential biogas utilization options were also considered for the Facility that could maximize the value of biogas while also providing sufficient heat for the thermal hydrolysis process. Following the outcome of feasibility studies, the City is planning to convert biogas to either compressed natural gas, to fuel the City's bus fleet, or to renewable natural gas for pipeline injection (Knight et al. 2017). The City is taking advantage of recent advances in gas upgrading technology that make biogas conversion to renewable or compression natural gas a viable alternative to more traditional combined heat and power applications. The City's Bioenergy Recovery Project is now in the detailed design phase and construction is expected to start in 2018 (Knight et al. 2017).

5.3.5 BOSTON, MASSACHUSETTS

In 1991, as part of the Boston Harbor Project, Boston began producing biosolids for beneficial use with the opening of the Quincy Residuals Processing Facility (MWRA 2016a, 2016b). The Boston Harbor Project was initiated in 1986 to improve the health of the Boston Harbour, which at the time was known as one of the dirtiest harbours in America (MWRA 2016b). For a century prior to the project's initiation, Boston's sewage received only limited treatment before being released into the harbour with the outgoing tide. Boston's primary treatment facility, the Deer Island Wastewater Treatment Plant, also received significant infrastructure upgrades as part of the project (MWRA 2016a, 2016b). The Massachusetts Water and Resources Authority (MWRA), which serves 61 metropolitan Boston communities, awarded the design, construction and operation of the biosolids processing facility to New England Fertilizer Company (NEFCO 2017a). NEFCO still owns and operates the Quincy facility today and is responsible for all biosolids product marketing and sales.

The Quincy facility uses thermal drying technology, including a rotary drying drum, to produce a Class A biosolids pellet product. Digested solids arrive at the facility via underwater pipe from the Deer Island Wastewater Treatment Plant, after which they are dewatered onsite and are treated through thermal drying and pellet processing before being sorted, cooled, and stored (NEFCO 2017a, 2017b). The product meets state and federal standards for biosolids fertilizers (MWRA 2016a).

NEFCO distributes the Class A biosolids pellets in bulk throughout the country, primarily for use as an agricultural fertilizer or fuel source (NEFCO 2017a). Selling the pelletized product in bulk enables larger agricultural operations to purchase high quality biosolids fertilizer at lower costs than traditional synthetic chemical fertilizers (MWRA 2016a, NEBRA 2017). NEFCO distributes approximately 80% of the product to other states for agricultural use or as an additive for various fertilizer blends. The remaining product is distributed as a fuel for cement kilns (O'Brien and Pawlowski 2011). Biosolids are increasingly being used as a renewable fuel source, most notably in cement kilns, as they provide a carbon-neutral substitute for coal. The amount of energy obtained from the biosolids product is greater than the amount of energy used to produce it and the ash generated in the process can be incorporated into the cement (NEFCO 2017c). A small portion of the product is also packaged and distributed throughout the New England region under the

brand Bay State Fertilizer (MWRA 2016a). Since 1995, Bay State Fertilizer has been available for purchase by the public at local garden centers and nurseries and is also available in bulk purchase for landscapers and golf courses. Many communities within the Massachusetts Water and Resources Authority use the biosolid pellets on their municipal landscaping, parks, and athletic fields (MWRA 2016a).

Table 5. Summary of Class A biosolids management programs.

Jurisdiction	Product Name	Biosolids Treatment	Program Initiation	Percentage of Class A Product Produced	Applicable Regulations	Beneficial Reuse of Biosolids
British Columbia						
Metro Vancouver Regional District	Nutrifor	Thermophilic anaerobic digestion	1991	80	BC OMRR, Federal Fertilizers Act	Mine reclamation, landfill closure and reclamation, regional reclamation projects, regional landscaping projects, forest fertilization, and ranch land fertilization.
City of Kelowna / City of Vernon	Ogogrow	Aerated static pile composting	1995 (2006)	100	BC OMRR, Federal Fertilizers Act	Commercial landscaping, residential gardening, nurseries, orchards, and landfill closure.
Comox/Strathcona Regional District	SkyRocket	Aerated static pile composting	2007	100	BC OMRR, Federal Fertilizers Act	Commercial landscaping, residential gardening, nurseries and orchards, slope stabilization project, and local reclamation projects.
Nanaimo Regional District	-	Mesophilic and Thermophilic anaerobic digestion	1991	30	BC OMRR, Federal Fertilizers Act	Forest fertilization.
Saanich Peninsula	PenGrow	RDF Lime-pasteurization	2008 to 2011	5	BC OMRR, Federal Fertilizers Act	Residential gardening and landscaping.
Other Canadian Jurisdictions						
City of Edmonton, AB	Second Nature	Co-composting with residential organic waste	2002	80	Federal Fertilizers Act; Provincial Application	Horticulture, agriculture, nurseries, commercial landscaping, residential gardening, city reclamation and enhancement projects.
Niagara Region, ON	Niagara N-Rich	N-Viro alkaline-stabilization	2007	50	ON Nutrient Management Act; Federal Fertilizers Act	Agricultural fertilizer.

Jurisdiction	Product Name	Biosolids Treatment	Program Initiation	Percentage of Class A Product Produced	Applicable Regulations	Beneficial Reuse of Biosolids
City of Toronto, ON	-	Thermal drying; N-Viro alkaline-stabilization	2007	75	ON Nutrient Management Act; Federal Fertilizers Act	Agricultural fertilizer and mine reclamation.
Greater Moncton, NB	Gardener's Gold	Composting - GORE Cover System	2008	100	CAN/BNQ 0413-200/2005; Federal Fertilizers Act	Commercial landscaping, municipal parks and horticultural activities, and residential gardening.
City of Halifax, NS	Halifax N-Rich	N-Viro alkaline-stabilization	2007	100	Federal Fertilizers Act	Agricultural fertilizer, and municipal horticultural activities.
United States of America						
King County, WA	GroCo	Aerated static pile composting	1976	2	US EPA Part 503 Biosolids Rule, Washington State Compost Standards	Residential gardening and landscaping, commercial landscaping, and forestry road reclamation.
City of Tacoma, WA	TAGRO	Duel digestion, composting	1990	100	US EPA Part 503 Biosolids Rule, Washington State Compost Standards	Urban community gardens, residential gardening, commercial landscaping, forest fertilization, and agriculture.
Pierce County, WA	SoundGRO	Thermal drying	2006	100	US EPA Part 503 Biosolids Rule, Dept. of Agriculture – Commercial Fertilizer	Agriculture, commercial and residential landscaping.
City of Raleigh, NC	Raleigh-Plus	Lime-stabilization, composting	2006	90	US EPA Part 503 Biosolids Rule	Agriculture, commercial landscaping, residential gardening, and biodiesel production.
Boston, MA	Bay State Fertilizer	Thermal drying	1991	100	US EPA Part 503 Biosolids Rule, Dept. of Agriculture – Commercial Fertilizer	Agriculture and fuel for cement kilns.

6 INTERNATIONAL BIOSOLIDS MANAGEMENT

The treatment and disposal of biosolids, including beneficial use programs, varies considerably worldwide.

6.1 EUROPEAN UNION

The European Union (EU) comprises 28 countries with a combined population of more than 500 million people (Evan 2012). The processing and use of biosolids varies considerably across the EU, with the dominant processing/utilization methods including application to agricultural land; composting and other land applications; landfilling; and incineration (Evan 2012, Fonts et al. 2012). The average use of biosolids for agricultural land application within EU countries is approximately 37%, with some countries such as the Netherlands, Greece, and Romania applying no biosolids to agricultural land and other countries such as the United Kingdom, Spain, France, and Ireland using more than 50% of their biosolids in agricultural land application programs (Evans 2012). Countries within the EU are required to enact Regulations and Directives into their own national legislations. While Regulations must be transposed verbatim, Directives are minimum requirements. Relevant directives include the Sludge (use in agriculture) Directive (CEC, 1986), the Landfill Directive (CEC, 1999), and the Waste Incineration Directive (CEC, 2000). EU member states have chosen a range of measures and limits in the implementation of the EU Sludge (use in agriculture) Directive (Evan 2012). Within the EU, biogas and phosphate recovery appear to be areas of future interest (Evan 2012).

6.1.1 UNITED KINGDOM

The United Kingdom (UK) beneficially re-uses most of its biosolids in agricultural land application as it is recognized at the best practicable environmental option in most circumstances by the government (UK Water 2010, Panter and Barber 2017). During last decade, the UK has undergone a shift from energy intensive processes with high carbon footprints (incineration, thermal drying, and lime stabilization) to energy producing wastewater processing using advanced digestion paired with biosolids agricultural land application (Panter and Barber 2017). A combination of strict financial regulation, high energy costs, and renewable energy incentives have led the UK Water Industry to invest heavily in advanced anaerobic digestion. The UK has the highest proliferation of thermal hydrolysis plants anywhere in the world (21 full-scale facilities), that treat more than a quarter of sludge production, 1500 metric dry tonnes per day, and generate 60 MWs of electrical energy continuously (Panter and Barber 2017). They have developed sludge centres where anaerobic digestion of biosolids is centralized, which has made sludge pre-treatment more affordable, has increased solid loads at treatment plants promoting energy self-sufficiency through biogas capture, and has provided greater ability to enhance product quality. When all current development projects in the UK are complete, 92% of all sewage sludge will be digested with captured biogas used in combined heat and power generation. Currently, nearly all digested biosolids are applied to farmland, with recent increases in Class A biosolids production. Almost all thermal dryers and incinerators have been de-commissioned and lime stabilization is now rare (Panter and Barber 2017).

6.1.2 FRANCE

France is a major agricultural country in the EU, applying 65% of its biosolids to farmland in 2010 (Wiechmann et al. 2013). In 2002, following pressure from the water industry and from farmers, France developed an indemnity fund, administered by the national government and linked to a quality assurance program. The fund ensures that should there be adverse effects of land-applied biosolids, they will be remedied, which provided market confidence (Evans 2012). In 2004, new regulations for biosolids compost were signed into law (NFU 44095), which recognizes composted biosolids as a product instead of a waste material (Petroff and Brashear 2005). A substantial amount of biosolids are composted with green waste in France and land applied as compost (Evans 2012). An example is Mont De Marsan biosolids composting facility, which began operations in 2005 and uses agitated bay composting technology. The facility is designed to handle 50 wet tonnes per day of dewatered biosolids (15% dry solids) and 50 wet tonnes per day of ground yard trimmings (BDP Industries 2014). The mixture undergoes 21 days of active composting in bays to meet EU requirements for a premium grade compost material, followed by a minimum of 2 months of curing in windrows. The finished compost is marketed for local agricultural use (BDP Industries 2014).

6.1.3 GERMANY

Germany generates the largest amount of biosolids in the EU, with approximately two million tonnes of biosolids dry mass utilized or disposed of in 2010 (Wiechmann et al. 2013). During that year, approximately 50% of biosolids were incinerated through co-incineration or micro-incineration (including gasification installations), 30% of biosolids were applied to farmland, and 20% were managed via other methods, including composting and landscaping (Wiechmann et al. 2013). Biosolids use in agriculture is subject to federal legislation, with three states opposed to the use of biosolids, and eleven states in favor. Only biosolids from municipal sewage treatment plants can be used as fertilizer for conventional farm crops (Wiechmann et al. 2013). Germany has established a liability compensation fund to remedy problems that might arise from land application. The fund, which is not linked to any quality management system, was started voluntarily by some of the leading operators and later taken over by the federal government (BCB1, 1998) (Evan 2012).

The most abundant form of biosolids management is Germany is thermal processing; anaerobically digested biosolids are incinerated at mono-incineration plants, coal fired power plants, cement plants, and at certain waste incineration facilities (Judex et al. 2012, Wiechmann et al. 2013). Germany has approximately 20 sewage sludge mono-incineration plants with aggregate combustion capacity of 580,000 tonnes dry solids per year and seven private sector sewage sludge mono-incineration plants with aggregate combustion capacity of 830,000 tonnes of original sewage sludge per year (Wiechmann et al. 2013). Germany has several pilot and full-scale gasification facilities in operation, including Balingen and Mannheim (refer to Section 4.4.1). Aside from incineration in mono-incineration plants, biosolids are also disposed of through co-incineration, which occurs mainly as coal fired power plants, waste incineration plants, and cement plants (Jones 2012, Wiechmann et al. 2013). Consequently, Germany is a major supplier of incinerator technology. Considerations for the future of Germany's biosolids management program include transitioning from agricultural use of biosolids to the exclusive use of mono-incineration in conjunction with energy and

phosphorous recovery, in an aim to avoid soil substance and contamination risks and also eliminate Germany's dependence on imported phosphorous (Wiechmann et al. 2013).

6.1.4 OTHER EUROPEAN COUNTRIES

Similar to France, Spain and Italy have taken the biosolids composting route to shift biosolids into a different legal framework than the national implementations of the Sludge Directive (Evan 2012). Norway, while not in the EU, quickly exceeded their official target to recycle 60% of biosolids to farmland, with 80% of biosolids applied to farmland or green areas in 2008 (Evan 2012).

The Netherlands, by contrast, has one of the lowest percentages of biosolid use in agriculture in the EU, as the Ministry of Agriculture set the limit values for metals in biosolids so low that it is challenging for biosolid products to comply. This keeps available land open to for the large qualities of livestock manure generated in the country (Evan 2012). The Netherlands incinerates most of its biosolids at facilities both within and outside of the country (GMSC and UN-Habitat 2008, Wiechmann et al. 2013).

Finland's Ministry of Agriculture has taken the same approach as the Netherlands; however the response has been to develop biosolids products for gardening, landscaping, and reclamation purposes instead of incineration. For example, Helisinki's Wastewater Treatment Plant anaerobically digests all of its sewage sludge (with biogas used for combined heat and power) and composts the resulting biosolids with sand, crushed biotite, stone and crushed limestone. The product is called Metsäpirtin Bio-Soil and it is sold largely to gardeners and landscapers (Evan 2012).

Switzerland banned the use of biosolids on farmland in 2005, over concerns about the potential consequences for human health and the environment of potentially toxic substances and harmful micro-organisms (FOEN 2003, Evan 2012, Smith 2009). The country co-incinerates much of its biosolids in either cement kilns or coal plants, with some biosolids applied to land in neighboring France. Greece and Malta have also chosen not to apply biosolids to land and use landfilling as their predominant disposal method (Mininni et al. 2015).

6.2 JAPAN

Like Germany, Japan also relies heavily on thermal processing (largely incineration) for biosolids management. The country produces over two million dry tonnes of biosolids annually and manages more than 70% through incineration (GMSC and UN-Habitat 2008). There are a number of different ways incineration ash is beneficially used, including incorporation in cement, soil improvement materials, and various construction materials such as paving stones and bricks (Vasileski 2007, GMSC and UN-Habitat 2008).

Wastewater treatment plants capture biogas from anaerobic digestion, as well as thermal energy from sewage and waste heat from the incineration process to provide heat and power to the treatment plants, as well as to external buildings (UN-Habitat and GMSC 2008). For example, the thermal energy captured from raw or

treated sewage is used for regional air conditioning (Vasileski 2007). Technical developments have also facilitated the recovery of phosphorus from biosolids, through the crystallization of Magnesium Ammonium Phosphate method (Vasileski 2007). Japan is exploring other high-technology thermal treatments, such as gasification and pyrolosis, with the hope of obtaining more net energy from biosolids than standard incineration yields (GMSC and UN-Habitat 2008). To that end, the world's largest fully operational sewage sludge gasification facility is located in Tokyo (Jones 2017). Additionally, treatment plants occur in Hiroshima and Tokyo that pyrolyze up to 27,800 and 109,000 tonnes of dewatered sewage sludge per year, respectively, into pygas and biochar (IBI 2013). Japan's way forward in wastewater and biosolids treatment is to change wastewater treatment plants in urban centers into energy supply and material recycling stations. This is being achieved through improved efficiencies and energy savings at treatment plants, as well as maximizing energy recovery from biosolids and other local organic wastes, such as food waste (GMSC and UN-Habitat 2008).

6.3 AUSTRALIA AND NEW ZEALAND

In the southern hemisphere, Australia and New Zealand initiated the Australian and New Zealand Biosolids Partnership (ANZBP) in 2007, a member-based collaboration of utilities, consultants, academics and government bodies committed to the sustainable management of biosolids (ANZBP 2016b). The objectives of the partnership, among others, are to support engagement with the public and other stakeholders regarding biosolid management, support the biosolids industry on technical and regulatory policy matters and provide support services and information to members and the public (ANZBP 2016b).

In Australia, biosolids are usually regulated by the State environment protection authority or equivalent using the guidelines that apply in that State or Territory, or adopting those used in other States or national Guidelines. In New Zealand, the application of biosolids to land is carried out under the guidance of Territorial Authorities as per the provisions of Regional Plans. Most Australian State guidelines and the New Zealand national guidelines specify three or four treatment grades and two or three contaminant grades (ANZBP 2016c). In 2015, Australia produced approximately 310,000 dry tonnes of biosolids, with approximately 64% applied to agricultural land, 23% used in composting, forestry, and land reclamation projects, and 11% disposed of in landfill or stockpiled (ANZBP 2016a). In 2015, New Zealand produced approximately 77,000 dry tonnes of biosolids, with roughly 61% going to landfill, 18% discharged to the ocean, 9% applied to agricultural land, and 12% used in composting, land reclamation, or forestry (ANZBP 2016d).

A survey completed in 2010, assessing community attitudes to the use of biosolids found that 71% of respondents, most of which were Australian, felt positively towards the use of biosolids for various purposes, such as land application in agriculture or forestry, composting, and energy generation (ANZBP 2010).

Although, the majority of biosolids in New Zealand are disposed of in landfills, the country has developed a number of successful vermicomposting operations over the last decade (Quintern and Morley 2017). Vermicomposting has grown from processing 2,000 tonnes of biosolids in 2008, to approximately 200,000

tonnes in 2015. The process yields a highly valued fertilizer and soil conditioner known as vermicast for uses in agriculture, horticulture, nurseries and recreation areas (Hernandez et al. 2015, Joshi et al. 2015, Sinha et al. 2013, Quintern and Morley 2017). Hamilton City, for example, has a vermicomposting operation that serves a population of 153,000 and a diverse industrial footprint. Anaerobically digested, dewatered biosolids are transported to Tokoroa vermicomposting site where they are blended with other industrial wastes, and pulpmill solids from a cardboard recycling plant. The site operates on forestry blocks, vermicomposting approximately 90,000 wet tonnes of blended material annually. The site produces 30,000 tonnes of various vermicast products per year which is applied to crops, pastureland, orchards and nurseries (Quintern and Morley 2017).

7 CONCLUSIONS

Managing biosolids is an ongoing challenge for most jurisdictions around the world. As a result, innovative techniques and processes are continually being developed to the address health and environmental concerns, as well as issues related to managing the physical volume of biosolids. Over the past number of decades, many jurisdictions have shifted from treating biosolids as a waste product to a resource.

The CRD is advancing efforts to design, construct, and operate a wastewater treatment system. They have determined that the system will be designed to generate Class A biosolids. Based on this jurisdictional review, it is apparent that many different options are available to CRD planners and decision-makers.

Jurisdictional examples from BC, other parts of Canada, the US, and further abroad internationally highlights a range of existing programs using a variety of techniques. Some of the emerging biosolids and bioenergy process trends include:

- Biodiesel production
- Biogas utilization
- Thermal hydrolysis/biological hydrolysis pre-treatment
- Gasification
- Pyrolysis, and
- Incineration with energy capture

These techniques are showing great promise to address some of the common concerns associated with biosolids management, as well as opportunities to be innovative and creative.

Many jurisdictions also have established biosolids programs. Fifteen jurisdictional summaries from North America were presented, highlighting a range of biosolids treatments or combination of treatments, including:

- Aerobic digestion
- Mesophilic and thermophilic anaerobic digestion
- RDF Lime-pasteurization
- N-Viro alkaline-stabilization
- Thermal Drying
- Composting
    - Aerated static pile
    - Co-composting with residential organic waste
    - Bottom aeration with Gore Cover System

Some of the Class A biosolids products are used in:

- mine reclamation
- landfill closure, reclamation, and slope stabilization
- forest fertilization
- ranch land fertilization
- agriculture
- commercial, municipal, and residential landscaping
- industrial process feedstock

This report does not provide recommendations to the CRD. But hopefully, through the information contained in this report, a range of options are provided for consideration, and if appropriate, further exploration and research.

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ERM 17-36

REPORT TO INTEGRATED RESOURCE MANAGEMENT ADVISORY COMMITTEE MEETING OF WEDNESDAY, SEPTEMBER 6, 2017

SUBJECT **Waste Flow Management Policy Backgrounder**

ISSUE

To present policy and financial considerations regarding flow control of waste feedstocks.

BACKGROUND

Proposed next steps for Advanced Integrated Resource Management (IRM) were presented to the IRM Advisory Committee in June 2017 and the next steps were approved at the Capital Regional District (CRD) Board meeting on July 12, 2017. As a result, staff have prepared a backgrounder summarizing potential policy/project implications resulting from the CRD's lack of flow control over much of the waste feedstock. The term “flow control” refers to the CRD’s authority to control the movement and disposal of solid waste within the region.

On May 12, 2017, the CRD Board approved the proposed IRM Work Plan for submission to the Province of British Columbia by May 31, 2017, as requested by the Minister of Environment in her conditional approval of Amendment No. 11 of the Core Area Liquid Waste Management Plan. The letter of submission reiterated the CRD Board’s commitment to pursuing IRM as a strategic priority, as confirmed in the Core Area Wastewater Treatment Program Business Case. One of the main challenges identified in the Business Case was the lack of flow control over solid waste streams in the region. Lack of flow control was also identified as a significant project risk by respondents to the Request for Expressions of Interest for the Advanced IRM Project.

Waste flow management refers to a regional district’s ability to regulate the flow of solid waste and recyclable materials, as provided for in the Environmental Management Act (EMA). It is an important regulatory tool to support the implementation of solid waste management plans and to help ensure the long-term financial sustainability of the system. It can also provide a means to guarantee feedstock for the establishment of new facilities, such as the proposed IRM facility. There have been several attempts by regional districts to implement waste flow management. In 2013, Metro Vancouver considered hauler licensing as an option for waste flow management, but removed it from consideration, as a result of significant opposition by the hauling industry. Staff subsequently developed Bylaw 280, meant to regulate waste flow to designated facilities in their region. In February 2014, Metro Vancouver wrote to the CRD Board to ask for support of Bylaw 280. At its meeting of June 11, 2014, the CRD Board voted to send a letter to the Minister of Environment supporting local government authority to implement a bylaw enabling waste flow management.

On June 24, 2014, the issue of waste flow management was further discussed by the Environmental Services Committee and CRD Board members at a workshop on the Solid Waste Management Plan (SWMP). Workshop participants did not endorse the assumption that waste flow management should be considered as part of the new SWMP and requested more information.

The Minister of Environment rejected Metro Vancouver's proposed flow management bylaw in October 2014. In 2015, as an alternative to the failed bylaw, Metro Vancouver reduced tipping fees for large commercial loads, sending a positive price signal to private waste hauling customers. This approach, along with the decreased strength of the Canadian dollar, resulted in a significant decrease of waste exports to Washington State and ensured continued flow of materials to Metro Vancouver transfer stations.

In 2015, the Regional District of Nanaimo (RDN) solid waste disposal facilities experienced a 25% decrease in commercially-hauled solid waste disposal. RDN staff proposed a large load tipping fee reduction, similar to Metro Vancouver's approach. The RDN Board rejected the proposed tipping fee change and decided to monitor the situation. With the reduced value of the Canadian dollar, waste exports seem to have stabilized for the time being and materials are being delivered to RDN facilities.

Metro Vancouver has recently taken a new approach to waste flow management. At its July 28, 2017 meeting, Metro Vancouver's Board initiated consultation on the introduction of a mixed municipal solid waste generator levy and of licensing commercial waste haulers. These initiatives propose to collect a levy starting at $40 per tonne, to pay for fixed solid waste management planning costs and to license haulers as a means of collecting the levy. The generator levy is already authorized as a component of the *Greater Vancouver Sewerage and Drainage District Act* in Metro Vancouver's SWMP and does not require approval by the Minister of Environment; however, implementing a hauler licensing program would be subject to Ministry approval.

Based on the experiences in other regional districts, it appears that price signals can influence waste flow. CRD staff have started conversations through the Province's CRD Project liaison about flow control, and there may also be opportunities for discussion at the upcoming Union of British Columbia Municipalities conference. The implementation of a flow control bylaw in the Capital Region would have to be included in the CRD's SWMP and requires extensive consultation. It is possible to conduct this consultation in parallel to the consultation process for the SWMP.

CONCLUSION

The CRD Board has identified Integrated Resource Management as a strategic priority, and confirmed this in the Core Area Wastewater Treatment Program Business Case. One of the main challenges identified in the Core Area Business Case was the CRD's lack of flow control over solid waste streams in the region. This was also seen as a significant risk by respondents to the Request for Expression of Interest for the Advanced IRM Project. Regional districts in the province have identified waste flow management as a critical issue and are trying different approaches to secure feedstock availability and funding for solid waste programs.

RECOMMENDATION

That the Integrated Resource Management Advisory Committee recommend to the Environmental Services Committee:

That this report be received for information.

Submitted by:	Russ Smith, Senior Manager, Environmental Resource Management
Concurrence:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services
Concurrence:	Larisa Hutcheson, P.Eng., Acting Chief Administrative Officer

AB:ac

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ERM 17-37

REPORT TO INTEGRATED RESOURCE MANAGEMENT ADVISORY COMMITTEE MEETING OF WEDNESDAY, SEPTEMBER 6, 2017

SUBJECT **Advanced Integrated Resource Management – Procurement and Project Plan Update**

ISSUE

To update the committee on the procurement process for the evaluation and potential development of an Advanced Integrated Resource Management (IRM) solution.

BACKGROUND

Proposed next steps for Advanced Integrated Resource Management were presented to the IRM Advisory Committee in June 2017 and the next steps were approved at the Capital Regional District (CRD) Board meeting on July 12, 2017.

This report provides the Request for Qualifications (RFQ) and Project Plan draft outlines prepared by the CRD's IRM consultants (appendices A and B) as requested at the July 2017 CRD Board meeting. Generally, for a project of this magnitude, a preliminary business case would be developed, including technology and feedstock assumptions, and used to determine project viability and the preferred procurement strategy. The timeframe under which the IRM Project Plan must be developed and completed, based on the Board's desire to explore IRM as a potential solution for the provincial requirement for biosolids beneficial reuse, is very tight. Advancement of the procurement of an IRM solution, and the above-mentioned procurement documents, will be substantially informed by the IRM facilities tour and IRM Technology Gap Analysis.

The proposed RFQ and Project Plan approach would seek to pre-qualify IRM service providers that demonstrate they have the capability to manage biosolids along with one or more solid waste stream(s), including raw sludge. The Technology Gap Analysis and proposed IRM facilities tour will inform the feedstock and technology diversity used by existing IRM facilities.

RFQ Outline

The draft RFQ outline includes key components related to the submission and evaluation of information and covers: project development approach; proponent details; and technical and financial capability. Finalization and Board approval of the RFQ document would be undertaken subsequent to the facilities tour to reflect the outcome of any IRM project recommendations arising from the facilities tour. This will also allow for consideration of the award of the Core Area Residuals Treatment Facility Project RFP in late 2017 and the technology brought forward by the preferred proponent.

Project Plan Outline

The IRM Project Plan outline sets out a roadmap necessary to implement an IRM solution within approximately two years of the Residual Treatment Facility beginning the production of biosolids at the Hartland facility. This timeline is required to meet provincial regulatory requirements relating to the beneficial use of biosolids. Finalization and Board approval of the Project Plan would be undertaken in conjunction with the RFQ process.

The IRM Work Plan submitted to the Province on May 31, 2017 has been adjusted to reflect the updated IRM procurement timeline. The ministry has indicated that a formal resubmission of the IRM Work Plan is not required and CRD staff have been directed to simply keep the ministry's appointed liaison up to date with any changes to the Work Plan.

ALTERNATIVES

Alternative 1

That the Integrated Resource Management Advisory Committee recommend to the Environmental Services Committee:

1. That the Request for Qualifications Outline and Integrated Resource Management Project Plan be received for information and that the final documents be brought back to the Capital Regional District Board for approval once the facility tour is complete; and

2. That Salt Spring Island be considered as a sub-regional IRM project alternative within the procurement process.

Alternative 2

That staff be requested to provide further information to the committee.

INTERMUNICIPAL IMPLICATIONS

The Director of Salt Spring Island (SSI) is engaged in a discussion with his community and has expressed an interest that SSI be considered as a sub-regional IRM project alternative within the IRM procurement process.

FINANCIAL IMPLICATIONS

The economic implications of a long-term, in-region IRM facility will be determined once the results from the RFQ and future RFP are available. Commitment on feedstocks supplied by municipal and private sector participants will be discussed as part of the collaborative RFP process. Outcomes of these discussions will impact processing technology selection and cost.

CONCLUSION

An outline for a Request for Qualifications and IRM Project Plan to advance procurement of an Integrated Resource Management solution has been prepared for the committee's information. The RFQ will be brought back in final form after the facilities tour is complete.

RECOMMENDATION

That the Integrated Resource Management Advisory Committee recommend to the Environmental Services Committee:

1. That the Request for Qualifications Outline and Integrated Resource Management Project Plan be received for information and that the final documents be brought back to the Capital Regional District Board for approval once the facility tour is complete; and

2. That Salt Spring Island be considered as a sub-regional IRM project alternative within the procurement process.

Submitted by:	Russ Smith, Senior Manager, Environmental Resource Management
Concurrence:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services
Concurrence:	Larisa Hutcheson, P.Eng., Acting Chief Administrative Officer

JF:sm

Attachments: Appendix A – IRM Project Plan Outline – HDR (August 30, 2017)
Appendix B – IRM Request for Qualifications – Draft Outline – HDR (August 23, 2017)

IRM Project Plan Outline

Capital Regional District

Advanced Integrated Resource Management (IRM) Project

August 30, 2017

1. Introduction

On June 28, 2017 the Integrated Resource Management Advisory Committee (IRMAC) recommended to the CRD Environmental Services Committee that five key deliverables be prepared and delivered for the September IRMAC meeting, based on the staff report entitled the *Advanced Integrated Resource Management, Next Steps* and the presentation that was provided regarding the IRM Road Map. These recommendations were approved by the Environmental Services Committee on June 28th, 2017 and subsequently by the CRD Board. One of these five key deliverables is an IRM Project Plan Outline.

The following describes the proposed IRM Project Plan Outline. This IRM Project Plan outline builds upon the IRM Work Plan which was submitted to the Province in May 2017 as requested by the Minister of Environment in her conditional approval of Amendment No. 11 of the Core Area Liquid Waste Management Plan (CALWMP). The intent is that the IRM Project Plan outline, provide more details regarding the road map for the IRM process. This document will also be used to support discussions with Ministry of the Environment staff for feedback and alignment during the remainder of 2017. The IRM Project Plan Outline reflects the staff reports and documents developed to-date in support the IRM process, and the outcome of discussions with CRD staff.

2. IRM Project Plan Outline

The proposed IRM Work Plan was submitted to the Province in May 2017. Since that document was completed, some adjustments to the work plan have become evident based both on the outcomes of the June 28, 2017 IRMAC meeting and based on development of a reasonable schedule and succession of activities to support the IRM Project Plan. These adjustments include the following:

a) As documented in the Report providing the detailed analysis of the results of the CRD IRM RFEOI, it was clear that the majority of parties interested in providing an IRM solution to the CRD indicated that a pilot program was unnecessary as the majority of the proposed technologies have been successfully used at operating facilities to process similar materials. A pilot program would require investment by the CRD in development or support of a small scale trial, and experience in other jurisdictions indicates it is difficult for a pilot to replicate actual full-scale facility operations. Facility tours offer the option to see larger scale operations first hand to gather essential information. Subsequently the option of undertaking an IRM Pilot has been removed from the IRM Plan Outline and replaced by recommendations for an IRM Facility Tour. Details regarding the proposed Facility Tour are outlined in the *Proposed IRM Facilities Tour Plan.*

   The IRM Facility Tour has been integrated within the IRM Plan Outline, with suitable timing to inform and support subsequent steps of the IRM process. To accommodate the proposed Facility Tour and other items as provided to the IRMAC for consideration in September, and to allow for reasonable decision making as required for some key steps in the IRM process, a number of actions have been moved out within a reasonable timeframe. However, as the Facility Tour effectively replaces

undertaking of an IRM pilot project which would have taken substantially longer time to complete, the overall effect on the IRM schedule is relatively minimal.

b) The IRM Plan Outline has been adjusted to indicate the key decisions that would be required, in the form of recommendations from the IRMAC and subsequent decisions by Environmental Services Committee and the CRD Board throughout the IRM planning process. This Plan Outline identifies the timing of key decisions related to policy, in particular waste flow management policy implications as reflected in a separate CRD Staff report presented to the IRMAC in September, as well as the implications related to the existing CRD policy regarding Land Application and implications associated with the beneficial reuse of products that could include biosolids. Decisions related to the regulation of the flow of solid waste and organic materials will determine whether the CRD will be in the position to guarantee feedstock for an IRM solution. In the absence of feedstock guarantees, the viability of an IRM solution will depend on its ability to compete cost effectively with options to ship materials off-island for management elsewhere. Decisions related to the CRD policy regarding Land Application and how that policy would apply to the use of products generated by an IRM solution that could contain biosolids, will significantly scope the potential for product markets and thus effect both facility design as well as the business case for implementing an IRM solution.

c) The IRM Plan Outline addresses the need for development of a Preliminary and Final Business Case for an IRM solution. Generally for similar projects a municipality would be advised to develop a Preliminary Business Case in order to determine if a project of this nature was viable, and in the event that it was viable the outcome of the business case would be used to scope the subsequent procurement process in regards to defining the preferred service delivery model to undertake the project; the preferred technology and the feedstock that would be managed. The timeframes under which the IRM Project Plan must be developed and completed including implementation of an approach for beneficial reuse of biosolids, does not allow for a separate business case to be developed in advance of procurement. Instead, during the development of the IRM RFPQ document an assessment of service delivery models will be undertaken. The IRM RFPQ document itself, will be structured so as to allow for pre-qualification of service providers that have capability to manage IRM solid and liquid waste streams, with the identification of any preferred technologies and the feedstock to be addressed in an IRM solution to be informed by the outcome of the RFPQ process. The outcome of the RFPQ along with the Preliminary Business Case will provide the basis for the CRD to decide whether to proceed with the next IRM steps and the RFP scope definition for an IRM solution. The Final Business Case would reflect the outcome of the IRM RFP.

d) The IRM Plan Outline has been adjusted to reflect alignment with the CRD solid waste management planning process, as it contemplates beneficial reuse of solid waste residuals. IRM in the Capital Region is predominantly driven by the solid waste streams, as biosolids comprise a relatively small proportion of the combined liquid and solid waste streams. The IRM project would be a fundamental shift in the way solid waste residuals and potentially other materials like organics would be managed in the Capital Region and requires a major review of the solid waste management plan. As appropriate, key steps in

the development of the CRD Solid Waste Management Plan (SWMP) which can affect the IRM planning process (and vice versa) have been indicated in the IRM Plan Outline.

e) The IRM Plan Outline refers to the planning and development of an advanced IRM solution, rather than making specific reference to an advanced IRM facility (in the singular) to allow for flexibility in the outcome of the process. This reflects the real potential that the outcome of the initial steps of the IRM Project Plan, including the RFPQ and Preliminary Business Case, may indicate that either a phased solution or a multi-facility approach may be identified as more feasible approaches to implement an advanced IRM solution for the CRD. For example, it may be made clear that initially the focus of an IRM facility should be the management of biosolids and a smaller subset of other CRD materials, with the option that over time either a facility expansion or an additional facility could be developed to manage other CRD materials. A phased approach could be developed by the same or a different entity. Alternatively, it may become apparent that the most feasible IRM solution may include more than one facility at the outset, developed by different entities, managing separate CRD material streams.

   In the event that an IRM opportunity managing biosolids and other CRD waste streams is not proven to be the most beneficial path forward, the CRD would pursue an individual resource recovery plan or plans for the Region's solid waste streams, and present the Province with a definitive plan for the beneficial reuse of biosolids as a stand-alone opportunity.

The following Table 1, provides the IRM Project Plan outline, breaking down key activities and the timing of key decisions that would have to be made throughout the IRM planning process.

Figure 1 illustrates the general timing of key activities included as part of the IRM Project Plan outline, and the timing of other associated/parallel activities under the SWMP and CALWMP processes.

Figure 1 IRM Project Plan General Timeline and Associated Activities

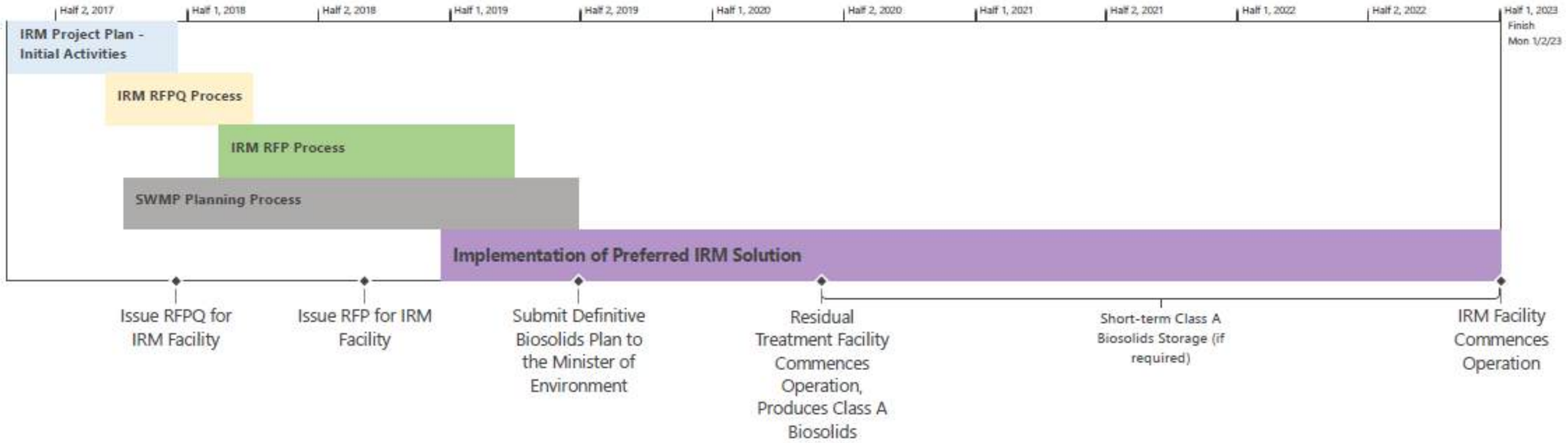


Table 1 Proposed CRD Integrated Resource Management, Project Plan Outline

General Timeframe	Key Activities	Key Decisions

September 2017	• IRM Project Plan Outline
	• Gap Analysis of Technologies and Feedstock Combinations
	• IRM Facilities Tour Plan
	• IRM RFPQ Outline
	• Summary of Policy/Project Implications
	• Complete arrangements for IRM Facilities Tour
	• Initiate development of Draft IRM RFPQ document (pending IRMAC and subsequent ESC/Board approval in early Sept)
	• Initiate assessment of Service Delivery models for the IRM; approach for technology selection; feedstock assumptions (pending IRMAC and subsequent ESC/Board approval in early Sept)
	• CALWMP RFP for Residual Treatment Facility closes
		• IRMAC and subsequent ESC/Board approval of the:
		  ○ IRM Project Plan Outline, and issuance of this document to support consultation with stakeholders
		  ○ IRM Facilities Tour Plan
		  ○ IRM RFPQ Outline and subsequent direction to draft the IRM RFPQ as informed by the IRM Facilities Tour
		  ○ Recommendations arising from the waste flow policy implications
		• The RFPQ outline lays out key issues regarding scope definition for an IRM facility and an approach to address these issues. These would include whether: an IRM solution could include one or multiple facilities; whether an IRM solution could be staged over time; and, what feedstock would be assumed to be addressed within an IRM solution.

October / November 2017	• Review Draft IRM Project Plan with Ministry of Environment (MoE) for feedback and alignment • Complete and document the outcome of the IRM Facilities Tour • Complete Final RFPQ document for IRM solution • Re-initiate SWMP Planning Process	• Prior to issuance of the RFPQ document resolution will be necessary regarding scope definition (see above) as informed by the outcome of the IRM Facilities Tour.

December 2017	• Issue RFPQ for an IRM solution	• Core Area Wastewater Project Board to execute agreement with preferred bidder for residual treatment facility, will allow for clear definition of the potential quantity and type of biosolids to be managed by an IRM solution. It is recommended that the RFPQ for the IRM solution be issued following this decision.
Q1 2018	• Review/evaluate results of IRM RFPQ and evaluate the feasibility of an advanced IRM solution • Prepare Preliminary Business Case, along with recommendations regarding: risk assessment, preferred service delivery model(s), technology(ies) and feedstock to be included in an IRM solution and CRD budget development recommendations. • Work with MoE staff to finalize the IRM Project Plan, including a detailed public consultation plan and timeline • Present preliminary business case and identification of qualified proponents arising from the IRM RFPQ process • Develop IRM Request for Proposals scope definition • Inform SWMP planning process by outcome of the IRM Preliminary Business Case to set plan direction	• Based on the Preliminary Business Case and the outcome of the RFPQ process, recommendations would be presented to the IRMAC regarding the RFP scope definition for an IRM solution including: risk assessment, method of implementation, technologies and feedstock assumptions and CRD budget recommendations. • IRMAC and subsequent ESC/Board approval of the recommendation(s) to proceed (or not) with an IRM RFP process.
Q2/Q3 2018	• ISWRMP Step 3, Evaluate Options (to be informed by outcome of IRM preliminary business case) • Confirm potential IRM facility locations to be made available by the CRD and complete data collection for these locations • Develop IRM RFP Document (to be informed based on the outcome of the ISWRMP Step 3) • Secure IRM feedstock commitments/agreements	• Key policy direction regarding flow control of waste streams to be addressed in SWMP planning process and inform the IRM RFP. • Key policy direction regarding IRM resource reuse opportunities (specifically related to the use of products containing biosolids) should be addressed through the IRMAC followed by a decision by the ESC/Board. • IRMAC recommendation followed by ESC/Board decision to proceed with issuance of the IRM RFP.

	• Confirm IRM resource reuse opportunities arising from key policy directions as sought in Q1 2018 • Issue RFP for advanced IRM solution	
Q4 2018 / Q1 2019	• Review/consultation on the SWMP • Evaluation of IRM RFP submissions and negotiations with preferred bidder • Development of Final Business Case for implementation of an IRM solution based on the submission from the preferred bidder including review of financing options • Review and align IRM Project Plan and SWMP to resolve discrepancies regarding integrated resource management • Finalize & Adopt the SWMP • Develop detailed implementation plan for the preferred IRM solution, including determination of regulatory approvals and environmental requirements and consultation plan	• ESC/Board decision to proceed to consultation on the SWMP • IRMAC recommendation followed by ESC/Board decision to proceed to award a contract for an IRM solution based on the outcome of the IRM RFP and Final Business Case. • The outcome of the above should be reflected in the SWMP, issued for public consultation and to the ESC/Board for Review (or adjust plan as needed)
June 30, 2019	• Submit Definitive IRM Plan to the Minister of the Environment for Approval (focus on IRM solution) • Submit SWMP to the Minister of the Environment for Approval (larger context for overall solid waste management system)	• IRMAC recommendation followed by ESC/Board decision to submit the Definitive IRM Plan to the Minister, with this plan reflecting the outcome of the IRM process up to that date, and the implementation plan/approach for the preferred advanced IRM solution.

2019/2020	• Permitting process for the long-term advanced IRM solution
	  ○ Legal
	  ○ Technical
	  ○ Environmental Impact Assessment (as applicable)
	  ○ Public consultation (as required)
	  ○ First Nations consultation (as required)
	• Design and engineering for the long-term advanced IRM solution
		• As appropriate, decision points related to submission of permitting documentation and implementation of the public consultation plan.
		• The CRD should consider retention of external services to act as owners engineer through the permitting, design, engineering and construction phases of the IRM solution, the extent of which will depend on the complexity of the technology and scope of the IRM solution that is selected.

January 1, 2021	• Residual treatment facility starts operation and produces Class A biosolids • Short-term Class A biosolids storage, if required	
2021/2022	• Construction and commissioning of long-term advanced IRM solution	
January 1, 2023	• IRM facility starts operation	

The IRM Project Plan outline as discussed in Table 1 above, is illustrated in the attached Figure 2 chart indicating these project activity streams and potential timing of these activities.

To assist in understanding the level of effort required for key procurement activities as indicated in the IRM Project Plan, further details are provided below.

The following provides a more detailed breakdown of the IRM RFPQ activities that would be undertaken:

a) Development of the RFPQ document:
   - Assess and scope Project service delivery models (e.g. financing, ownership, operation)
   - Prepare components for team qualifications
   - Prepare components for technology qualifications
   - Prepare components for financing qualifications
   - Develop full draft RFPQ
   - Review and finalization of RFPQ
   - Release of RFPQ

b) RFPQ Submission Window:
   - Due to complexity of the RFPQ (which is required to provide flexibility for potential outcomes) recommend at least 60 days submission window
   - A number of enquiries during this window should be anticipated

c) RFPQ Evaluation:
   - Prior to the RFPQ submission deadline an evaluation framework would be developed and evaluator training would be completed
   - RFPQ submissions would be reviewed. There may be a need to accommodate commercially confidential meetings/discussions with proponents to clarify aspects of their submissions under the guidance of the CRD Fairness Advisor
   - Completion of RFPQ evaluation, development of recommendations and CRD Staff Report
   - Completion of the Preliminary IRM Business Case

The IRM RFP approach would be refined based on the outcome of the RFPQ and Preliminary Business Case. In general the IRM RFP process could be expected to include:

a) Drafting of the RFP Document
    - Technical Specifications
    - Payment Mechanism
    - Submission requirements and Evaluation Criteria
    - Project Agreement and Schedules
    - Full draft review and revisions
    - Issuance of the RFP
b) RFP submission window
    - The extent of the RFP would likely require a 90 day RFP submission window
    - A number of enquiries during this window should be anticipated
    - It would be recommended that a series of commercially confidential meetings be held with each bidder in order to discuss financing CCMs, the Project Agreement and Technical specifications
c) RFP Evaluation:
    - Prior to the RFP submission deadline an evaluation framework would be developed and evaluator training would be completed.
    - RFP submissions would be reviewed. There will likely be a need to correspond with proponents and or conduct interviews to clarify aspects of their submissions under the guidance of the CRD Fairness Advisor.
    - Completion of RFP evaluation, development of recommendations and CRD Staff Report
    - Completion of the Final IRM Business Case

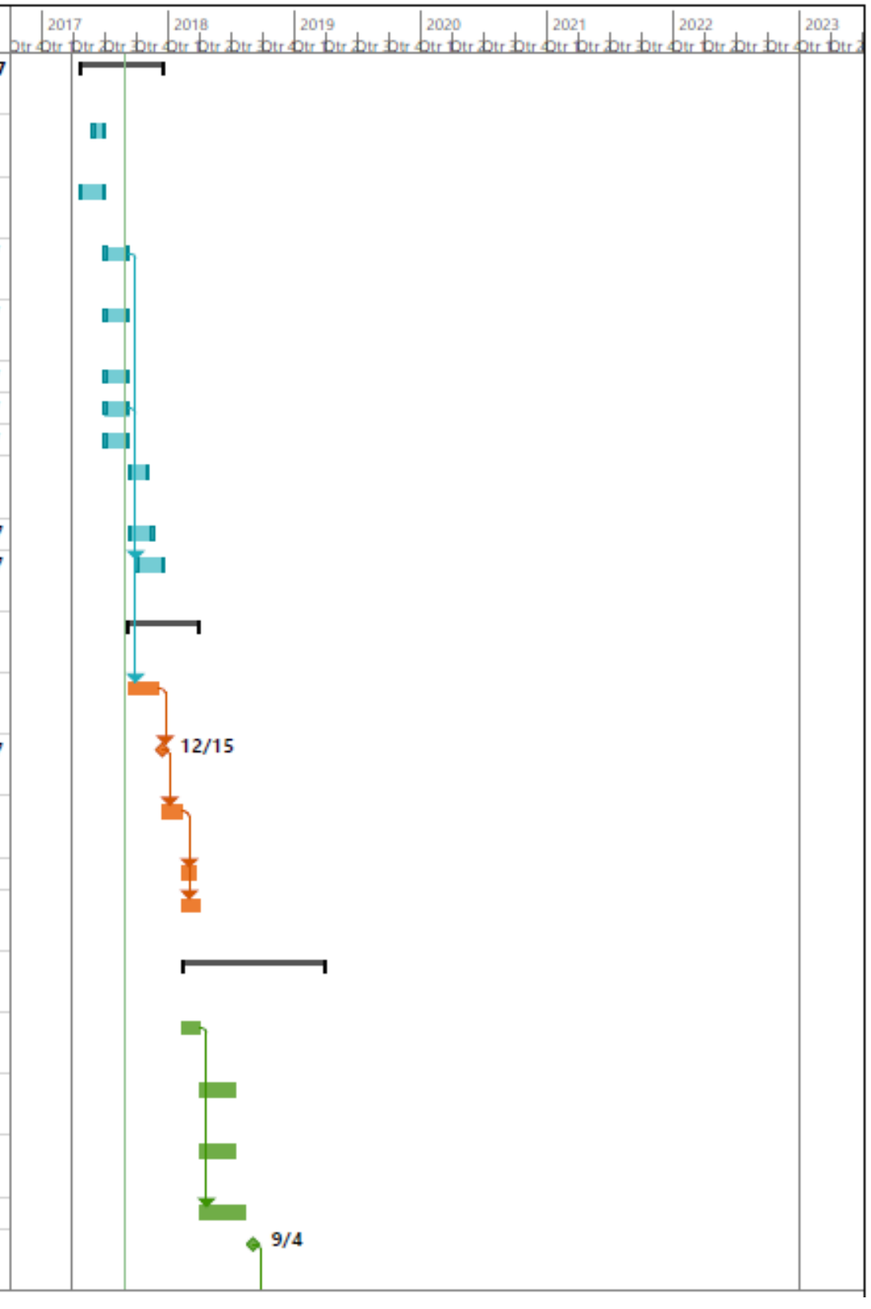
3. Conclusion

The IRM Project Plan sets out a series of actions and decisions that would be necessary to implement an IRM solution within approximately 2 years of the Residual Treatment Facility beginning operations, in order to provide for beneficial reuse of CRD biosolids and minimize the period where landfill disposal may be required. The activities identified in the IRM Project Plan, reflect the current status of the IRM investigations, and would be subject to modification depending on the outcome of initial activities such as the Facilities Tour, RFPQ and Preliminary Business Case. The timelines identified assume that key critical decisions are made in a timely fashion through the process, and would be subject to review and updates as implementation of the plan progresses. This would include developing further details regarding the activities and timing of activities in the latter steps of developing an IRM solution (2019 and beyond). Adjustments may also be necessary based on the outcome of discussions with the Ministry of Environment (MoE) for feedback and alignment.

The IRM Project Plan and the outcome of the initial IRM activities will be used to form the basis of the Definitive IRM Plan that would be submitted to the Minister of the Environment for Approval by June 30, 2019.

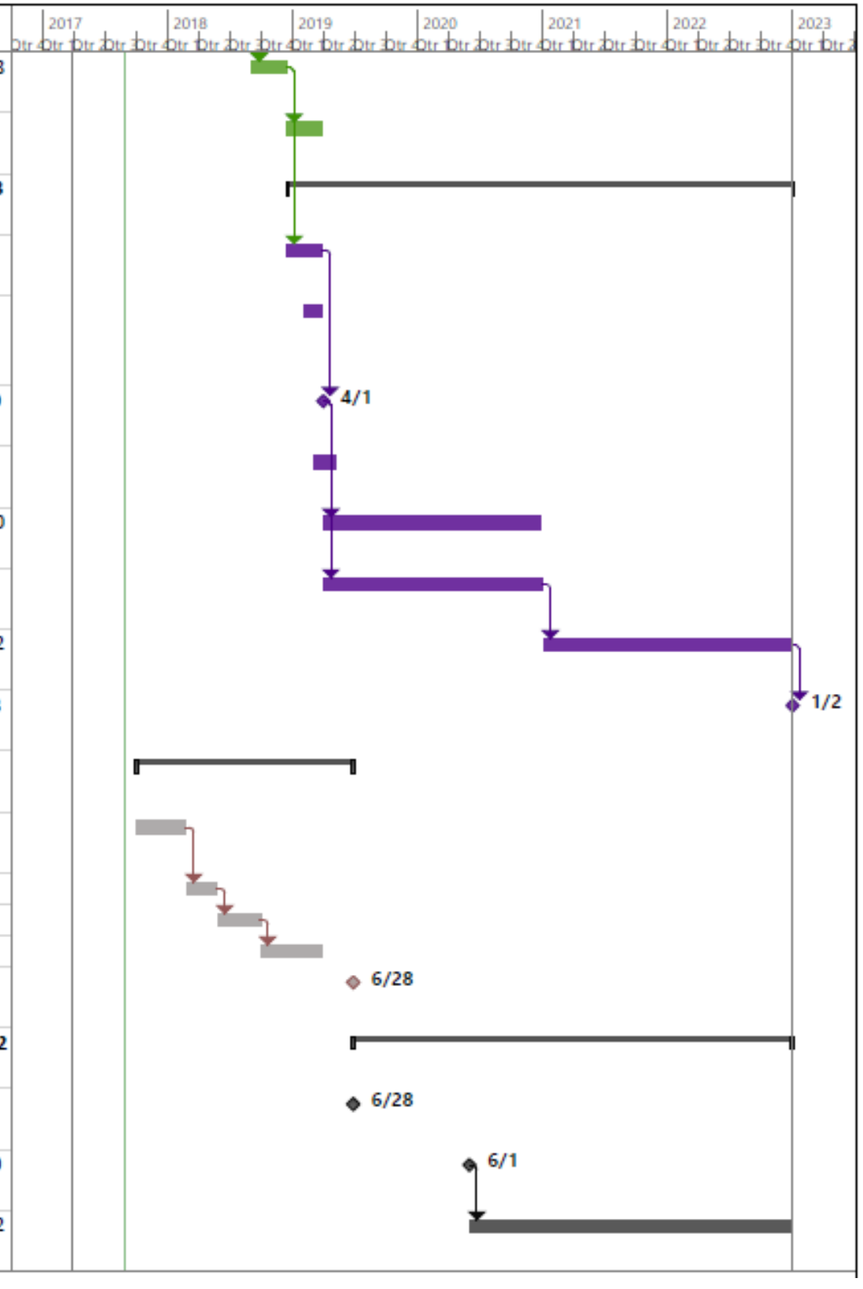
Figure 2 IRM Project Plan Outline – Schedule

Task Name	Duration	Start	Finish
IRM Project Plan - Initial Activities	**170 days?**	**Mon 4/24/17**	**Fri 12/15/17**
Jurisdictional Review	25 days	Mon 5/29/17	Fri 6/30/17
Detailed Evaluation of IRM RFEOI Submissions	50 days	Mon 4/24/17	Fri 6/30/17
IRM Project Plan Outline	48 days	Mon 7/3/17	Wed 9/6/17
Gap Analysis of Technologies and Feedstock Combinations	48 days?	Mon 7/3/17	Wed 9/6/17
IRM Facilities Tour Plan	48 days?	Mon 7/3/17	Wed 9/6/17
IRM RFPQ Outline	48 days?	Mon 7/3/17	Wed 9/6/17
Summary of Policy/Project Implications	48 days?	Mon 7/3/17	Wed 9/6/17
Assessment of Service Delivery Models	40 days	Mon 9/11/17	Fri 11/3/17
Arrange and Undertake IRM Facilities Tour	50 days	Mon 9/11/17	Fri 11/17/17
Review of Draft IRM Project Plan with MOE Staff	55 days	Mon 10/2/17	Fri 12/15/17
IRM RFPQ Process	**147 days**	**Thu 9/7/17**	**Fri 3/30/18**
Develop RFPQ for IRM Facility	62 days	Thu 9/7/17	Fri 12/1/17
Issue RFPQ for IRM Facility	0 days	Fri 12/15/17	Fri 12/15/17
RFPQ for IRM Facility - Bid Open Period	40 days	Fri 12/15/17	Thu 2/8/18
Review/Evaluate IRM RFPQ Submissions	30 days	Mon 2/12/18	Fri 3/23/18
Develop Preliminary Business Case and ID Qualified Vendors	35 days	Mon 2/12/18	Fri 3/30/18
IRM RFP Process	**295 days**	**Mon 2/12/18**	**Fri 3/29/19**
Develop IRM RFP Scope Definition	35 days	Mon 2/12/18	Fri 3/30/18
Secure Feedstock commitments/agreements	75 days	Mon 4/2/18	Fri 7/13/18
Confirm resource reuse opportunities	75 days	Mon 4/2/18	Fri 7/13/18
Develop IRM RFP Documentation	95 days	Mon 4/2/18	Fri 8/10/18
Issue RFP for IRM Facility	0 days	Tue 9/4/18	Tue 9/4/18



CRD IRM Project Plan Outline

Task Name	Duration	Start	Finish
RFP Bid Open Period	74 days	Tue 9/4/18	Fri 12/14/18
Evaluate IRM RFP Submissions & Negotiate with Preferred Vendor	75 days	Mon 12/17/18	Fri 3/29/19
Implementation of Preferred IRM Solution	**1055 days**	**Mon 12/17/1**	**Mon 1/2/23**
Final Business Case Including Financing Options	75 days	Mon 12/17/18	Fri 3/29/19
Detailed Implementation Plan (including regulatory approvals, environmental requirements, consultation plan)	40 days	Mon 2/4/19	Fri 3/29/19
Decision to Proceed with IRM Solution	0 days	Mon 4/1/19	Mon 4/1/19
Review and Align IRM Project Plan and ISWRMP Plan	45 days	Mon 3/4/19	Fri 5/3/19
Permitting Process	455 days	Mon 4/1/19	Fri 12/25/20
Design and Engineering	460 days	Mon 4/1/19	Fri 1/1/21
Construction	520 days	Mon 1/4/21	Fri 12/30/22
IRM Facility Commences Operation	0 days	Mon 1/2/23	Mon 1/2/23
SWMP Planning Process	**454 days**	**Mon 10/2/17**	**Fri 6/28/19**
Step 1 - Reinitiate Planning Process	105 days	Mon 10/2/17	Fri 2/23/18
Step 2 - Set Plan Direction	65 days	Mon 2/26/18	Fri 5/25/18
Step 3 - Evaluate Options	90 days	Mon 5/28/18	Fri 9/28/18
Review and Consultation	130 days	Mon 10/1/18	Fri 3/29/19
Submit SWMP to the MOE for Approval	0 days	Fri 6/28/19	Fri 6/28/19
Other Milestones	**916 days**	**Fri 6/28/19**	**Fri 12/30/22**
Submit Definitive Biosolids Plan to the Minister of Environment	0 days	Fri 6/28/19	Fri 6/28/19
Residual Treatment Facility Commences Operation, Produces Class A Biosolids	0 days	Mon 6/1/20	Mon 6/1/20
Short-term Class A Biosolids Storage (if required)	675 days	Mon 6/1/20	Fri 12/30/22



APPENDIX B

IRM Request for Qualifications (RFQ)

Draft Outline

Capital Regional District

Advanced Integrated Resource Management (IRM) Project

August 23, 2017

1. Introduction

On June 28, 2017 the Integrated Resource Management Advisory Committee (IRMAC) recommended to the CRD Environmental Services Committee that five key deliverables be prepared and delivered for the September IRMAC meeting, based on the staff report regarding Advanced Integrated Resource Management, Next Steps and the presentation that was provided regarding the IRM Road Map. These recommendations were approved by the Environmental Services Committee on June 28th, 2017 and subsequently by the CRD Board. One of these five key deliverables is an IRM Request for Qualification (RFQ) Outline.

The following describes the proposed approach to undertake the IRM RFQ along with the proposed IRM RFQ Outline. This approach and the IRM RFQ Outline reflects the staff reports and documents developed to-date in support the IRM process including the outcome of the RFEOI process, the outcome of discussions with CRD staff and work completed on other components of the IRM Project Plan.

2. Alignment of the IRM RFPQ Within the IRM Project Plan

The proposed IRM Work Plan submitted to the Province in May 2017 indicated that in the latter half of 2017 the CRD would issue an RFPQ for an IRM facility. Since that time, the CRD has considered the approach to integration of the RFQ process within the overall IRM Project Plan, and have updated the approach and timing for the RFQ process within the IRM Project Plan Outline which is addressed under separate cover. Implications of the overall IRM Project Plan in regards to the content and approach used to undertake the IRM RFQ include the following:

a) The outcome of the IRM Facility Tour will be used to inform the RFQ. As a result finalization of the RFPQ document would be undertaken subsequent to the Facilities Tour to reflect the outcome and any IRM project recommendations arising from the tour.

b) The CRD will not be in a position as of late 2017 to 'guarantee' all of the feedstock types or quantities that could be made available for an IRM solution. The outcome of the RFP process for the Residual Treatment Facility will be understood in late 2017 and will allow for greater definition of the biosolids material stream in the IRM RFQ document. However, work on the Solid Waste Management Plan (SWMP) process and decisions related to flow control that would be required to guarantee other solid waste feedstock materials, will not be completed as of the time the RFQ needs to be finalized and released in order to support the overall IRM Project Plan.

   As a result, this RFQ would not seek to pre-qualify service providers capable of managing specific feedstock as required by the CRD, other than management of biosolids. Rather the RFQ would seek to pre-qualify service providers that demonstrate that they have the capability to manage biosolids along with one or more other solid waste streams. The outcome of the RFQ could result in biosolids/raw sludge identifying service providers that demonstrate capability to

manage the full range of the potential CRD liquid and solid waste feedstock within a single integrated IRM facility as well as service providers that can manage some of these materials with their proposed technology, potentially requiring a multi-facility approach to address the full spectrum of potential IRM feedstock.

c) In most RFQ processes, a preferred type of technology or subset of technologies is identified prior to development and release of the document, which focuses the exercise to qualifying vendors with specific technologies that meet key technical criteria. This is not possible for the IRM RFQ process for two key reasons:

   i. Firstly, it is difficult (to impossible) to scope the technologies that are the subject of an RFQ, without first being able to scope or guarantee the feedstock that must be managed by the facility. The current spectrum of feedstock is capable of being managed through a range of mechanical, biological and thermal technologies.

   ii. Secondly, to support the alignment of the IRM Project Plan with the ISWRMP process, decisions cannot be made to scope or focus technologies this early in the concurrent processes, without constraining the ISWRMP planning process in a way that is not consistent with provincial solid waste management planning policy.

   iii. As a result, the RFQ would be designed to qualify service providers that demonstrate capability to manage some or all of the potential IRM feedstock, and the technologies proposed by those service providers that meet the qualification criteria will be used to inform the ISWRMP process and subsequent steps of the IRM Project Plan.

d) The outcome of the RFEOI process, as documented in the report on the detailed analysis of the RFEOI responses, did not identify any consensus or focus by the technology providers on any specific service delivery models. Interest was expressed by the majority of respondents on a longer term of agreement (20+ years) for some form of Design, Build, Operate (DBO) service delivery model. There was wide variation in the type of the preferred deal structure identified by respondents. As noted below, it is recommended that concurrent with the development of the IRM RFQ that an assessment of risk management approaches, service delivery models and contract structures be undertaken to focus the RFQ approach.

e) Generally for similar projects a municipality would be advised to develop a Preliminary Business Case in order to determine if a project of this nature was viable, and in the event that it was viable the outcome of the business case would be used to scope the subsequent procurement process including identification of the service delivery model / contract structure and risk management approaches that would be applied during procurement.

   The timeframes under which the IRM Project Plan must be developed and completed does not allow for a separate business case to be developed in advance of the RFQ. Instead, concurrently with development of the IRM RFQ document an assessment of service delivery models / contract structures will be undertaken and risk management approaches will be defined. This

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will be provided in a separate report to the CRD and will be reflected in the RFQ document. The RFQ outline includes components related to the submission and evaluation of information on financial capability, which will be adjusted based on the outcome of the assessment of service delivery models and the CRD's preferred risk management approach.

3. IRM RFQ Outline

The following Table 1, provides an IRM RFQ outline, identifying key components of the RFQ. As the RFQ is developed some adjustments to the content/structure of the RFQ will be required to reflect the outcome of the IRM Facility tour and the assessment of service delivery approaches. In addition the RFQ outline will be reviewed and may be adjusted by the CRD Procurement, Legal and Contracts teams, to ensure that this document aligns with the CRD's procurement and contract approaches.

Table 1 Proposed IRM RFQ Outline

Section Number	Content	Description
1.	**Introduction**	Overview of Project
2.	**Purpose**	Describes CRD Goals and Objectives
3.	**Background / History** a) IRM and CALWMP Processes b) Current Waste Management System c) Additional Background Information d) Objectives e) Scope of Project	Provides history detailing why CRD is conducting this procurement. Intended to demonstrate that this is a viable serious opportunity.
4.	**Procurement Process and Project Implementation Overview** a) Definitions b) Overview of the Procurement Process c) Procurement Schedule d) Evaluation Process e) Clarification of Submissions f) Reference Checks g) Reference Facilities Site Visits (optional) h) Changes to Submissions i) No Honorarium j) No Contact and Lobbying k) Confidential Information l) Conflict of Interest m) Fairness Advisor	Describes the key overall mechanics of the procurement process.
5.	**General Conditions** a) CRD Rights b) Conflict of Interest	Highlights specific important provisions that the Proposers need to keep in mind.

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	c) Confidentiality d) Equal Opportunity and Nondiscrimination e) Submission Validity	
6.	**Submittal Instructions** a) Submission b) Deadline Obtaining the Document c) Communications d) Contact Person e) Language of Communication f) Requests for Clarifications and Issuance of Addenda g) Site Visit (site visit to location identified by CRD for IRM facility) h) Process for Revision of Submissions i) Technologies j) Proponent i. Proponent Technical Team Membership ii. Proponent Financing Team Members iii. Project Company k) Service Delivery Model / Contract Structure	Provides specific details related to the submission process and key participants.
7.	**Submission Documentation Requirements** a) Transmittal Letter b) Response Security and Insurance Letters c) Executive Summary d) Proponent Team i. Organizational Information ii. Experience and Staffing e) Financial Capability f) Proposed Technical Approach for IRM Project i. Proposed Feedstock ii. Operational Approach and Process iii. Detailed Process Description and Outputs g) Reference Facilities	Outline of Response format. The intent is to control the format of the Response to help the review process by clearly delineating how the information is to be provided.

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	i. Reference System Identification and Contact Information ii. Reference System Description iii. Process Narrative iv. Process Schematic and Drawings v. System Mass and Energy Balances vi. Feedstock Composition vii. Operating History viii. Product Recovery and Marketing ix. Environmental Performance Summary – Emissions x. Environmental Performance Summary – Nuisances **a)** Additional Information	
8.	**Qualification Review (Evaluation)** a) Approach b) Mandatory Requirements c) Proponent Team Evaluation i. Organizational Structure of the Project Company ii. Experience of the Project Lead iii. Experience of the Project Technology Provider(s) iv. Experience of the Project Designer v. Experience of the Project Constructor vi. Experience of the Project Operations and Maintenance Service Provider d) Technical Evaluation i. Similarity of Scale ii. Similarity of Feedstock iii. System Reliability iv. System Availability	Describes the Evaluation Process so that the Responders fully understand the CRD's approach to identifying qualified service providers.

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	v. Recovery of Products for Beneficial Use (materials and energy) vi. Environmental Performance e) Financial Capability Evaluation i. Financial Approach ii. Financial Condition iii. Financial Capacity iv. Track Record and Experience of the Financing Team Members	
FORMS	Form of Security and Insurance Letters Team, Technical and Financial Submission Forms Reference Systems	Detailed forms to control the manner in which key information is provided.
CRD DATA	Solid Waste Quantity Data Solid Waste Composition Data CRD IRM Site Information	Essential background Data

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The following provides a breakdown of the IRM RFQ activities that would be undertaken to complete the RFQ process:

a) Development of the RFQ document:
   - Assess and scope Project service delivery models/contract structure (e.g. financing, ownership, operation) and risk management approaches
   - Prepare components for team qualifications
   - Prepare components for technology qualifications
   - Prepare components for financing qualifications
   - Develop full draft RFQ
   - Review and finalization of RFQ
   - Release of RFQ

b) RFQ Submission Window:
   - Due to complexity of the RFQ (which is required to provide flexibility for potential outcomes) recommend at least 60 days submission window
   - A number of enquiries during this window should be anticipated

c) RFQ Evaluation:
   - Prior to the RFQ submission deadline an evaluation framework would be developed and evaluator training would be completed
   - RFQ submissions would be reviewed. There may be a need to accommodate commercially confidential meetings/discussions with proponents to clarify aspects of their submissions under the guidance of the CRD Fairness Advisor
   - Completion of RFQ evaluation, development of recommendations and CRD Staff Report
   - Completion of the Preliminary IRM Business Case

4. Conclusion

The outcome of the RFQ along with the Preliminary Business Case will provide the basis for the CRD to decide whether to proceed with the next IRM steps and would be used to scope any subsequent RFP for an IRM solution.

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ERM 17-30

REPORT TO INTEGRATED RESOURCE MANAGEMENT ADVISORY COMMITTEE
MEETING OF WEDNESDAY, JUNE 28, 2017

SUBJECT **Advanced Integrated Resource Management – Next Steps**

ISSUE

To present the next steps in the development of the Advanced Integrated Resource Management (IRM) Project.

BACKGROUND

The recent Advanced Integrated Resource Management (IRM) Project – Request for Expressions of Interest (RFEOI) gathered information to better inform the CRD of IRM market capabilities and considerations prior to embarking on an IRM procurement process. The outcome of the RFEOI process was not intended to qualify technologies or respondents, nor was it intended to validate partners.

The CRD received ten RFEOI submissions that propose a variety of IRM technologies, feedstocks and end uses. An initial high-level assessment of the responses was presented to this advisory committee in April 2017. Additional clarification was sought from all respondents to better inform the detailed analysis.

Key findings from the detailed analysis point to a number of next steps to advance the initiative. The primary next step in the IRM process is to draft an IRM Project Plan outline, together with the following short-term deliverables:

- a gap analysis to complete the evaluation of the broader array of technologies and feedstock combinations (as required in the provincial approval of the Core Area Liquid Waste Management Plan, Amendment No. 11)
- a proposed IRM facilities tour plan to address identified information gaps; and
- a summary of potential policy/project implications resulting from the CRD's lack of flow control over much of the waste feedstock.

The gap analysis bulleted above will be informed by a jurisdictional review of how similar-sized and larger municipalities within BC, North America and further abroad successfully and beneficially reuse biosolids. This review was also directed by the Minister of Environment as a condition of approval for Amendment No. 11 of the Core Area Liquid Waste Management Plan, and will be presented to the Advisory Committee in September.

The IRM Project Plan, which builds on the IRM work plan that was submitted to the Province at the end of May (Appendix A), will serve as a road map and will be built over time as the process evolves and further deliverables are identified.

ALTERNATIVES

Alternative 1

That the Integrated Resource Management Advisory Committee recommend to the Environmental Services Committee:

That staff be directed to prepare the following deliverables for the September 2017 IRM Advisory Committee meeting:

- a draft Integrated Resource Management Project Plan outline
- a gap analysis to complete the evaluation of the broader array of technologies and feedstock combinations (as required in the provincial approval of the Core Area Liquid Waste Management Plan, Amendment No. 11)
- a proposed IRM facilities tour plan to address identified information gaps; and
- a summary of potential policy/project implications resulting from the CRD's lack of flow control over much of the waste feedstock.

Alternative 2

That staff revise the next steps in the IRM process as directed by the IRM Advisory Committee.

POLICY IMPLICATIONS

IRM has the potential to impact every aspect of the overall waste management system. IRM in the Capital Region is predominantly driven by the solid waste streams, as biosolids comprise a relatively small proportion of the total combined liquid and solid waste streams. The CRD does not have flow control over the vast majority of its solid waste streams, which presents a significant risk to the IRM project, as identified by the RFEOI respondents.

If thermal treatment technology (mass burn, gasification, pyrolysis) is used to produce energy from Municipal Solid Waste, the Province expects local governments to have a minimum target of 70% reduction of solid waste from reduce, reuse and recycle initiatives before moving to a thermal treatment technology for residuals management. Furthermore, an amendment to the CRD Solid Waste Management Plan would be necessary to move in this direction. Supporting such a plan amendment and the fundamental shift in waste management will necessitate ongoing and meaningful public and First Nations consultation and deep community support.

CONCLUSION

The CRD has initiated the Advanced Integrated Resource Management Project process by issuing a Request for Expressions of Interest and has obtained valuable information. The next step in the process is to prepare the initial deliverables in the development of a draft IRM Project Plan for review by committee in September 2017.

RECOMMENDATION

That the Integrated Resource Management Advisory Committee recommend to the Environmental Services Committee:

That staff be directed to prepare the following deliverables for the September 2017 Integrated Resource Management Advisory Committee meeting:

- a draft Integrated Resource Management Project Plan outline
- a gap analysis to complete the evaluation of the broader array of technologies and feedstock combinations (as required in the provincial approval of the Core Area Liquid Waste Management Plan, Amendment No. 11)
- a proposed IRM facilities tour plan to address identified information gaps; and
- a summary of potential policy/project implications resulting from the CRD's lack of flow control over much of the waste feedstock.

Submitted by:	Russ Smith, Senior Manager, Environmental Resource Management
Concurrence:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

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Attachment: Appendix A – Proposed Integrated Resource Management Work Plan

PROPOSED INTEGRATED RESOURCE MANAGEMENT WORK PLAN

June 2017	• Core Area Liquid Waste Management Plan biosolids requirements: jurisdictional review, assessment of full spectrum of beneficial uses • Detailed review and assessment of Request for Expressions of Interest submissions
July 2017	• Draft Integrated Resource Management (IRM) Project Plan • Pre-Request for Qualifications (RFQ) consultation/scope definition for IRM facility
Q3 2017	• Review Draft IRM Project Plan with Ministry of Environment (MoE) staff and First Nations for feedback and alignment • Issue Request for Pre-Qualifications (RFPQ) for IRM facility
Q4, 2017	• Review/evaluate results of IRM RFPQ and evaluate the feasibility of an integrated solution • Work with MoE staff to finalize IRM Project Plan (including a public consultation plan and timeline)
Q1, 2018	• Present full business case and identification of qualified vendors from IRM RFPQ process • Determine regulatory requirements for IRM pilot (if warranted) • Obtain permits for IRM pilot (if warranted)
Q1, 2018 up to Q1, 2019	• Conduct IRM pilot project (if warranted) • IRM Request for Proposals (RFP) scope definition and develop IRM RFP document • Secure IRM feedstock commitments/agreements • Confirm IRM resource reuse opportunities • CRD Board decision to proceed • Issue RFP for full-scale advanced IRM facility • Evaluation of IRM RFP submissions and negotiations with preferred bidder • Review of financing options • Determine regulatory approvals and environmental requirements for preferred IRM facility
2019/2020	• Permitting process for the long-term advanced IRM facility - legal - technical - environmental (EIS) - public consultation, as required • Design and engineering of long-term advanced IRM facility
June 30, 2019	• Submit definitive IRM Plan to the Minister of Environment
January 1, 2021	• Residual treatment facility starts operation and produces Class A biosolids • Short-term Class A biosolids storage, if required
2021 & 2022	• Construction and commissioning of long-term advanced IRM Facility
January 1, 2023	• IRM facility starts operation

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ERM 17-15

REPORT TO INTEGRATED RESOURCE MANAGEMENT ADVISORY COMMITTEE MEETING OF WEDNESDAY, APRIL 12, 2017

SUBJECT **Advanced Integrated Resource Management – Next Steps**

ISSUE

To present a summary of the results of the Request for Expressions of Interest for Advanced Integrated Resource Management and outline next steps.

BACKGROUND

At its February 8, 2017 meeting, the Capital Regional District (CRD) Board approved the Advanced Integrated Resource Management (IRM) Project – Request for Expressions of Interest (RFEOI) documentation and directed staff to proceed with issuing an RFEOI. The RFEOI is intended to explore the market interest in beneficially using locally available solid waste and liquid waste residual materials as feedstock for an IRM facility. The information gathered by the RFEOI process will help to initiate the requirement for assessing IRM options, as stipulated in Amendment No. 11 of the Core Area Liquid Waste Management Plan (CALWMP), outlined in Appendix A.

The CALWMP requires the CRD to submit, by May 31, 2017, a work plan that outlines the steps and schedule the CRD will implement to develop a definitive plan for the beneficial reuse of biosolids by June 30, 2019. The CRD is proposing that the CALWMP requirements be met by providing the province with a comprehensive Integrated Resource Management Work Plan (Appendix B).

The CRD received ten RFEOI submissions that propose a variety of IRM technologies, feedstocks and end uses. Appendix C presents an initial high-level assessment of the responses to the RFEOI, prepared by the CRD's independent IRM specialist, HDR Consultants.

The implementation of a full-scale IRM facility, potentially including a pilot project, will likely take about four years, with up to two years for the permitting process and another two years for construction and commissioning of an IRM facility. Development of an IRM facility in the CRD will be subject to significant policy implications and extensive legal, technical, environmental, consultation and notification requirements. In addition, the IRM project will require stringent regulatory approvals, which could include a waste discharge authorization, completion of an environmental impact study and issuance of an operational certificate. Staff will work closely with provincial Ministry of Environment staff to ensure the MOE is proactively engaged on issues that may impact the approval requirements and timelines for this project. Regardless, the best case approval scenario will still require short-term storage, at Hartland landfill, of Class A biosolids generated by the Residual Treatment Facility, starting January 2021.

The CRD's proactive IRM approach is consistent with the requirement by the Minister of Environment for a plan for the beneficial reuse of biosolids, as it integrates solid and liquid waste streams to maximize resource recovery and generate energy/revenue through combined processing of some or all of these materials. The Integrated Resource Management Work Plan outlines the steps required to address the regulatory, technical and policy implications that will allow for the development of a plan for the beneficial reuse of biosolids as part of an integrated

waste management solution. This work plan will be submitted to the Minister of Environment by May 31, 2017.

NEXT STEPS

- May 2017 – once approved by CRD Board, staff will submit the IRM Work Plan to the Province to fulfill the May 31, 2017 deadline under the CRD's Core Area Liquid Waste Management Plan
- June 2017 – staff will present a detailed evaluation and assessment of IRM options based on RFEOI submissions to the IRM Advisory Committee
- June 2017 – staff will present, as required by the CALWMP, a jurisdictional biosolids review and an assessment of the full spectrum of biosolids beneficial uses
- July 2017 – staff will present a draft IRM Project Plan to the IRM Advisory Committee for feedback prior to starting the IRM procurement process

ALTERNATIVES

Alternative 1

That the Integrated Resource Management Advisory Committee recommend to the Environmental Services Committee:

1. That the Integrated Resource Management Work Plan be submitted to the Minister of Environment by May 31, 2017; and

2. That this report be forwarded to the Core Area Liquid Waste Management Committee, the Saanich Peninsula Wastewater Commission and the Core Area Wastewater Treatment Project Board for information.

Alternative 2

That staff be directed to revise the Integrated Resource Management Work Plan for review by the Environmental Services Committee at its April 26, 2017 meeting.

ECONOMIC IMPLICATIONS

The range of estimated IRM technology costs will be summarized in the detailed RFEOI analysis, to be completed by HDR Consultants for the June 2017 IRM Advisory Committee meeting.

ENVIRONMENTAL IMPLICATIONS

Integrated resource management contributes to sustainability by maximizing beneficial reuse opportunities that recover resources from waste, generate energy, reduce greenhouse gas emissions, and extend the life of Hartland landfill.

The IRM technologies that end up being considered by the CRD will have to be assessed based on the environmental risk of potential contaminants contained in the various available feedstocks.

CORE AREA WASTEWATER TREATMENT IMPLICATIONS

The Core Area Wastewater Treatment Plant Residual Treatment Facility (RTF) procurement has been structured to ensure that up to 50% of raw residuals produced at the McLoughlin treatment plant can bypass the RTF. This contractual and operating flexibility supports the viability of IRM solutions that rely upon the incorporation of both raw residuals and Class A biosolids.

CONCLUSION

The Capital Regional District is working on an integrated resource management solution that integrates solid and liquid waste streams to maximize resource recovery and revenue generation through combined processing of some or all of these regional materials. The CRD received ten Request for Expressions of Interested submissions that propose a variety of IRM technologies, feedstocks and end uses. This report presents an initial assessment of the results of the Request for Expressions of Interest for an Advanced Integrated Resource Management Project.

RECOMMENDATION

That the Integrated Resource Management Advisory Committee recommend to the Environmental Services Committee:

1. That the Integrated Resource Management Work Plan be submitted to the Minister of Environment by May 31, 2017; and

2. That this report be forwarded to the Core Area Liquid Waste Management Committee, the Saanich Peninsula Wastewater Commission and the Core Area Wastewater Treatment Project Board for information.

Submitted by:	Russ Smith, Senior Manager, Environmental Resource Management
Concurrence:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

RS:ac

Attachments: Appendix A – Letter from Minister of Environment, November 18, 2016
Appendix B – Proposed Integrated Resource Management Work Plan
Appendix C – Initial Assessment of Responses to RFEOI – HDR Inc.

BRITISH COLUMBIA

Reference: 305517

November 18, 2016

Jane Bird
Chair, Core Area Wastewater Treatment Project Board
Capital Regional District
PO Box 1000, 625 Fisgard Street
Victoria BC V8W 2S6

Dear Ms. Bird:

Thank you for your letter of November 17, 2016, regarding my conditional approval of Amendment No. 11 to the Core Area Liquid Waste Management Plan (CALWMP). As requested in your letter, I will clarify my conditional approval of Amendment No. 11 to the CALWMP and have also considered your request to modify my condition for Integrated Resource Management.

To address your concerns, I am revising my September 30, 2016, Conditional Approval of Amendment No. 11. This revised Conditional Approval of Amendment No.11 supersedes my September 30, 2016, decision.

To clarify, Amendment No. 11 includes, but is not limited to, the following:

1. A single 108 megalitre/day wastewater treatment plant located at McLoughlin Point within the Township of Esquimalt capable of tertiary treatment for flows up to 2 times Average Dry Weather Flow (ADWF) for the Core Area up to 2040. For flows that are greater than 2 times ADWF but not more than 3 times ADWF for the Clover Point catchment and up to 4 times ADWF for the Macaulay catchment, primary treatment will be guaranteed. Construction of the wastewater treatment plant will be completed by December 31, 2020.
2. Commitment to advance studies for a wastewater treatment proposal in Colwood, including up to $2 million to complete the required technical studies and environmental impact assessments.
3. Conveyance of sewage sludge to the Hartland landfill for processing into Class A biosolids, as defined under the Organic Matter Recycling Regulation, for beneficial use and optimization for potential opportunities for integrated resource management.

...2

Ministry of Environment
Office of the Minister
Mailing Address: Parliament Buildings Victoria BC V8V 1X4
Telephone: 250 387-1187
Facsimile: 250 387-1356

As a condition of my approval and in accordance with Section 24 (5) of the *Environmental Management Act*, I require the Capital Regional District (CRD) develop a definitive plan for the beneficial reuse of biosolids that does not incorporate multi-year storage of biosolids within a biocell. The Ministry of Environment understands that the plan may need to include short-term storage and/or management options as part of implementing the beneficial reuse plan, but the CRD is strongly encouraged to minimize the need for this. Further, I am amending the deadline for submission of the plan from December 31, 2017, to June 30, 2019, under the condition that the CRD submit, by May 31, 2017, a plan that outlines the procedural steps and schedule it will implement to achieve the definitive plan.

The CRD must ensure that the definitive plan for beneficial reuse of biosolids is supported by an assessment of the full spectrum of beneficial uses and integrated resource management options available for the proposed Class A biosolids produced at the Hartland Landfill, and incorporates a jurisdictional review of how similar-sized and larger municipalities within British Columbia, North America and further abroad, successfully and beneficially reuse biosolids. Ministry staff will assist as necessary and can share the ministry's jurisdictional review of how other similar-sized and larger municipalities reuse biosolids.

The beneficial reuse option selected for treated biosolids must meet the requirements for beneficial use specified in the Canadian Council of Ministers of the Environment *Canada-Wide Approach for the Management of Wastewater Biosolids* (October 11, 2012) and be based on scientific evidence. This definitive plan for the beneficial reuse of biosolids will replace the current proposal to use a biocell for storage.

Please continue to work with staff in the Environmental Protection Division of the Ministry of Environment to ensure that the proposed wastewater treatment facility is registered under the Municipal Wastewater Regulation prior to operation of the plant. Please also inform ministry staff of all beneficial uses of biosolids being considered, in order to ensure all necessary forms of authorization are obtained in advance of discharge.

Additionally, the CRD should continue to engage First Nations and the public on all aspects of the CALWMP.

Be advised that the ministry intends to publically post any reports or other documents received by the CRD on the ministry website related to this conditional approval, the CALWMP and this activity regulated under the *Environmental Management Act*.

...3

Approval of Amendment No.11 to the CALWMP does not authorize entry upon, crossing over or use for any purpose of private or Crown lands or works, unless and except as authorized by the owner of such lands or works. The responsibility for obtaining such authority shall rest with the local government. This amendment is approved pursuant to the provisions of the *Environmental Management Act*, which asserts it is an offence to discharge waste without proper authorization. It is also the regional district's responsibility to ensure that all activities conducted under this plan amendment are carried out with regard to the rights of third parties and comply with other applicable legislation that may be in force.

Sincerely,

Mary Polak
Minister

cc: Honourable Peter Fassbender, Minister of Community, Sport and Cultural Development
AJ Downie, Director, Environmental Protection Division, Ministry of Environment
Robert Lapham, Chief Administrative Officer, Capital Regional District
Larisa Hutcheson, Interim Project Director, Core Area Wastewater Treatment Project, Capital Regional District
Sharon Singh, Associate, Bennett Jones Vancouver

APPENDIX B

PROPOSED INTEGRATED RESOURCE MANAGEMENT WORK PLAN

June 2017	• Core Area Liquid Waste Management Plan biosolids requirements: jurisdictional review, assessment of full spectrum of beneficial uses • Detailed review and assessment of Request for Expressions of Interest submissions
July 2017	• Draft Integrated Resource Management (IRM) Project Plan • Pre-Request for Qualifications (RFQ) consultation/scope definition for IRM facility
Q3 2017	• Review Draft IRM Project Plan with Ministry of Environment (MoE) staff for feedback and alignment • Issue Request for Pre-Qualifications (RFPQ) for IRM facility
Q4, 2017	• Review/evaluate results of IRM RFPQ and evaluate the feasibility of an integrated solution • Work with MoE staff to finalize IRM Project Plan (including a public consultation plan and timeline)
Q1, 2018	• Present full business case and identification of qualified vendors from IRM RFPQ process • Determine regulatory requirements for IRM pilot (if warranted) • Obtain permits for IRM pilot (if warranted)
Q1, 2018 up to Q1, 2019	• Conduct IRM pilot project (if warranted) • IRM Request for Proposals (RFP) scope definition and develop IRM RFP document • Secure IRM feedstock commitments/agreements • Confirm IRM resource reuse opportunities • CRD Board decision to proceed • Issue RFP for full-scale advanced IRM facility • Evaluation of IRM RFP submissions and negotiations with preferred bidder • Review of financing options • Determine regulatory approvals and environmental requirements for preferred IRM facility
2019/2020	• Permitting process for the long-term advanced IRM facility - legal - technical - environmental (EIS) - public consultation, as required • Design and engineering of long-term advanced IRM facility
June 30, 2019	• Submit definitive IRM Plan to the Minister of Environment
January 1, 2021	• Residual treatment facility starts operation and produces Class A biosolids • Short-term Class A biosolids storage, if required
2021 & 2022	• Construction and commissioning of long-term advanced IRM Facility
January 1, 2023	• IRM facility starts operation

APPENDIX B
Revised April 20, 2017

PROPOSED INTEGRATED RESOURCE MANAGEMENT WORK PLAN

June 2017	• Core Area Liquid Waste Management Plan biosolids requirements: jurisdictional review, assessment of full spectrum of beneficial uses • Detailed review and assessment of Request for Expressions of Interest submissions
July 2017	• Draft Integrated Resource Management (IRM) Project Plan • Pre-Request for Qualifications (RFQ) consultation/scope definition for IRM facility
Q3 2017	• Review Draft IRM Project Plan with Ministry of Environment (MoE) staff and First Nations for feedback and alignment • Issue Request for Pre-Qualifications (RFPQ) for IRM facility
Q4, 2017	• Review/evaluate results of IRM RFPQ and evaluate the feasibility of an integrated solution • Work with MoE staff to finalize IRM Project Plan (including a public consultation plan and timeline)
Q1, 2018	• Present full business case and identification of qualified vendors from IRM RFPQ process • Determine regulatory requirements for IRM pilot (if warranted) • Obtain permits for IRM pilot (if warranted)
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2019/2020	• Permitting process for the long-term advanced IRM facility - legal - technical - environmental (EIS) - public consultation, as required • Design and engineering of long-term advanced IRM facility
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2021 & 2022	• Construction and commissioning of long-term advanced IRM Facility
January 1, 2023	• IRM facility starts operation

Capital Regional District

Initial Assessment, Responses to RFEOI No. 16-1894

Advanced Integrated Resource Management (IRM)

1. Introduction

The Capital Regional District (CRD) issued RFEOI No. 16-1894 as a part of the CRD's exploration of waste management options. Specifically, the CRD desires to better understand the current market capabilities for an integrated waste management solution to manage residues from the Region's existing solid and future liquid waste management facilities. To explore market capabilities, the CRD determined that it would engage the market through an RFEOI and potentially through a subsequent procurement process.

Further the CRD wishes to explore the possibility of integrating solid and liquid waste management interests and maximize resource recovery through integrated processing of some or all of these materials and generate energy/revenue. Completion of the IRM RFEOI process is a critical step in the development of a more definitive IRM plan

2. Overview of RFEOI No. 16-1894

The RFEOI identified that the CRD is seeking a solution or solutions to manage some or all of the following materials:

1. 35,000 tonnes per year of biosolids;
2. 120,000 to 135,000 tonnes per year of general municipal refuse;
3. 8,000 to 12,500 tonnes per year of controlled waste (including screenings and sludge from existing wastewater plants);
4. 15,000 to 20,000 tonnes per year of source separated household organics (kitchen scraps and compostable paper, not including yard and garden wastes); and,
5. 15,000 to 18,000 tonnes per year of yard and garden wastes.

The potential outcome of the RFEOI process could include undertaking a pilot project or directly proceeding to development of a full-scale IRM facility capable at minimum of providing a beneficial reuse solution for the material streams as identified above. The RFEOI clearly indicated CRD is interested in identifying integrated options that present region-wide and/or sub-regional solutions.

Information requested in the RFEOI included:

1. General corporate information;
2. A technical overview of the processing technology;
3. Information regarding reference facilities;
4. Information regarding preferred contract terms, contract structure and allocation of responsibilities; and,
5. Information regarding the need for and interest in undertaking a pilot.

3. Review of RFEOI Responses

The RFEOI was issued on February 16, 2017 and closed on March 20th, 2017. Ten submissions were received. The initial review and assessment of these submissions indicates that:

1. Overall there was a good response to the RFEOI. A reasonable number of submissions were made. Submissions were generally complete and addressed the specific information that was requested.
2. The majority of the respondents are represented in Canada and/or have team members in Canada. This should be helpful during future procurement stages.
3. The majority of respondents proposed approaches capable of integrated resource management including most if not all of the identified CRD solid and liquid waste streams.
4. All of the respondents indicated that their technology was capable of managing the biosolids stream identified in the RFEOI although in some cases there was a lack of clarity as to how exactly it would be managed. In some cases the submissions indicated that they could manage biosolids or sewage sludge.
5. The diverse feedstock sources tend to attract different treatment technologies. Respondents generally focused on organic processes (aerobic/anaerobic) to process organic wastes (biosolids, food waste, yard/garden wastes, the organic fraction recovered from mixed solid waste) and mechanical/thermal processes (RDF, gasification) for mixed waste sources.
6. Reference projects of singular technologies tended to be relevant in terms of similar feedstock, while reference projects from multi-technology proposals tended to reflect only individual components and not the combined systems, as proposed.
7. The majority of respondents prefer that the CRD provide the site for the IRM facility. Many prefer that the CRD owns the IRM facility.
8. The type of business offerings in the submissions were quite varied. Many respondents are open to a variety of development models (DB, DBOM, DBOOT, etc.).
9. The majority of respondents reported their technology as being proven (operating at a commercial level) and do not recommend that the CRD undertake a pilot project. Those

respondents that did not put forward a proven technology, were more interested in, or recommended that the CRD undertake a pilot.

A detailed evaluation of the RFEOI submissions is currently underway, and will be used to support the detailed assessment of IRM options.

CALWMP Requirements	Advanced IRM Investigations	Timeline
	RFEOI (10 Submissions)	April 2017
	IRM Work Plan	May 2017
CALWMP Work Plan and Biosolids Review Requirements	Detailed RFEOI Evaluation	June 2017
	IRM Project Plan Preliminary	July 2017
	Request for Pre-Qualification	November 2017
CALWMP Definitive Plan Requirement	IRM Project Plan Finalized	January 2018
	CRD Board IRM Decision to Proceed	**March 2018**
	IRM Procurement	April 2018
	Permitting and Design	2019-2020
	Construction	2021-2022

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ERM 17-06

REPORT TO INTEGRATED RESOURCE MANAGEMENT ADVISORY COMMITTEE MEETING OF WEDNESDAY, FEBRUARY 8, 2017

SUBJECT **Advanced Integrated Resource Management Project – Request for Expressions of Interest**

ISSUE

To present the Request for Expressions of Interest (RFEOI) document prepared for the development of an Advanced Integrated Resource Management Facility within the Capital Regional District (CRD).

BACKGROUND

At its August 10, 2016 meeting, the CRD Board directed staff to:

1. *retain the services of a procurement specialist to work with staff to develop a Request for Expressions of Interest (RFEOI) for an Integrated Resource Management (IRM) pilot project and bring an RFEOI document back through the Committee to the Board for approval;*

2. *retain the services of an independent IRM specialist to present information to the Board regarding the Sydney, Australia strategic IRM process and to assist with the development of an RFEOI, as outlined above.*

At its November 30, 2016 meeting, the CRD Board directed staff to include in the Integrated Resource Management project Request for Expressions of Interest the following:

1. *A statement outlining the Board's current policy on land application and the concerns which drove its establishment; and*

2. *A request for proponents to outline technologies that will deal with the Board's concerns; how the technology will mitigate the Board's concerns; applicability to the core area, Peninsula and other community sludge/biosolids management problem as a central and/or sub regional solution; costs, history and effectiveness.*

As directed by the Board, CRD staff hired HDR Consulting as the independent IRM specialist to develop an RFEOI for the project. The request is the first step in finding a long-term, integrated solution for managing solid and liquid waste residuals and will provide the CRD with a better understanding of true market capabilities. Market responses would need to demonstrate the ability to meet the full scope of the CRD's goals for an IRM solution, including:

1. technical and commercial maturity
2. process and feedstock flexibility
3. mandatory use of biosolids from core area residuals treatment facility

4. maximum energy output, scalability and flexibility
5. cost effectiveness
6. sustainability
7. maximum beneficial reuse opportunity
8. greenhouse gas reduction potential

The RFEOI describes all feedstock currently available to the CRD and includes: biosolids; source-separated kitchen scraps; yard and garden waste; residual municipal solid waste (MSW); and the potential inclusion of Saanich Peninsula and Sooke wastewater treatment residuals.

The absence of MSW flow control within the CRD, and the inability to guarantee tonnages, significantly raises the level of financial risk on the project and will likely be reflected in the responses to the RFEOI. Commitment on feedstocks supplied by municipal and private sector participants will be discussed as part of a future collaborative RFP process.

Hartland landfill is identified as a potential site for the facility and proponents will also be allowed to present other suitable site options for consideration. Potential proponents are expected to ensure alternate locations have appropriate land use designations by working directly with the appropriate municipality or electoral area.

The results from the RFEOI will be public information and enable the development of a detailed project plan to lay out economic implications, project risks, pilot program details, procurement options, integration with the Core Area Wastewater Treatment Project (CAWTP), regulatory and environmental considerations and implementation timelines. The detailed project plan would be brought back to the Committee for approval.

NEXT STEPS

Following issuance and review of the outcome of this Request for Expressions of Interest (RFEOI) in Q1 2017 and subject to the quality and number of responses received staff recommend the following next steps:

> **Prepare Detailed Project Plan** – Q2 2017 (information from the private sector will be essential to prepare a preliminary Beneficial Reuse of Biosolids Plan outlining procedural steps and schedule to achieve the definitive biosolids reuse plan, as stipulated in the Core Area LWMP Amendment No. 11 conditional approval, and due to the Province by May 31, 2017)
> ↓
> **Request for Pre-qualification** (RFPQ) – Q3 2017, which will include solicitation of information regarding project team experience, financial capacity and preferred business approach, including willingness to provide associated guarantees
> ↓
> and/or **Request for Proposal for Pilot** for certain technologies and/or feedstock (following RFPQ evaluation, if CRD determines that a pilot phase is warranted)

Based on the outcome of either the RFPQ and/or the responses to the RFP for a pilot, update the project plan and proceed with either of the following:

↓

Request for Proposal for Commercial Scale (RFP) following RFPQ evaluation Q1 2018, or some combination of these, anticipating a phased project implementation schedule.

↓

Proceed with the development of a Final Business Case (following evaluation of proposals submitted in response to RFP)
or,

↓

Proceed with the implementation of the Pilot facility (if the CRD determines that a pilot phase is warranted for certain feedstock sources and/or technologies) Q1 2018

↓

Based on the performance of the pilot facility, proceed with the expansion of the pilot facility to implementation of a commercially-sized facility

ALTERNATIVES

Alternative 1

That the Integrated Resource Management Advisory Committee recommend to the CRD Board:

That the Advanced Integrated Resource Management Project – Request for Expressions of Interest be approved and that staff be directed to proceed with the RFEOI and bring back a summary report on the responses received and recommended next steps.

Alternative 2

That staff be directed to not proceed with the RFEOI and report back to Committee with further information.

IMPLICATIONS

Information received from the RFEOI will be instrumental in developing a detailed project plan for moving forward with this initiative and to inform the CAWTP of potential synergies and impacts on the residuals treatment facility project located at Hartland.

CONCLUSION

A Request for Expressions of Interest for an Advanced Integrated Resource Management solution has been prepared for the Committee's consideration.

RECOMMENDATION

That the Integrated Resource Management Advisory Committee recommend to the Capital Regional District Board:

That the Advanced Integrated Resource Management Project – Request for Expressions of Interest be approved and that staff be directed to proceed with the RFEOI and bring back a summary report on the responses received and recommended next steps.

Submitted by:	Russ Smith, Senior Manager, Environmental Resource Management
Concurrence:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

RS/JF/DT:mer

Attachment: Appendix A – Request for Expressions of Interest – Advanced Integrated Resource Management (February 2017)

APPENDIX A



PARKS & ENVIRONMENTAL SERVICES DEPARTMENT

Request for Expressions of Interest

RFEOI No. 16-1894

Advanced Integrated Resource Management

February 2017

REQUEST FOR EXPRESSIONS OF INTEREST

Advanced Integrated Resource Management

RFEOI No. 16-1894

1. Introduction

The Capital Regional District (CRD) is issuing this Request for Expressions of Interest (RFEOI) as a part of the CRD's exploration of waste management options. Specifically, the CRD desires to better understand the current market capabilities for an integrated waste management solution to manage residuals from the Region's existing solid and future liquid waste management facilities. To explore market capabilities, the CRD intends to engage the market through an RFEOI and a subsequent procurement process.

Further, the CRD wishes to explore the possibility of integrating solid and liquid waste management interests and maximize resource recovery through integrated processing of some or all of these materials and generate energy/revenue. The CRD would like to demonstrate leadership, and find a solution that places them at the leading edge of resource recovery, broadening the search for technologies to those that could manage all or some of these materials in an integrated approach.

Interested parties are advised that any information provided in response to this RFEOI may be included in public report(s).

Additional project information is provided in Appendix I.

2. Purpose

The purpose of this RFEOI is to gather information on potentially viable alternatives for processing of the existing solid and future liquid waste residuals that are/will be managed by the CRD. These alternatives will be assessed, and the information will be used to support decision making on the ultimate feedstock, resource/waste processing system configuration and the future procurement steps. The goal of the CRD is to put in place a full scale integrated solution that provides a long term environmentally and economically sustainable system to manage all of the waste streams identified above.

This REFOI includes solicitation of information regarding the Respondents experience with full-scale solutions capable of processing feedstock similar to that being proposed to meet the needs of CRD. One aspect of this REFOI is to obtain information from Respondents that will permit CRD to determine whether or not achieving the goal of a full scale integrated system will require a Pilot program(s) for specific combinations of feedstock and technology prior to making the significant investment associated with implementation of a commercial scale system. Depending on the track record of the application of specific technologies to the type of feedstock being proposed, CRD will assess whether or not a Pilot initiative is warranted. As part of this REFOI, CRD is seeking to confirm:

1. the capability of the vendors to provide a full scale integrated solution to manage the CRD solid and liquid waste streams as identified;
2. the need for a Pilot program (based in part on the status of reference facilities) to demonstrate capability to manage some or all of the CRD solid and liquid waste streams;

3. the level of interest in and viability of the private sector undertaking a pilot program if it would be needed to provide critical data related to the management of CRD's solid and future liquid waste residuals; and,
4. a description of specific value added assets/support that the Respondents can bring to a Pilot initiative.

3. Residual Materials Summary

The CRD is seeking a solution or solutions to manage some or all of the following residual materials:

1. 35,000 tonnes per year of biosolids;
2. 120,000 to 135,000 tonnes per year of general municipal refuse;
3. 8,000 to 12,500 tonnes per year of controlled waste (including screenings and sludge from existing wastewater plants);
4. 15,000 to 20,000 tonnes per year of source separated household organics (kitchen scraps and compostable paper, not including yard and garden wastes); and,
5. 15,000 to 18,000 tonnes per year of yard and garden wastes.

The CRD does not have flow control of municipal, commercial or industrial MSW within the Region. In regards to the general municipal refuse, approximately 30% of this material stream is from largely residential sources from member municipalities. All reference to tonnages for respective feedstock other than biosolids is understood as being an estimate of future volumes based on currently generated quantities. The following table summarizes the material streams managed at the Hartland landfill over the past four years.

Year	General Refuse (tonnes/year)	Controlled Waste (tonnes/year)	Portion of Controlled Waste consisting of WWTP screenings /sludge (tonnes/year)
2013	123,210	8,208	5,086
2014	119,306 (start of kitchen scraps collection program)	8,739	5,707
2015	112,442 (start of ban on kitchen scraps disposal)	10,939	6,065
2016	135,000 (temporary increase in construction waste)	12,594	NA

Further details regarding the general municipal refuse, controlled waste, household organics and yard and garden waste material streams are provided in Appendix II. This includes a material summary for all wastes managed by the CRD in 2014 and the results of a 2016 solid waste stream composition study.

4. RFEOI Objectives

4.1 Part A – Processing Technologies

The primary goal of this RFEOI is to identify technologies which could be implemented by the CRD at full scale as part of an Advanced Integrated Resource Management strategy for the Region's current solid and future liquid residual waste streams. Minimization of technology, operational and commercial risk is a core concern for the CRD, and therefore the field of potential solutions for consideration under this RFEOI should be focused on technologies that are (at least individually in the case of combination schemes) proven at a commercial scale on similar feedstock(s). Proposed solutions should in

particular demonstrate proven ability to meet in full the scope of CRD's Advanced Integrated Resource Management needs and goals including:

1. Technical and commercial maturity, integrate at scale robust and proven systems for feedstock pre-treatment, emission control and safe handling and disposal of processing residuals;
2. Process and feedstock flexibility, provide a high degree of integration with other resource opportunities within the Region;
3. Maximum energy output flexibility, including but not limited to:
   .1 direct use of raw conversion products (e.g. synthesis gas, biogas, methane or other off-gasses and char residuals if produced) for the generation of power and heat on site, or
   .2 their upgrading into high-order energy carriers or products (such as substitute natural gas or hydrogen, renewable natural gas, compressed natural gas or equivalent products, etc.) that can be used for transport fleets and/or delivered off-site;
4. Cost-effectiveness, providing lowest overall net cost to the CRD, with the goal to establish a long-term least cost solution to integrate resource management needs across the Region;
5. Sustainability, ensuring the least impact to the public and the environment;
6. Maximize beneficial reuse opportunities to recover resources from waste; and,
7. GHG emissions reduction potential.

Information provided must cover reference facilities, potential for integration with the Residuals Treatment Facility producing Class A biosolids (mandatory), scalability as it relates to potential sub-regional solutions that can accept biosolids from the Saanich Peninsula Wastewater Treatment plant, District of Sooke and other sources.

4.1.1 Technology Details

Proponents should provide sufficient information to determine if their technology and concept has the potential to address the needs of the Capital Region to manage some or all of its solid and liquid residuals, based on technical information, existing reference facilities and experience. For this purpose, proponents are requested to provide with their responses the following key technology verification details:

1. a technical overview of the proposed technology (or technologies for combination schemes), including details of the core technology, key processing subsystems, acceptable feedstocks, scalability and other details pertinent to the application of this technology as an integrated full-scale solution to manage CRD materials.
2. a list of reference facilities with details regarding the development and financing approach for the facility, feedstock managed and operational track record as well as indicative costs.

Respondents are requested to indicate their interest and approach to exploring and implementing solutions for managing CRD materials in **Attachment A**, Respondent Preference Summary. Respondents are requested to provide an overview of the elements that they have found in their experience to result in successful implementation of a project including (but not limited to):

1. preferred contractual model and long term relationship expectations (DB, DBOM, DBFOM, DBOOM);
2. preference to siting a facility (site provided by CRD, site provided by proponent);
3. ability to secure capital funding applicable to the preferred contracting/financing model;
4. willingness to offer performance guarantees;
5. willingness to take responsibility for establishing/entering into required offtake agreements; and

6. the allocation of other areas of responsibility associated with design, construction, operation and maintenance of a facility(ies).

4.2 Part B – Pilot Program

As part of the review process the CRD is interested in:

1. assessing the whether the need exists for a Pilot program to demonstrate the efficacy of their proposed technology;
2. identifying the types of assets that the Respondents bring to the opportunity; and,
3. determining the Respondents willingness to engage with the CRD in carrying out a Pilot program to demonstrate the ability of their proposed technology to effectively upcycle applicable feedstock(s) for those feedstocks which lack a reference facility at the scale required.

The CRD understands and acknowledges that the facility where the pilot could be carried out may be at a designated site within the CRD or might be at an existing out of region commercial or demonstration facility. In order to be considered for the commercial scale project, proponents will need to clearly demonstrate that the key conversion technology (or technologies) have the commercial maturity, scalability, demonstrated ability to handle the feedstock(s) and product flexibility required to meet the region current and future integrated resource management needs. A Pilot program will be considered in those instances where the applicable technology has not been demonstrated within a reasonable scale on the feedstock proposed. Respondents are requested to identify potential pilot program candidates in **Attachment B**, Potential Pilot Program Candidates.

Available information regarding material composition, energy content etc. is provided in Appendix II. Respondents should note for the CRD any specific analyses that they would find necessary to determine if a pilot is reasonable/required for their technology.

Respondents are requested to provide data regarding what elements of a pilot project they are able to provide, including any details regarding the location and size of the Pilot, feedstock preparation, product marketing, and residuals management. Interested and qualified companies should have a proven track record in the development, commissioning and operation of commercial-scale technologies that can work with the CRD to run a pilot program if CRD determines is the best approach to realizing its long term goals.

5. Proposed Timeline

Following issuance and review of the outcome of this Request for Expressions of Interest (RFEOI) in Q1 2017 and subject to the quality and number of responses received the CRD may proceed with a procurement process as follows:

Prepare Detailed Project Plan (Q2 2017)
↓
Request for Pre-qualification (RFPQ) Q3 2017 which will include solicitation of information regarding project team experience, financial capacity and preferred business approach including willingness to provide associated guarantees.
↓
And/or Request for Proposal for Pilot for certain technologies and/or feedstock (following RFPQ evaluation if CRD determines that a Pilot Phase is warranted)

Based on the outcome of either the RFPQ and/or the responses to the RFP for a Pilot, the CRD may elect to proceed with either of the following:

↓

Request for Proposal for Commercial Scale (RFP) following RFPQ evaluation Q1 2018 or some combination of these anticipating a phased project implementation schedule.

↓

Proceed with the development of a Final Business Case (following evaluation of proposals submitted in response to RFP)

Or,

↓

Proceed with the implementation of the Pilot facility (if the CRD determines that a Pilot Phase is warranted for certain feedstock sources and/or technologies) Q1 2018

↓

Based on the performance of the Pilot facility, proceed with the expansion of the Pilot facility to implementation of a commercially sized facility

6. Submission Requirements

The following information is requested – noting that Respondents may elect to provide any portion or all of the information requested below, at their discretion. Respondents should be aware that the more information that is provided the better able the CRD will be to assess the Respondents potential added value in meeting the CRD's needs.

The purpose of the RFEOI process is to gather as much information as possible ensuring the CRD is an informed customer and that our eventual RFPQ and/or RFP documents and evaluation criteria consider all key aspects in a procurement of this nature – including various technology options. There will be no contract awarded as a result of this RFEOI process. This is an information gathering exercise only and does not preclude any interested party from participation in any subsequent procurement opportunity. Your response to this RFEOI should include detailed information about your company, previous experience, your technology and your place in the market. Interviews/presentations may be scheduled as part of this process.

To assist with the review of submissions, information should be provided in five sections as noted below.

6.1 General Corporate Information

Provide an overview of your corporation or entity including information about your structure, year, and jurisdiction of incorporation or establishment and primary lines of business. Information should include:

1. legal name
2. address
3. business e-mail address
4. business phone number
5. contact name
6. contact e-mail address
7. contact phone number

6.2 Processing Technology

Provide a **technical overview** of the proposed technology (or technologies for combination schemes), including:

1. an overview of the core technology with details of the range of designs and processing capacities available;
2. an overall process schematic diagram illustrating waste and auxiliary inputs, conversion outputs and processing residuals;
3. a detailed list of key processing subsystems and components;
4. details of acceptable feedstock composition and quantity and typical feedstock pre-processing requirements (e.g. feedstock sorting/separation, moisture and size reduction requirements) necessary the proposed technology;
5. information regarding the scalability of the technology and capability to provide a full-scale integrated solution to manage the CRD solid and liquid waste streams and/or sub-regional solutions;
6. identification of potential site size and siting requirements (e.g. access to key infrastructure);
7. ability to meet environmental standards (e.g. air, noise and wastewater emissions); and,
8. any other information that would be pertinent for the application of the proposed technology for the CRD which could include (but not be limited to):
    .1 Typical energy balance;
    .2 GHG emission reduction potential;
    .3 Potential markets for recovered materials.

6.3 Reference Facilities

Provide a list of **reference facilities** with details regarding:

1. site and location (including type of setting e.g. rural / urban);
2. owner/operator (including reference contact details and ability to visit);
3. year of entry into service and current status (under construction/commissioning /operational/decommissioned);
4. type of feedstock and throughput capacity (in tonnes per day);
5. average annual plant availability;
6. average annual product and residuals yields;
7. indicative capital costs (noting the timeframe the capital investment was made) and annual operating and maintenance costs (total or on a per tonne-year basis);
8. land area requirements (including waste storage and all auxiliaries);
9. general mass and energy balances for the reference facilities, noting all energy and other inputs; to the process as well as all outputs; and
10. a description of financing sources and uses.

6.4 Preferred Project Arrangements

Provide information as outlined in Attachment A, Respondent Preferred Project Arrangements including:

1. A.1 Preferred Project Business/Contract Structure; and,
2. A.2 Preferred Allocation of Responsibilities.

Respondents can include additional detail in this section as it relates to their preferred project arrangements, beyond that outlined in Attachment A.

6.5 Pilot Program

Provide information as outlined in Attachment B, Potential Pilot Program Candidates. Please complete the table summarizing your planned approach to managing CRD materials and whether or not a pilot would be appropriate based on your preferred feedstock(s) and proposed technology solution. Respondents can include additional detail in this section as it relates to the potential role of a pilot program in the implementation of a pilot program related to their specific technology.

7. General Terms and Conditions

Issuance of the RFEOI, and/or the decision not to proceed with the RFQ or RFP, will not cause the CRD to be liable for any costs incurred by Respondents.

The CRD may, in its sole and absolute discretion, independently verify any information in any submission. The CRD reserves the right to debrief Respondents regarding the outcome of the RFEOI.

This RFEOI does not create a tender or RFP process. This RFEOI is not an offer to contract made by the CRD. By this RFEOI, the CRD reserves to itself the right to review, consider and analyze the RFEOI's, select short-listed respondents, and sign a future agreement with one or multiple respondents. Without limiting the generality of the foregoing, the CRD reserves the right to:

1. reject any RFEOI response, whether or not complete and whether or not it contains all the requested information;
2. require clarification of any RFEOI response;
3. request additional information on any RFEOI respondent;
4. reject any or all RFEOI responses without any obligation, or any compensation or reimbursement to the Respondents;
5. refuse to proceed with the RFQ, RFP , pilot or commercial facility;
6. modify this RFEOI at any time;
7. proceed with the project in some other manner separate from this RFEOI; and
8. re-advertise for new submissions for this work or for work of a similar nature.

8. Submission Review

The CRD will review and analyze the RFEOI submissions seeking to identify those that demonstrate proven ability to meet in full the scope of CRD's Advanced Integrated Resource Management needs and goals. The CRD reserves the right to retain additional expertise to support the submission review process. Key aspects of the submissions that will be assessed in the review process will include:

1. The capability of the technology to provide a comprehensive integrated resource management solution based on the technology overview;
2. The responses to Attachment A, particularly as it relates to potential risks and allocation of risk;
3. Whether the technology represents a proven technology for managing the CRD's solid and liquid waste streams based on the reference facility information:
4. The range of costs as identified for the reference facilities; and
5. GHG emission reduction potential and carbon neutrality.

9. Conflict of Interest

A Respondent must disclose in their Response any actual or potential conflicts of interest and existing business relationships it may have with the CRD, its elected or appointed officials or employees.

10. Limitation of Liability and No Claim

The CRD and its directors, officers, employees, agents, consultants and advisors are not liable or responsible for any oral, verbal or written information, or any advice, or any errors or omissions, which may be contained in this RFEOI or otherwise provided to a Respondent pursuant to this RFEOI. The CRD and its representatives, agents, consultants and advisors will not be liable to any Respondent for any claims, whether for costs, expenses, losses or damages, or loss of anticipated profits, or for any other matter whatsoever, incurred by a Respondent in preparing or making a submission, or participating in any discussions or negotiations or any other activity related to or arising out of this RFEOI.

By responding to this RFEOI a Respondent agrees that it will conduct its own independent investigations and interpretations and will not rely on the CRD with respect to information, advice, or documentation provided by the CRD.

For certainty, no contractual relations shall exist between the CRD and any Respondent to this RFEOI, except that by submitting a response to this RFEOI a Respondent acknowledges and accepts the provisions of this section, General Terms and Conditions.

11. Ownership of Submissions/Confidentiality

All documents submitted to the CRD, including all RFEOI response documents, any drawings, plans and models (as applicable), become the property of the CRD and will not be returned to the Respondent. They will be received and held in confidence by the CRD, subject to the provisions of the *Freedom of Information and Protection of Privacy Act* of British Columbia (FOIPPA).

FOIPPA governs the collection, use, retention, security, and disclosure of personal information managed by public organizations, including the CRD. FOIPPA also applies to all electronic information accessed or submitted by Respondents. If EOI and any related documents contain protected, proprietary or confidential information, Respondents should identify the specific issue or information and provide supporting reasons why the CRD should not release this information if requested by a FOIPPA inquiry.

12. Future Process

Participation in this RFEOI and the submission of a response to this RFEOI is not a pre-condition to participation in a subsequent commercial process, if any. If the CRD decides, at its sole and absolute discretion, to implement a subsequent commercial process, the CRD may invite proponents who did not participate in this RFEOI to participate in such subsequent process.

13. Form of Submission and Address

Respondents are to submit five (5) complete hard copies of their submission along with one electronically readable copy of the submission on a USB stick.

(by courier)
Capital Regional District
625 Fisgard Street
Victoria, BC V8W 1R7
Attention: Joshua Frederick

(by mail)
Capital Regional District
PO Box 1000
Victoria, BC V8W 2S6
Attention: Joshua Frederick, MASc, P.Eng.

Responses submitted by facsimile communication equipment (FAX) or email will not be considered.

14. Closing Date and Time: April 4, 2017 at 2:00:00 pm local time.

Late responses may be considered at the sole and absolute discretion of the CRD. However, the CRD is not obligated to consider late responses.

Proponents must register with the Parks & Environmental Services Contracts Coordinator (250-360-3284 or smccreesh@crd.bc.ca) to be included on the Registered Proponents List and in order to receive any further communications regarding this RFEOI issued by the Owner. Appendices I, II and III will only be provided to registered proponents.

All communications regarding this REFOI shall be directed to the Parks & Environmental Services Contracts Coordinator (250-360-3284 or smccreesh@crd.bc.ca).

Attachment A Respondent Preference Summary

Respondent Preferred Project Arrangements

Please complete the following table summarizing your preference regarding key elements of a potential project

A.1 Preferred Project Structure

Key Project element	**Respondent Preference**	**Rationale**
Term of Agreement		
Deal Structure (i.e. Design-Build (DB), DBOM (Design Build Operate Maintain), DBOOM (Design Build Own Operate Maintain) DBFOM (Design Build Finance Operate Maintain)		

A.2 Preferred Allocation of Responsibilities

Key Project Element	**CRD Responsibility**	**Respondent Responsibility**	**Shared**	***Comment/Rationale***
Provide Site				
Provide financing				
Arrange Offtake Agreements for Output				
Manage Residuals/Provide Disposal Site				
Own the Facility				
Provide Feedstocks				
Obtain Permits/Licenses				
Changes in Law				
Site Utilities				

Key Project Element	CRD Responsibility	Respondent Responsibility	Shared	*Comment/Rationale*
Geotechnical Risk				
Stakeholder Outreach/Interface				
Performance Guarantees				
Construction Schedule				
Construction Deficiencies				
Compliance with Emission Standards/Regulations				
Sourcing Merchant Waste				
Energy/Commodity Price Risk				

Attachment B Potential Pilot Program Candidates

Please complete the following table summarizing your planned approach to managing CRD materials and whether or not a pilot would be appropriate based on your preferred feedstock(s) and proposed technology solution.

B.1 Pilot Recommendations

Feedstock	Proposed Technology Solution	Demonstrated at Commercial Scale at our Reference Facility	Recommend Pilot Program	Comment
MSW (General Refuse)				
MSW (Controlled Waste)				
Source Separated Organics (kitchen scraps and compostable paper)				
Yard/Garden Wastes				
Biosolids				
Recyclables				

Appendix 1

Project Background

Solid and liquid waste management within the CRD are currently driven by different legislative authorities/requirements and under the administration of different regional committees and Boards. The CRD is seeking a long-term solution for managing solid and liquid residuals that will meet its Advanced Integrated Resource Management goals.

The CRD Corporate Plan for 2015 to 2018 includes Climate Change and Integrated Waste Management as Board priority areas, and Environmental Protection and Regional Infrastructure as key Corporate priority areas. In regards to Integrated Waste Management, the Board's strategic priorities include:

1. acquiring additional expertise on technologies and solutions (including centralized/decentralized approaches and gasification) to liquid and solid waste management;
2. Investigate region-wide solutions to liquid and solid waste;
3. Establish a systematic process of evaluation for all liquid and solid waste decisions;
4. Investigate combined liquid and solid waste management plans;
5. Ensure responsible management of wastewater for the entire capital region.

The CORE Area Project Board's Terms of Reference for the wastewater treatment facility that is planned to come online in 2020 includes the following key goals:

1. optimizing opportunities to recover resources from waste as part of an integrated waste management approach; and,
2. minimizing GHG emissions.

Solid waste generated in the CRD is managed at two specific sites within the region. The CRD owns and operates the Hartland Landfill in Saanich, approximately 14 km north of the City of Victoria. At the current rate of fill, the Hartland landfill has over 30 years of life remaining. Appendix II includes information regarding the contributing sources of waste disposed at the Hartland landfill, and the composition by weight of waste disposed based on a waste compositions study completed in 2010. Of the waste entering the Hartland landfill, approximately 50% of the approximately 150,000 tonnes per year that is landfilled, is generated by residential sources. Current tipping fees at the Hartland landfill are identified in the *Hartland Tipping Fee and Regulation Bylaw.* As of 2017 the charge for general refuse was $110/tonne. This is generally equivalent to the average tipping fees set by other Vancouver Island regional districts. The landfill gas system at the Hartland landfill currently captures 1,200 SCFM of landfill gas, of which approximately 50% is directed to a 1.6 MW co-generation plant, and approximately 50% is currently flared. The LFG that is currently flared, may be available as a supplementary energy source to an Advanced Integrated Resource Management Facility.

A second landfill owned and operated by Tervita known as the Highwest Waste Management Facility accepts construction and demolition (C & D) and non-hazardous institutional, commercial and light industrial (ICI) waste. This facility is the only private disposal facility located in the CRD and can dispose of a maximum of 25,500 tpy of selected non-putrescible wastes. Capacity is expected to be reached around year 2019/2020. The CRD has no control over the flow of C & D material to the Highwest facility. There may be some residual waste that flows outside the region via private haulers but that is considered negligible at this time. However, there is some concern that ICI material streams could be directed to other landfills in BC and Washington State should the tipping fee at Hartland increase such that the haul and export of waste outside of the CRD becomes financially viable.

The CRD has a vision to extend the life of the Hartland landfill, as it is unlikely that a replacement landfill can be sited within the CRD. Central to this vision would be the development of an integrated waste management solution to manage solid waste in lieu of direct landfilling. On a preliminary basis, the CRD has identified approximately 2 hectares of land located on the Hartland Landfill property that could be available for siting and development of some form of future integrated waste management solution, close to the potential Residual Treatment Facility intended to produce Class A biosolids (as discussed further below). A drawing of the Hartland landfill, indicating the area of land available for a potential Integrated Resource Management (RM) Facility is provided in Appendix III.

The CRD has restricted kitchen scraps from disposal at the Hartland Landfill as of 2015. Household organics are collected through municipal services or private service providers across the CRD. Acceptable materials include food scraps, household plants and soiled paper towels and tissues. The CRD expects diverted organic tonnes to increase to 20,000 tpy over the next few years following implementation of this restriction. The CRD manages a portion of the processing of kitchen scraps collected across the Region for some of its municipal partners. This material is hauled to a transfer station at Hartland Landfill. Currently the CRD contracts for the haul and processing of these materials at a facility located outside the Region in Richmond BC.

The estimates of biosolids production are based on the estimates of residual solids that would be generated by the new McLoughlin Point Wastewater Treatment Plant, and the capability of a new residuals treatment facility which will be designed to produce Class A Biosolids from the WWTP residuals.

Currently there is a prohibition of land application of biosolids (either with or without treatment) that applies across most jurisdictions within the CRD. As a result, the CRD requires that a solution be found for management of the majority of this material stream. Appendix IV includes a copy of the decisions that encompass the CRD policy regarding land application of biosolids. This includes:

1. the minutes of the CRD Board meeting held on Wednesday, July 13, 2011, which includes the following resolution:

   "*Be it so moved that the CRD will harmonize current and long-term practices at all CRD-owned regional facilities and parts with the approved policies of the regional treatment strategy, including ending the production, storage and distribution of biosolids for land application at all CRD facilities and parks; and*

   Be it further moved that the CRD does not support the application of biosolids on farmland in the CRD under any circumstances, and let this policy be reflected in the upcoming Regional Sustainability Strategy."
2. the minutes of the CRD Board meeting held on Wednesday, October 30, 2013, which includes the following resolution:

   "*That the current policy, adopted July 13, 2011, regarding the banning of the land application of biosolids be confirmed*."
3. the minutes of the CRD Board meeting held on Wednesday, November 30, 2016, which includes the following resolution:

   "That the Capital Regional District Board direct staff to include in the Integrated Resource Management project Request for Expressions of Interest the following:

   1. *A statement outlining the Board's current policy on land application and the concerns which drove its establishment; and*
   2. *A request for proponents to outline technologies that will deal with the Board's concerns; how the technology will mitigate the Board's concerns; applicability to the core area, Peninsula and other community sludge/biosolids management problem as a central and/or sub regional solution; costs, history and effectiveness.*

Respondents to this RFEOI should note that it is the intent of the CRD to ensure that it has an integrated waste management solution that at minimum would allow for management of the Class A biosolids stream. Any system selected by the CRD, whether it consists of a single technology or a group of approaches must include a long-term solution for the management of these biosolids. The CRD is looking for a solution that can be integrated with the outcome of the current procurement process being undertaken by the CRD for a Residuals Treatment Facility to produce Class A Biosolids, and are interested in identifying those options that present region-wide and/or sub-regional solutions. The CRD issued a Request for Qualifications (RFQ) for the Residuals Treatment Facility on December 5, 2016, and expects to issue the subsequent RFP to qualified respondents in March 2017. Design and construction of the Residuals Treatment Facility is expected to begin in January 2018, with service commencement in the summer of 2020.

The CRD has investigated the regulatory requirements that could apply to the development of an Advanced Integrated Resource Management facility for pilot and/or full scale development. Depending on the technology, it is likely that a waste discharge authorization under the B.C. Waste Discharge Regulation, in the form of a permit (full scale) or short term approval (pilot) would be required. A permanent full-scale facility would require additional authorizations including a Solid Waste Management Plan amendment, issuance of an operational certificate and potentially an Environmental Risk Assessment would be needed. For the waste discharge authorization, approximately 12 months would be required to complete the process for a pilot facility, and approximately 24 months for a permanent full-scale facility.

Appendix II

1. **CRD 2016 Solid Waste Stream Composition Study Results, Table 6-9, Figure 7, Table A**

2. **CRD Environmental Resource Management (ERM) 2015 Material Summary for MSW at Hartland Landfill**

Table 6: Waste Composition Results by Sector and Overall Hartland Average

Primary Category	SF	MF	ICI	Bins	CR&D	Overall Sector Weighted Average
Weighting	**0.25**	**0.13**	**0.41**	**0.05**	**0.16**	
Paper and Paperboard	14.8%	16.2%	22.9%	2.7%	0.7%	15.4%
Glass	2.6%	2.8%	1.5%	0.6%	0.2%	1.7%
Ferrous Metals	1.7%	3.0%	2.1%	0.5%	0.7%	1.8%
Non-ferrous Metals	1.0%	0.9%	0.6%	0.8%	0.2%	0.7%
Plastics	14.8%	15.5%	17.6%	9.4%	5.5%	14.3%
Organics	28.2%	31.1%	23.3%	8.4%	0.3%	21.1%
Wood and Wood Products	2.3%	5.3%	8.2%	43.4%	63.9%	17.0%
Construction and Demolition (non-wood)	2.9%	2.4%	3.0%	13.3%	23.6%	6.7%
Textiles	8.2%	5.0%	7.2%	2.3%	1.0%	5.9%
Tires	0.3%	1.5%	1.3%	0.1%	<0.1%	0.8%
Bulky Objects	0.0%	0.0%	2.1%	5.2%	0.7%	1.3%
Household Hygiene	15.9%	11.5%	3.3%	1.5%	<0.1%	6.9%
Hazardous Wastes	2.5%	2.1%	1.8%	1.0%	0.4%	1.8%
Electronics	1.2%	1.2%	3.2%	0.7%	<0.1%	1.8%
Other	3.4%	1.6%	1.9%	10.0%	2.5%	2.7%

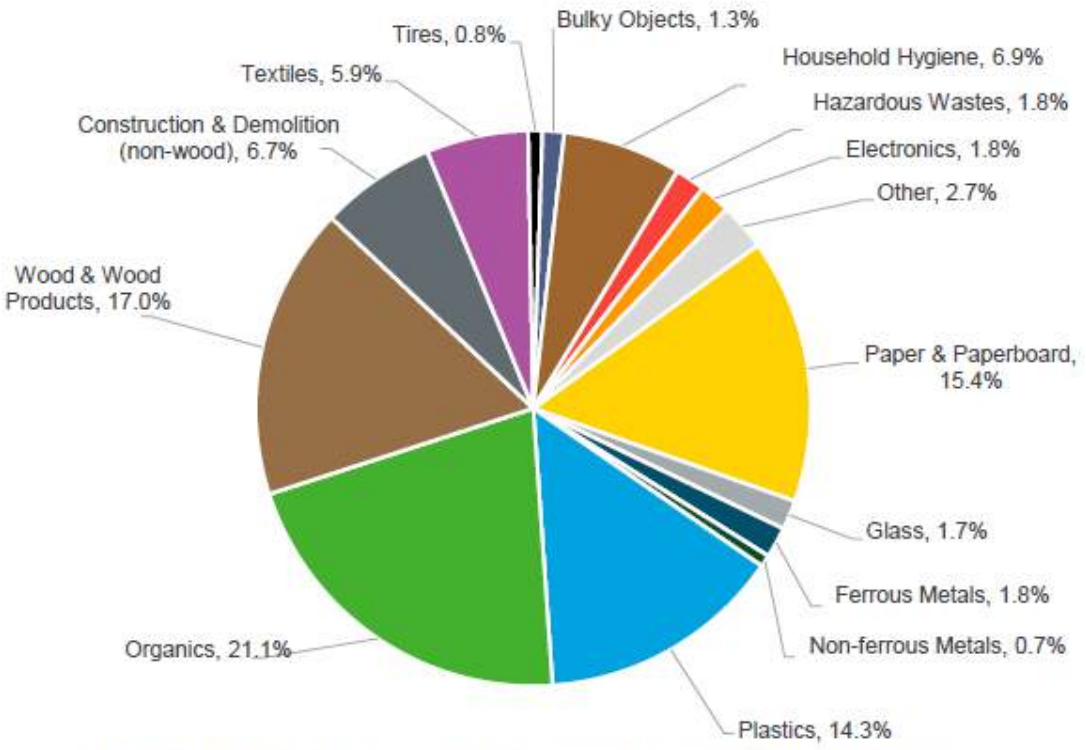


Figure 6: Primary Category Composition – Overall Regional Weighted Average

Table 7: Overall Waste Composition and Generation at Hartland

Primary Category	Overall Waste Composition		
	Composition (%)	2016 Estimated Waste Generation (kg/person/year)	2016 Estimated Waste Disposal Rate (tonnes/year to landfill)
Paper and Paperboard	15.4%	55	20,826
Glass	1.7%	6	2,299
Ferrous Metals	1.8%	6	2,417
Non-ferrous Metals	0.7%	2	930
Plastics	14.3%	51	19,282
Organics	21.1%	75	28,503
Wood and Wood Products	17.0%	61	22,997
Construction and Demolition (non-wood)	6.7%	24	9,087
Textiles	5.9%	21	8,018
Tires	0.8%	3	1,114
Bulky Objects	1.3%	4	1,697
Household Hygiene	6.9%	25	9,337
Hazardous Wastes	1.8%	6	2,366
Electronics	1.8%	6	2,447
Other	2.7%	10	3,681
Total (Estimated) 2016		357	135,000

Table 9: Comparison to Historic Waste Generation Rates at Hartland

Primary Category	2001	2004	2009/2010	2016
	kg/capita			
Paper and Paperboard	62	67	67	55
Glass	9	9	8	6
Ferrous Metals	13	12	10	6
Non-ferrous Metals	3	4	3	2
Plastics	54	59	54	51
Organics	119	128	120	75
Wood and Wood Products	37	41	53	61
Construction and Demolition (non-wood)	33	27	32	24
Textiles	15	20	23	21
Tires	3	2	3	3
Bulky Objects	6	4	3	4
Household Hygiene	30	29	38	25
Hazardous Wastes	1	5	3	6
Electronics	4	11	8	6
Other	8	12	8	10
Waste Generation (kg/capita)	399	429	433	357

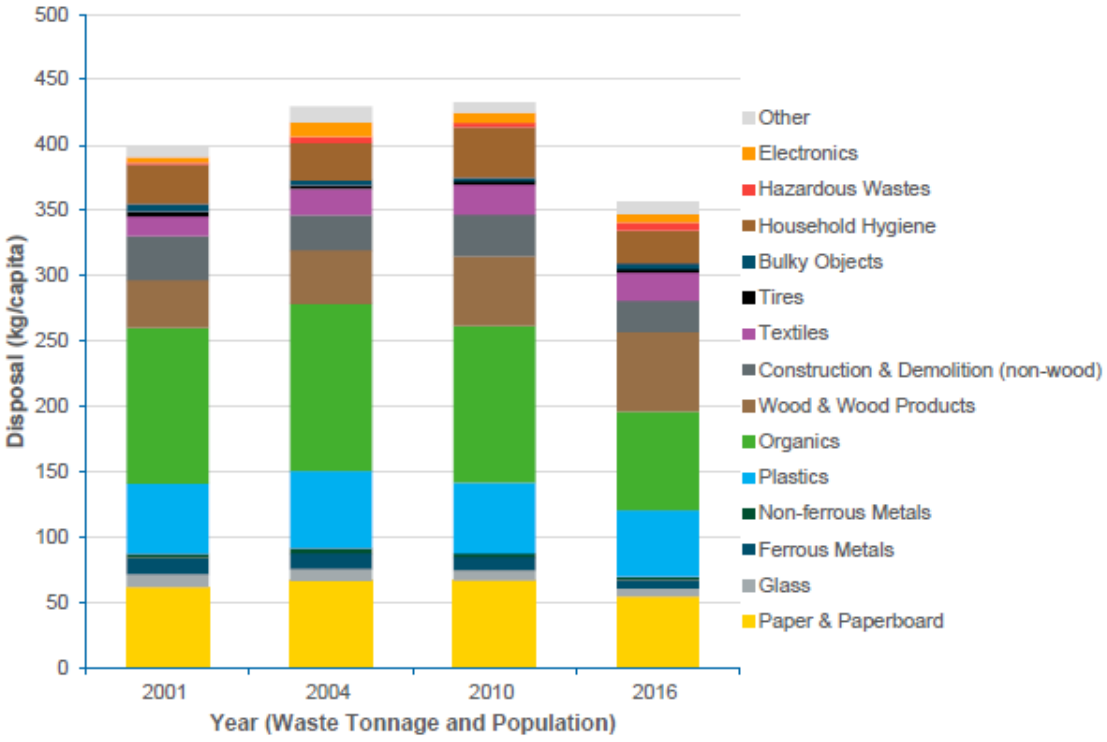


Figure 7: Disposal per Capita at Hartland - Historical Comparison (2001-2016)

Table A: Waste Composition Results – All Categories by Sector and Overall Average

Category	SF	MF	ICI	Bins	CR&D	Average	kg/capita
Paper and Paperboard							
Books	0.4%	0.5%	0.3%	0.0%	0.0%	0.3%	1.1
Corrugated Cardboard	0.8%	1.1%	2.8%	0.5%	0.1%	1.5%	5.5
Newsprint	0.8%	1.1%	0.6%	0.1%	0.0%	0.6%	2.1
Other paper (non-recyclable)	1.2%	2.0%	2.6%	0.1%	0.1%	1.6%	5.9
Paper Beverage Containers - deposit	0.1%	0.4%	0.1%	0.0%	0.0%	0.1%	0.5
Paper packaging - dry goods	2.9%	2.7%	3.0%	0.5%	0.2%	2.4%	8.4
Paper packaging - liquids	0.7%	1.0%	2.3%	0.1%	0.3%	1.3%	4.7
Printed Paper	1.5%	1.4%	2.8%	0.3%	0.0%	1.7%	6.2
Soiled paper (compostable)	6.4%	6.0%	8.3%	1.1%	0.0%	5.8%	20.8
Subtotal	**14.8%**	**16.2%**	**22.9%**	**2.7%**	**0.7%**	**15.4%**	**55.1**
Glass							
Glass beverage containers - deposit	0.3%	0.7%	0.2%	0.2%	0.0%	0.3%	1.1
Glass containers - bottles and jars	0.8%	1.1%	0.3%	0.2%	0.0%	0.4%	1.6
Other Glass and Ceramics	1.5%	1.0%	1.0%	0.3%	0.2%	1.0%	3.4
Subtotal	**2.6%**	**2.8%**	**1.5%**	**0.6%**	**0.2%**	**1.7%**	**6.1**
Ferrous Metals							
Ferrous metal beverage containers - deposit	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1
Food containers	0.5%	0.5%	0.5%	0.0%	0.0%	0.4%	1.4
Other ferrous metals	1.2%	2.5%	1.5%	0.4%	0.6%	1.4%	4.9
Subtotal	**1.7%**	**3.0%**	**2.1%**	**0.5%**	**0.7%**	**1.8%**	**6.4**
Non-ferrous Metals							
Food containers & foil	0.7%	0.4%	0.3%	0.1%	0.0%	0.4%	1.3
Non-ferrous beverage containers - deposit	0.1%	0.2%	0.1%	0.1%	0.0%	0.1%	0.4
Other non-ferrous metals	0.3%	0.3%	0.1%	0.6%	0.2%	0.2%	0.8
Subtotal	**1.0%**	**0.9%**	**0.6%**	**0.8%**	**0.2%**	**0.7%**	**2.5**
Plastics							
Compostable plastics	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0
Durable plastic products	3.3%	4.5%	5.3%	3.8%	1.1%	3.9%	14.0
Film packaging - #2 & #4 polyethylene film	1.9%	1.7%	2.3%	0.4%	0.1%	1.6%	5.9
Film packaging – (PETE, PVC, LDPE Stretch and PP Films, Multi)	3.5%	2.0%	2.8%	2.0%	1.6%	2.7%	9.5

Category	SF	MF	ICI	Bins	CR&D	Average	kg/capita
Film packaging – retail & grocery bags	1.5%	1.0%	0.5%	0.2%	0.2%	0.8%	2.7
Other film packaging	1.0%	1.6%	2.4%	1.7%	1.5%	1.8%	6.4
Packaging – expanded polystyrene	0.3%	0.1%	0.4%	0.8%	0.8%	0.4%	1.5
Plastic beverage containers – deposit	0.2%	0.2%	0.4%	0.0%	0.1%	0.3%	0.9
Plastic containers – bottles & jugs - non deposit	1.0%	1.2%	1.0%	0.1%	0.0%	0.8%	2.9
Rigid plastic containers (incl. lids) – expanded PS (Coloured)	0.5%	0.3%	0.2%	0.1%	0.0%	0.2%	0.8
Rigid plastic containers (incl. lids) – expanded PS (White)	0.4%	0.4%	0.3%	0.1%	0.0%	0.3%	1.0
Rigid plastic containers (incl. lids) – non expanded polystyrene	1.3%	2.5%	2.0%	0.2%	0.0%	1.5%	5.3
Subtotal	**14.8%**	**15.5%**	**17.6%**	**9.4%**	**5.5%**	**14.3%**	**51.0**
Organics							
Food waste – avoidable	13.5%	12.2%	12.2%	1.3%	0.0%	10.0%	35.8
Food waste – backyard compostable (unavoidable)	9.7%	11.3%	7.0%	3.7%	0.0%	7.0%	24.8
Food waste – donatable	1.7%	2.9%	1.9%	0.1%	0.0%	1.6%	5.7
Food waste – fats, oil and grease	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0
Food waste – non-backyard compostable (unavoidable)	1.2%	2.0%	0.9%	0.1%	0.0%	0.9%	3.2
Other organic waste	0.2%	0.7%	0.1%	2.6%	0.0%	0.3%	1.2
Yard & garden waste	1.9%	2.0%	1.2%	0.6%	0.2%	1.3%	4.6
Subtotal	**28.2%**	**31.1%**	**23.3%**	**8.4%**	**0.3%**	**21.1%**	**75.4**
Wood & Wood Products							
Clean wood	0.4%	0.1%	0.6%	0.3%	2.9%	0.9%	3.1
Other wood - painted	0.0%	0.0%	0.4%	5.8%	8.2%	1.8%	6.3
Other wood – treated	1.4%	0.7%	6.5%	19.7%	28.5%	8.7%	30.9
Pallets/skids	0.0%	0.0%	0.0%	4.4%	10.9%	2.0%	7.0
Plywood/particle board	0.0%	0.2%	0.0%	2.5%	6.9%	1.3%	4.5
Wood furniture	0.4%	4.3%	0.7%	7.6%	0.2%	1.4%	4.9
Wood shingles	0.0%	0.0%	0.0%	3.1%	6.3%	1.2%	4.1
Subtotal	**2.3%**	**5.3%**	**8.2%**	**43.4%**	**63.9%**	**17.0%**	**60.8**

Category	SF	MF	ICI	Bins	CR&D	Average	kg/capita
Construction and Demolition (non-wood)							
Asphalt shingles	0.0%	0.0%	0.2%	0.4%	14.0%	2.4%	8.4
Drywall	0.2%	0.1%	0.1%	0.6%	0.5%	0.2%	0.8
Flooring – carpet & underlay	1.6%	1.3%	0.6%	5.5%	0.4%	1.2%	4.2
Flooring – vinyl, tile and other	0.3%	0.6%	0.2%	1.8%	0.0%	0.3%	1.1
Insulation – fibreglass, foam, vermiculite, other	0.3%	0.0%	0.3%	0.9%	3.6%	0.8%	3.0
Masonry	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1
Other C&D waste	0.4%	0.4%	1.4%	3.8%	1.1%	1.1%	3.9
Rock/sand/dirt	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.2
Roofing Felt	0.0%	0.0%	0.0%	0.4%	3.9%	0.6%	2.3
Stucco/plaster	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0
Subtotal	**2.9%**	**2.4%**	**3.0%**	**13.3%**	**23.6%**	**6.7%**	**24.0**
Textiles							
Clothing	3.2%	2.0%	2.7%	0.3%	0.0%	2.2%	7.9
Footwear	1.3%	0.7%	0.7%	0.2%	0.0%	0.7%	2.6
Other textiles	3.8%	2.3%	3.7%	1.7%	1.0%	3.0%	10.8
Subtotal	**8.2%**	**5.0%**	**7.2%**	**2.3%**	**1.0%**	**5.9%**	**21.2**
Tires							
Other rubber products	0.3%	1.1%	1.1%	0.1%	0.0%	0.7%	2.4
Vehicle tires	0.0%	0.4%	0.3%	0.0%	0.0%	0.2%	0.6
Subtotal	**0.3%**	**1.5%**	**1.3%**	**0.1%**	**0.0%**	**0.8%**	**2.9**
Bulky Objects							
Furniture	0.0%	0.0%	1.7%	3.4%	0.0%	0.9%	3.1
Large appliances	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.2
Mattresses & Box springs	0.0%	0.0%	0.3%	1.8%	0.7%	0.3%	1.2
Subtotal	**0.0%**	**0.0%**	**2.1%**	**5.2%**	**0.7%**	**1.3%**	**4.5**
Household Hygiene							
Animal feces	2.9%	1.5%	0.1%	0.1%	0.0%	1.0%	3.4
Cat litter	4.5%	2.3%	0.8%	0.0%	0.0%	1.8%	6.3
Disposable diapers	6.6%	6.5%	1.6%	1.2%	0.0%	3.2%	11.5
Other hygiene products	1.9%	1.1%	0.9%	0.3%	0.0%	1.0%	3.5
Subtotal	**15.9%**	**11.5%**	**3.3%**	**1.5%**	**0.0%**	**6.9%**	**24.7**

Category	SF	MF	ICI	Bins	CR&D	Average	kg/capita
Hazardous Wastes							
Batteries – automotive	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0
Batteries – household	0.2%	0.2%	0.1%	0.0%	0.0%	0.1%	0.3
EPR paints & containers (latex and oil)	0.7%	0.5%	0.5%	0.4%	0.1%	0.5%	1.7
EPR solvents & pesticides	0.1%	0.0%	0.1%	0.2%	0.2%	0.1%	0.3
Non-hazardous / non-EPR	0.3%	0.2%	0.3%	0.0%	0.0%	0.2%	0.8
Light bulbs, tubes & ballasts	0.2%	0.8%	0.2%	0.3%	0.0%	0.3%	1.0
Needles & sharps	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0
Non EPR paints & containers	0.2%	0.0%	0.1%	0.0%	0.0%	0.1%	0.3
Non EPR solvents & pesticides	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0
Oil and antifreeze	0.1%	0.0%	0.1%	0.0%	0.0%	0.1%	0.2
Other empty aerosol cans	0.2%	0.2%	0.1%	0.0%	0.0%	0.1%	0.3
Other materials	0.4%	0.1%	0.3%	0.1%	0.1%	0.3%	0.9
Pharmaceuticals, including containers	0.2%	0.1%	0.1%	0.0%	0.0%	0.1%	0.3
Subtotal	**2.5%**	**2.1%**	**1.8%**	**1.0%**	**0.4%**	**1.8%**	**6.3**
Electronics							
Alarms & Thermostats	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0
Cell phones	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0
Computers & peripherals	0.4%	0.0%	0.4%	0.0%	0.0%	0.3%	1.0
Electronic or electrical instruments/equipment (incl. toys)	0.4%	0.3%	0.9%	0.2%	0.0%	0.5%	1.9
Heating & cooling products	0.0%	0.0%	0.1%	0.2%	0.0%	0.1%	0.2
Outdoor power equipment	0.0%	0.4%	0.0%	0.0%	0.0%	0.1%	0.2
Small appliances & power tools	0.3%	0.4%	1.1%	0.2%	0.0%	0.6%	2.1
Telephones & answering machines	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0
TV & audio/video equipment	0.2%	0.1%	0.5%	0.1%	0.0%	0.3%	1.0
Subtotal	**1.2%**	**1.2%**	**3.2%**	**0.7%**	**0.0%**	**1.8%**	**6.5**
Other							
Non distinct fines	3.4%	1.6%	1.9%	0.3%	0.0%	1.8%	6.5
Soot/Ash	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0
Black Bags (Visual Audits Only)	-	-	-	9.8%	2.5%	0.9%	3.2
Subtotal	**3.4%**	**1.6%**	**1.9%**	**10.0%**	**2.5%**	**2.7%**	**9.7**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**356.9**

MATERIAL SUMMARY (Revised Jan 28/16)

MATERIAL	COLLECTION	CONTROLLER	TONNAGE	percent	GOVERNMENT CONTROLLED FEEDSTOCK
DISPOSAL	**HAULER**				
General Refuse [1]					
paper and paperboard	municipalities, private, self haul bus and res	30% gov't, 70% other	21,888	30%	6,566
food waste	municipalities, private, self haul bus and res	30% gov't, 70% other	19,709	30%	5,913
plastic	municipalities, private, self haul bus and res	30% gov't, 70% other	17,312	30%	5,194
wood and wood products	municipalities, private, self haul bus and res	30% gov't, 70% other	13,133	30%	3,940
construction and demolition	private, self haul bus and res	100% other	30,594	0%	-
textiles	municipalities, private, self haul bus and res	30% gov't, 70% other	7,287	30%	2,186
composite materials	municipalities, private, self haul bus and res	30% gov't, 70% other	6,851	30%	2,055
other	municipalities, private, self haul bus and res	30% gov't, 70% other	6,441	30%	1,932
yard waste	municipalities, private, self haul bus and res	30% gov't, 70% other	4,430	30%	1,329
other organic waste	municipalities, private, self haul bus and res	30% gov't, 70% other	3,134	30%	940
ferrous metals	municipalities, private, self haul bus and res	30% gov't, 70% other	3,134	30%	940
glass	municipalities, private, self haul bus and res	30% gov't, 70% other	2,566	30%	770
electronics	municipalities, private, self haul bus and res	30% gov't, 70% other	2,526	30%	758
hazardous waste	municipalities, private, self haul bus and res	30% gov't, 70% other	1,017	30%	305
rubber	municipalities, private, self haul bus and res	30% gov't, 70% other	939	30%	282
non-ferrous metals	municipalities, private, self haul bus and res	30% gov't, 70% other	845	30%	254
			141,806		**33,364**
Controlled Waste (solid waste)					
waste asbestos	municipalities, private, self haul bus and res	100% other	1,390	0%	-
surface coating waste	municipalities, private haulers	100% other	265	0%	-
out of region asbestos	municipalities, private, self haul bus and res	100% other	182	0%	-
contaminated soil	municipalities, private, self haul bus and res	100% other	151	0%	-
food processing waste	municipalities, private haulers	100% other	148	0%	-
spoiled food	municipalities, private, self haul bus and res	100% other	112	0%	-
misc controlled waste	municipalities, private, self haul bus and res	92% gov't, 8% other	56	92%	52
dead animals	municipalities, private, self haul bus and res	86% gov't, 14% other	37	86%	32
animal fecal waste	municipalities, private, self haul bus and res	100% other	34	0%	-
soot and spent charcoal	private haulers, residents, self haul bus	100% other	24	0%	-
health hazard waste	municipalities, private haulers	100% other	22	0%	-
contaminated drywall	municipalities, private, self haul bus and res	100% other	2	0%	-
			2,423		**83**
Controlled Waste (liquid waste)					
SPWWTP (screenings/sludge)	CRD contractors or staff	100 % gov't	3,601	100%	3,601
Other sludge	private haulers	100% other	675	0%	-
Pumpings (non sewage)	municipalities, private, CRD contractors/staff	70% gov't, 30% other	611	70%	428
Sooke (screenings/sludge)	CRD contractors or staff	100 % gov't	580	100%	580
Clover Point (screenings)	CRD contractors or staff	100 % gov't	392	100%	392
Macaulay Point (screenings)	CRD contractors or staff	100 % gov't	318	100%	318
Other screenings	private haulers	100% other	124	0%	-
Tsawout (screenings/sludge)	private haulers	100 % gov't	17	100%	17
			6,318		**5,336**
TOTAL DISPOSAL 2014			**150,547**		**38,783**

MATERIAL	COLLECTION	CONTROLLER	TONNAGE	percent	GOVERNMENT CONTROLLED FEEDSTOCK
DIVERSION [2]	**RECEIVER**				
Yard Waste	CRD Facilities	100% gov't	18,384	100%	18,384
Paper Fibres [3]	CRD contractors and facilities	100% other (stewards)	13,904	0%	-
Food Waste	Municipalities	100% gov't	8,626	100%	2,185
Mixed Containers [3]	CRD contractors and facilities	100% other (stewards)	5,449	0%	-
Wood Waste	CRD facilities	100% gov't	1,653	100%	1,653
Metals	CRD facilities	100% gov't	590	100%	590
Electronics	CRD contractors and facilities	100% other (stewards)	316	0%	-
Mattresses	CRD facilities	100% gov't	218	100%	218
Paint/Pesticides/Lamps	CRD facilities	100% other (stewards)	167	0%	-
Plastic (Large Rigid)	CRD contractors and facilities	100% gov't	147	100%	147
Metal Appliances	CRD facilities	100% other (stewards)	128	0%	-
Asphalt Shingles	CRD facilities	100% gov't	101	100%	101
HHW Orphans	CRD facilities	100% gov't	66	100%	66
Tires	CRD contractors and facilities	100% other (stewards)	54	0%	-
Books	CRD facilities	100% gov't	50	100%	50
Motor Oil, Filters, Containers	CRD contractors and facilities	100% other (stewards)	36	0%	-
Batteries	CRD facilities	100% other (stewards)	34	0%	-
Plastic (Film)	CRD contractors and facilities	100% other (stewards)	26	0%	-
Propane Tanks/Fire Ext.	CRD facilities	100% gov't	17	100%	17
Polystyrene	CRD contractors and facilities	100% other (stewards)	15	0%	-
Reusable Materials	CRD facilities	100% gov't	12	100%	12
Glass (bottles and jars)	CRD facilities	100% other (stewards)	11	0%	-
Cooking Oil	CRD facilities	100% gov't	3	100%	3
TOTAL DIVERSION 2014			**50,007**		**23,426**

GRAND TOTAL ALL MATERIAL STREAMS	**200,554**		**62,209**

[1] General refuse tonnage by material type is an estimate based on known kitchen scraps diversion and latest waste stream analysis data. Data includes 22,500 tonnes of construction and demolition waste from Tervita Highwest Landfill in Highlands.

[2] 2013 data-Quantity of curbside paper fibres/mixed containers not available with material being managed under stewardship beginning May 2014

[3] Estimated composition by weight = 40% glass, balance is a mixture of plastic, metal and polycoat containers

Appendix III

Hartland Landfill, North Residual Treatment & Integrated Resource Management Facility – Site Plan

WILLIS POINT ROAD

POTENTIAL RESIDUAL TREATMENT FACILITY
Area ≈ 2.70 Ha

HARTLAND OPERATIONAL AREA
Area ≈ 1.55 Ha.

FUTURE AGGREGATE STOCKPILE AREA
Area ≈ 3.14 Ha.

POTENTIAL INTEGRATED RESOURCE MANAGEMENT (IRM) FACILITY
Area ≈ 2.17 Ha.

HARTLAND NORTH ACCESS ROAD

S.R.W.

R/W BOUNDARY

NEW ACCESS ROAD

HIGH LEVEL ROAD

LOT A
PLAN VIP64898

Plan VIP64801

R/W BOUNDARY

WILLIS POINT RD.
ENTRANCE
HARTLAND NORTH
POTENTIAL IRM FACILITY LOCATION
0 100 200
SCALE IN METRES
HARTLAND LANDFILL
LANDFILL BOUNDARY
HARTLAND AVE.

LOCATION PLAN
1:15,000

Capital Regional District | Parks & Environmental Services

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HARTLAND LANDFILL

HARTLAND NORTH
RESIDUAL TREATMENT & INTEGRATED RESOURCE MANAGEMENT FACILITY – SITE PLAN

DESIGNED	DRAWN	SCALE	CHECKED	APPROVED	DATE	CONTRACT NO.	DWG. NO.	REV.	SHT OF
B.M.	L.B./H.L.	1: 2000	B.M.	J.F.	17/01/17	———	24-W799-1		1 OF 1

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Appendix IV

Resolutions from Minutes of CRD Board Meetings noting CRD policy regarding Land Application of Biosolids

FROM CRD BOARD MEETING OF WEDNESDAY, JULY 13, 2011:

5.3 ENVIRONMENTAL SUSTAINABILITY COMMITTEE – May 25, 2011

1. Motion to Protect Local Farmland and to Harmonize Sewage Treatment Strategies within the CRD – Director Lucas

MOVED by Director Lucas, **SECONDED** by Director Derman
Whereas the CRD is committed to developing regional sewage treatment strategies that have the lowest impact on both the environment and public health, and the highest resource recovery potential;

And Whereas the Core Area Liquid Waste Management Committee has passed a motion banning the land application of biosolids in order to address legitimate public health and environmental concerns about the accumulation and dispersal of Polycyclic Aromatic Hydrocarbons, heavy metals, pharmaceuticals, and other Emerging Compounds of Concern (ECCs) on our land, in our food, and in the regional water table;

And Whereas protecting the "integrity of rural communities" and "regional green and blue spaces", and managing "natural resources and environmental sustainability" are important and explicit goals and responsibilities of the CRD as outlined in the Regional Growth Strategy (http://tinyurl.com/65wdd8p), and "improving population health and regional food security" are noted as Priority Actions in the Capital Region Food and Health Action Plan (http://tinyurl.com/4xetqbz);

Be it so moved that the CRD will harmonize current and long-term practices at all CRD-owned regional facilities and parks with the approved policies of the regional treatment strategy, including ending the production, storage and distribution of biosolids for land application at all CRD facilities and parks; and

Be it further moved that the CRD does not support the application of biosolids on farmland in the CRD under any circumstances, and let this policy be reflected in the upcoming Regional Sustainability Strategy.

MOVED by Director Hendren, **SECONDED** by Director Hancock,
That the motion **be amended** by adding the following:
"That it be further moved that the pasteurized, lime-stabilized Class A biosolids material produced at the Saanich Peninsula Wastewater Treatment Plant may be beneficially used by Hartland Landfill operations to replace chemical fertilizers as the soil amendment blended with soil and compost for use as the final cover material in the closure of Phase 2 Cell 1, in full compliance with all environmental and health regulations."

Concerns were raised that the amendment creates an exception and that other exemptions may need to be considered.

MOVED by Director Evans, **SECONDED** by Director Hill,
That the **amendment be referred** to the Environmental Sustainability Committee for consideration.
CARRIED

MOVED by Director Hendren, **SECONDED** by Director Hill,
That consideration of the main motion be postponed until the Environmental Sustainability Committee reports on exemptions.

DEFEATED
Hicks, Ranns, Evans, Seaton, Young, Brice, Causton and Wergeland IN FAVOUR

The question on the main motion was called. **CARRIED**
Evans, Seaton, Causton OPPOSED

FROM CRD BOARD MEETING OF WEDNESDAY, OCTOBER 30, 2013:

2. REPORT OF COMMITTEE OF THE WHOLE – October 30, 2013

1. Review of Regional Biosolids Management Policy

MOVED by Director Derman, **SECONDED** by Director Isitt,
That the current policy, adopted July 13, 2011, regarding the banning of the land application of biosolids be confirmed.

CARRIED
Blackwell, Bryson, Sanders, Young OPPOSED

MOVED by Director Derman, **SECONDED** by Director Desjardins,
That staff be directed to identify possible linkages between the region's solid waste and liquid waste management systems and report to the Environmental Services Committee.

CARRIED
Fortin, Young OPPOSED

FROM CRD BOARD MEETING OF WEDNESDAY, NOVEMBER 30, 2016:

3.1.5. 16-1137 Integrated Resource Management Project Request for Expressions of Interest - Director Windsor

MOVED by Director Windsor, SECONDED by Director Blackwell,
That the Capital Regional District Board direct staff to include in the Integrated Resource Management project Request for Expressions of Interest the following:
1. A statement outlining the Board's current policy on land application and the concerns which drove its establishment; and
2. A request for proponents to outline technologies that will deal with the Board's concerns; how the technology will mitigate the Board's concerns; applicability to the core area, Peninsula and other community sludge/ biosolids management problem as a central and/ or sub regional solution; costs, history and effectiveness.
CARRIED

MOVED by Director Windsor, SECONDED by Director Blackwell,
That the CRD undertake a survey of farmers and foresters in the capital region to determine numbers that would accept potential biosolid application on their land if available.
CARRIED
OPPOSED Alto

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EEE 16-73

REPORT TO INTEGRATED RESOURCE MANAGEMENT SELECT COMMITTEE MEETING OF WEDNESDAY, NOVEMBER 9, 2016

SUBJECT **Advanced Integrated Resource Management Project – Request for Expressions of Interest**

ISSUE

To update the Integrated Resource Management Select Committee (IRMSC) regarding the Request for Expressions of Interest (RFEOI) process for development of an Advanced Integrated Resource Management Facility.

BACKGROUND

At its August 10, 2016 meeting, the IRMSC made the following recommendations:

That staff be directed to:

1. *retain the services of a procurement specialist to work with staff to develop a Request for Expressions of Interest (RFEOI) for an Integrated Resource Management (IRM) pilot project and bring an RFEOI document back through the Committee to the Board for approval;*

2. *retain the services of an independent IRM specialist to present information to the Board regarding the Sydney, Australia strategic IRM process and to assist with the development of an RFEOI, as outlined above.*

As directed by the IRMSC, CRD staff hired HDR Consulting as the independent IRM specialist to provide expertise regarding technologies and to bring innovative procurement approaches to the project.

The process for developing an Advanced Integrated Resource Management (AIRM) solution for the region would commence with issuing a performance-driven Request for Expressions of Interest to sound the market. This request would cover the CRD's goals for an IRM solution, evaluation of technologies, greenhouse gas reduction potential, resource and revenue opportunities, site selection and facility reference costs. The responses to the RFEOI will guide the next important step, which is RFP scope definition and laying out a multi-stage competitive and innovative procurement process. Potential ownership structure and delivery models for a new AIRM facility will be communicated as future procurement phases unfold.

In order to realize an integrated municipal solid waste (MSW)/biosolids solution, the RFEOI has been expanded to investigate a wide range of beneficial reuse opportunities of all feedstock available to the CRD. Current feedstock includes: biosolids, source-separated kitchen scraps, yard and garden waste and residual MSW. The absence of MSW flow control within the Region and the inability to guarantee tonnages raises the level of financial risk on the project and will likely be reflected in the responses to the RFEOI.

In keeping with recent Core Area Wastewater Treatment Plant Project Board recommendations and the Saanich Peninsula Wastewater Commission's desire to explore a regional approach to wastewater treatment and residuals management, the RFEOI would include a section to determine the level of private sector interest to undertake a scalable sub-regional solution on the Saanich Peninsula.

HDR consultants have provided a technical scoping summary to identify key considerations for the proposed RFEOI, attached in Appendix A. The IRM Select Committee's preference for thermal reduction processes as a potential IRM solution, including an option for a pilot, is emphasized in the RFEOI, along with a categorical exclusion around land application of biosolids/process residuals.

Once the Scoping Summary has been vetted and approved by the committee, the RFEOI will be finalized and brought back for approval. A Project Charter is also being contemplated for the project.

The economic implications of a long-term, in-region facility will only be determined once the results from the RFEOI and future RFP are available. Commitment on feedstocks supplied by municipal and private sector participants will be discussed as part of the collaborative RFP process. Outcomes of these discussions will impact processing technology selection and cost.

Any in-region facility, regardless of technology, would be subject to CRD Bylaws, MOE approvals and include environmental assessments and controls, including leachate, air emissions, odour, vector, litter and dust management plans. For location, Hartland landfill is identified as a potential site for the project and proponents will be allowed to present other suitable site options for consideration.

Potential proponents are expected to ensure alternate locations have appropriate land use designations by working directly with the appropriate municipality or electoral area.

Next Steps

Implementation of the kitchen scraps processing procurement process includes:

- Issue Expression of Interest (EOI) – November/December 2016
- Issue RFQ – February 2017
- Board selection of proponents and review of RFP documents – April 2017
- Scope Definition – May to June 2017
- Issue RFP – July 2017
- Collaboration with RFP proponents, municipalities and municipal haulers – Fall 2017
- Volume commitments and award RFP (timing dependent on technology and location)
- Finalize contracts and start construction (timing dependent on technology and location)

CONCLUSION

A scoping summary of key considerations for a Request for Expressions of Interest for an

advanced Integrated Resource Management solution has been prepared for the committee's consideration.

RECOMMENDATION

That the Integrated Resource Management Select Committee recommend to the Capital Regional District Board:

That the staff report on Advanced Integrated Resource Management Project – Request for Expressions of Interest be received for information.

Submitted by:	Joshua Frederick, P.Eng., Manager, Environmental Planning and Engineering
Concurrence:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

JF:cl

Attachment: Appendix A – Request for Expressions of Interest Scoping Summary, HDR Inc.

Request for Expressions of Interest - Scoping Overview

HDR offers the following scoping overview for the preparation of a Request for Expressions of Interest (RFEOI) when seeking to engage the market for Integrated Waste Management technologies and related services for the Capital Regional District (CRD).

Introduction and Project Understanding:

HDR understands the CRD is intending to issue an RFEOI as a part of the CRD's exploration of waste management options. Specifically, we understand the CRD desires to better understand the current market capabilities for an integrated waste management solution for the Region's existing solid and future liquid waste management facilities. To explore market capabilities, the CRD intends to engage the market through an RFEOI and a subsequent procurement process.

Solid and liquid waste management within the CRD are currently driven by different legislative authorities/requirements and under the administration of different regional committees and Boards. The CRD seeks to solicit response in the RFEOI to manage some or all of the following materials (quantities to be confirmed):

- 35,000 tonnes per year of biosolids
- 150,000 tonnes per year of municipal solid waste (MSW)
- 15,000 to 30,000 tonnes per year of source separated household organics
- 15,000 to 18,000 tonnes per year of yard and garden wastes

Further the CRD wishes to explore the possibility of integrating solid and liquid waste management interests and maximizing resource recovery through integrated processing of some or all of these materials and generating energy, recovering materials, and producing revenue. We understand the prohibition of land application of biosolids requires that a solution be found for management of this material stream. The CRD would like to demonstrate leadership, and find a solution that places them at the leading edge of resource recovery, broadening the search for technologies for those that could manage all or some of these materials in an integrated approach.

RFEOI Scoping:

Based on these understandings we suggest the CRD prepare the RFEOI employing a transparent process whereby the results are impartial and free from outside influences.

The entire procurement process should be structured to identify and manage risks, as this is most likely to result in a successful outcome. The allocation of risks should be based on which entity is best suited to manage the risk.. For example facility risks such as technology performance and facility operations are typically best allocated to private sector entities. Similarly, program risks such as policy/program adoption, payment for service, etc. are generally allocated to the public sector. Risks that could be either or even shared include site acquisition, offtake purchase commitments, etc.

Prior to issuing the RFEOI, the CRD should confirm their intentions by addressing the following key framework issues:

- What the CRD has (assets, current operations)
- What the CRD needs or wants
- What the CRD is willing to do
- What the CRD is unwilling to do

With these issues clarified, the RFEOI should convey the following information to the prospective respondents:

- Overall goals of the CRD, the purpose of the request
- Identification of issues that are not negotiable (such as finding a solution to manage biosolids).
- Feedstock material types and respective quantities
- Flow control (or the lack thereof) of each feedstock type. What are the market conditions and where do these materials go when certain parameters change (such as cost)
- Any specifics the CRD may have in terms of placing value on issues that otherwise may not be evident (resiliency/redundancy, self-determination, climate goals, greenhouse gas metrics, etc.)
- Schedule or timeline expectations
- Regulatory constraints, site constraints
- Other issues that convey the 'project' to the proponents

The RFEOI should be relatively easy for respondents to reply. Its purpose is to 'cast a wide net' in terms of capturing a response from a wide variety of firms with varying degrees of experience. The outcome of the RFEOI should provide insight into the overall interest of the market, and gauge the

capability, maturity and depth of the market without requesting information that could be seen as proprietary. At this stage, no overly onerous requests such as submitting cost proposals, bonding, or related demands should be included. The RFEOI should not have a bias in terms of possible technologies or outcomes, as there are a range of potentially applicable technologies that are capable of managing some or all of the material streams identified by the CRD. The RFEOI is not a screening tool. Later RFQ phases will be used to reduce the pool of acceptable proponents. If the CRD is intending to employ any unique procurement process in terms of innovative procurement (e.g.: flexibility in terms of risk sharing such as ownership, construction, operations, revenue sharing, etc.) those issues should be revealed. The CRD will also create a data room to provide all historical and current information related to the project.

We typically expect to request information including but not limited to:

- Experience dealing with similar feedstock source materials at throughput rates that are relevant;
- Demonstration evidence of having an existing or previous working facility, how long it has been in operation, typical feedstock, its setting (rural, industrial, urban);
- A description of the typical by-products and/or residues;
- An overview of a facility that could perform the types of functions they offer;
- An interest in participating in further conversations/explorations by the CRD;
- Ability to finance/support the financing of a project of the anticipated scope/size
- Identification of the project execution framework that best suits their capabilities and interest, e.g. Design/Finance/Build/Own/Operate, Design/Build/Operate etc.; and
- Allow respondents to express themselves, offer input, expound on things they feel may be relevant to make a project successful, including terms the proponents feel are necessary for the project to be successful. As part of this, we would propose to include a matrix outlining key project ingredients/risk elements to solicit confirmation of their willingness to take on those project elements typically allocated to the private partner.

We realize these terms may require refinement to reflect the conditions unique to the CRD. We would work with CRD staff to refine the RFEOI prior to issuance.

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ERM 16-59

REPORT TO INTEGRATED RESOURCE MANAGEMENT SELECT COMMITTEE
MEETING OF WEDNESDAY, AUGUST 10, 2016

SUBJECT **Integrated Resource Management Pilot Project – Next Steps**

ISSUE

Moving forward with the development of an Integrated Resource Management (IRM) pilot project within the Capital Regional District (CRD).

BACKGROUND

At its July 27, 2016 meeting, the IRM Select Committee passed the following motions:

1. *That the goals listed in the document "IRM Select Committee Project Framework", dated 27 July 2016 and submitted by M.C. Williams (Appendix A), be approved and added to the IRM Select Committee terms of reference.*

2. *The staff be directed to report on a process by which the CRD could issue a performance-driven request for expressions of interest asking the private sector for a regional IRM solution dealing with solid wastes in the region including at a minimum the biosolids from Saanich Peninsula, and including the regulatory requirements for an in-region pilot.*

The goals of the Select Committee, listed in Appendix A, represent many of the elements of a comprehensive IRM action plan, which ultimately establishes a long-term strategy for maximizing gas, heat and energy recovery from residual wastes, dramatically reducing the greenhouse (GHG) footprint while potentially generating net economic benefit. A similar approach is being successfully implemented in Sydney, Australia and staff have contacted the independent IRM specialist who coordinated development of the Sydney process. The primary components of a comprehensive IRM action plan could include:

1. IRM goals and objectives
2. governance structure for implementation of IRM at the CRD
3. policies and regulatory framework
4. waste resource mapping and network analysis to identify synergies among all waste streams and community energy needs
5. design strategies to reduce GHGs and energy consumption of existing and future waste management facilities
6. advanced waste treatment technologies
7. environmental and climate action goals
8. creating green energy districts
9. metrics for evaluating projects that put resource use, reuse, recovery and net revenues first.
10. demonstration/pilot projects (Request for Expressions of Interest)
11. new evaluation criteria/policy for procuring infrastructure

As per the direction received at the July 27, 2016 Integrated Resource Management Select Committee meeting, the development and issuance of a performance-driven Request for Expressions of Interest (RFEOI) would require staff to retain both a procurement specialist to inform the RFEOI process and an independent IRM specialist, similar to the Sydney, Australia project coordinator, both with an innovative technology background, to ensure the RFEOI addresses the goals of the Committee. It is envisioned that an RFEOI process would include such components as:

1. the experience of the proponent in implementing gasification facilities, including design, construction and long-term operation of these facilities
2. a description of the thermal processing technology, including capacity, pre-processing requirements and a clear indication of required inputs and expected outputs
3. a mass balance and energy balance as well as an expected net energy production (net of internal consumption and purchased energy) in kWh per tonne of feedstock
4. the nature and quality of the recovered resources expected from the facility
5. the proposed form of environmental control for all facets of the process and indicate where this has been successfully used before
6. the flexibility of the process to manage greater or lower volumes of waste and the ability to accommodate biosolids and other waste streams
7. the detailed feedstock source, quality and pre-processing requirements
8. operating reference facilities using the same or very similar technology
9. approximate capital costs and operating costs per tonne of input material processed for the reference facilities
10. potential pilot project development process, validation process and final reporting

The preliminary timing and steps required for an RFEOI deployment strategy are outlined in Appendix B.

ALTERNATIVES

Alternative 1

That the Integrated Resource Management Select Committee recommend to the CRD Board that staff be directed to:

1. retain the services of a procurement specialist to work with staff to develop a Request for Expressions of Interest (RFEOI) for an Integrated Resource Management (IRM) pilot project and bring an RFEOI document back through the Committee to the Board for approval;
2. retain the services of an independent IRM specialist to present information to the Board regarding the Sydney, Australia strategic IRM process and to assist with the development of an RFEOI, as outlined above; and
3. amend the Terms of Reference of the IRM select Committee as shown in Appendix D.

Alternative 2

That staff be directed to prepare a report for the Integrated Resource Management (IRM) Select Committee providing further information and options for proceeding with the development of a comprehensive IRM action plan based on the Committee's IRM goals.

ECONOMIC IMPLICATIONS

Funding for the RFEOI development process could be drawn from the Environmental Resource Management budget as a new initiative.

REGULATORY IMPLICATIONS

The anticipated timelines, based on conversations with Ministry of Environment staff, for the approval of a gasification pilot would be in excess of twelve months. A pilot transitioning to a Full-scale project is projected to be at least an additional two years.

A detailed regulatory requirements staff report was received by the IRM Task Force at its meeting of March 4, 2016 (Appendix C).

CONCLUSION

The Committee's IRM goals can be achieved by retaining independent procurement and technologies specialists to develop an RFEOI for an IRM pilot project. Consideration of an evaluation team for the RFEOI proposals will be brought forward to the Select Committee concurrent with the RFEOI documents.

RECOMMENDATION

That the Integrated Resource Management Select Committee recommend to the Capital Regional District Board:

That staff be directed to:

1. retain the services of a procurement specialist to work with staff to develop a Request for Expressions of Interest (RFEOI) for an Integrated Resource Management (IRM) pilot project and bring an RFEOI document back through the Committee to the Board for approval;

2. retain the services of an independent IRM specialist to present information to the Board regarding the Sydney, Australia strategic IRM process and to assist with the development of an RFEOI, as outlined above; and

3. amend the Terms of Reference of the IRM select Committee as shown in Appendix D.

Submitted by:	Russ Smith, Senior Manager, Environmental Resource Management
Concurrence:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

RS:dd

Attachments: Appendix A – IRM Select Committee Project Framework
Appendix B – RFEOI Deployment Timelines
Appendix C – IRM Task Force - Regulatory Timeline Staff Report
Appendix D – Revised Terms of Reference

APPENDIX A

IRM SELECT COMMITTEE

PROJECT FRAMEWORK

27 JULY 2016

1. TERMS OF REFERENCE-PURPOSE

   a. Make Recommendations to the Board on timing, funding and Terms of Reference for a potential pilot waste to resource program for biosolids, kitchen scraps and/or municipal solid waste
   b. Recommend options for Board and Core Area Wastewater Treatment Project Board action on governance and implementation for liquids treatment and solids treatment

2. GOALS FOR THE COMMITTEE
   i) ESTABLISH **INITIAL GOALS FOR AN IRM PROJECT (see below)**
   ii) BASED ON INITIAL GOALS IN i) ABOVE ESTABLISH **GOALS/OUTCOMES FOR A PILOT AND ACCOMPANYING STAFF WORK (see below)**
   iii) IDENTIFY POTENTIAL CRD MARKETS FOR PRODUCTS OF AN IRM PROJECT (EG. ENERGY, HEAT, SOLID MATERIALS)
   iv) IDENTIFY OPTIONS FOR A PILOT, INCLUDING MAKING A PILOT THE FIRST PHASE IN A MULTI-PHASE PROJECT, EVALUATE AND CHOOSE AN OPTION
   v) PRODUCE AN RFEOI FOR A PILOT OR MULTI-PHASE PROJECT INCLUDING EVALUATION CRITERIA
   vi) CONSIDER OPTIONS AND RECOMMEND A METHOD FOR PROCURING THE PILOT OR MULTI PHASE PROJECT
   vii) IDENTIFY OPTIONS FOR FUTURE GOVERNANCE OF MANAGING LIQUID AND SOLID WASTES TOGETHER, EVALUATE AND CHOOSE ONE
   viii) BASED ON THE OPTIONS FOR GOVERNANCE ABOVE IDENTIFY, EVALUATE AND CHOOSE AN OPTION FOR COST SHARING AND FUNDING
   ix) MAKE RECOMMENDATIONS TO THE BOARD ON ALL OF THE ABOVE

INITIAL GOALS FOR THE IRM PROJECT

- REDUCE OVERALL COSTS OF MANAGING LIQUID AND SOLID WASTES
- REDUCE NEEDED LANDFILL SPACE
- PROVIDE AN OPTION FOR MANAGING PENINSULA, CORE SLUDGE AND OTHER SLUDGE
- REDUCE OVERALL GHG EMISSIONS
- REDUCE OVERALL ENVIRONMENTAL IMPACT OF MANAGING OUR LIQUID AND SOLID WASTES

- MAXIMISE GENERATION OF USEABLE 'RESOURCES'
- USE THESE 'RESOURCES' TO RECOVER AND USE ENERGY
- REPLACE FOSSIL AND CARBON FUELS

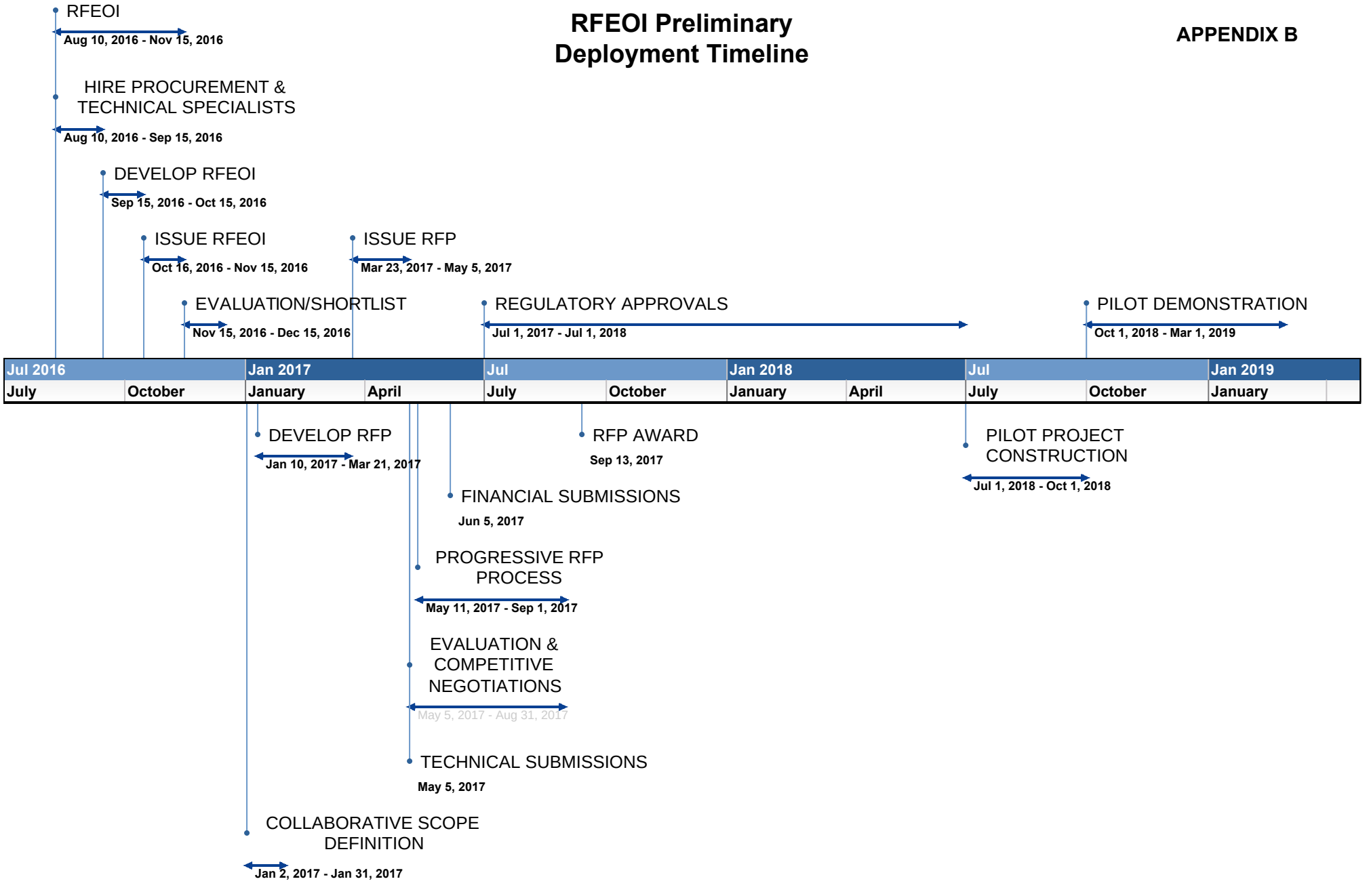
GOALS/OUTCOMES FOR A PILOT AND ACCOMPANYING STAFF WORK

- DETERMINE IF SLUDGE, KITCHEN SCRAPS AND /OR MSW GENERATED IN THE CRD CAN BE USED AS FEEDSTOCK FOR AN IRM PROJECT AND WHAT PROBLEMS WILL NEED TO BE OVERCOME
- ESTIMATE CAPITAL AND OPERATING COSTS OF COMBINING THESE IN AN IRM PLANT
- ESTIMATE POTENTIAL CRD REVENUES FROM THE SALE AND/OR USE OF RECOVERED RESOURCES
- ESTIMATE POTENTIAL SAVINGS IN CURRENT OPERATIONAL AND ENVIRONMENTAL COSTS
- GENERATE TOP LEVEL COST BENEFIT ANALYSIS
- PROVIDE INFORMATION FOR SITING, DESIGN AND TECHNOLOGIES FOR THE IRM PROJECT
- PROVIDE INFORMATION ON QUANTITIES, QUALITY AND AVAILABILTY OF FEEDSTOCK NEEDED TO MAKE AN IRM PROJECT VIABLE
- DETERMINE IF AN INTEGRATED APPROACH TO MANAGING LIQUID AND SOLID WASTE STREAMS TOGETHER WILL MEET THE INITIAL GOALS OF AN IRM PROJECT
- GENERATE SUFFICIENT INFORMATION TO INFORM THE DECISION OF GO OR NO GO FOR A FULL OR PHASE 2 OF A MULTI PHASE PROJECT THEN
- ESTABLISH SCOPE, REFINE GOALS, TECHNOLOGY AND REQUIREMENTS OF A PERMANENT REGIONAL IRM PROJECT

Prepared by M.C. Williams

RFEOI Preliminary Deployment Timeline

APPENDIX B



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APPENDIX C

REPORT TO SPECIAL TASK FORCE ON INTEGRATED RESOURCE MANAGEMENT
MEETING OF FRIDAY, MARCH 4, 2016

SUBJECT **Gasification Pilot Regulatory Requirements**

ISSUE

To provide an overview of regulatory requirements for a gasification pilot.

BACKGROUND

At its January 29, 2016 meeting, the Task Force inquired about the regulatory requirements to run a gasification pilot. Staff spoke with Ministry of Environment (MOE) staff to compile the following information.

The Waste Discharge Regulation identifies a number of industries and activities that require authorization to discharge under the Environmental Management Act (EMA). Gasification is an identified activity requiring a waste discharge authorization, usually through a permit. However, EMA has a provision to allow identified activities for a period of up to 15 months without issuing a permit. In such instances, the Ministry could issue a short term approval (maximum 15 months) that cannot be renewed at the end of its term. Ministry staff advise that a short term approval may be an option for a temporary small scale gasification pilot project utilizing both liquid waste residuals and solid waste.

The Ministry's application process for a short term Waste Discharge approval is:

- completion and submission of a draft application form by the proponent
- pre-application meeting with Ministry staff during which legal, technical and notification/consultation requirements would be discussed, including air emissions criteria and bottom and fly ash management resulting from a gasification plant
- based on the pre-application meeting, Ministry staff determines the scope of activities required by the project proponent to prepare the final application for submission of the short term approval to the Ministry
- The Ministry processes complete Waste Discharge applications on a 'first in-first out' principle (as of January 27, 2016, the Authorizations-South region, which includes the Capital Regional District, had 214 applications in the application queue)

Note: a permanent gasification facility would require a number of additional authorizations, including a Solid Waste Management Plan amendment, issuance of an operational certificate, and the potential need for an Environmental Risk Assessment.

The MOE waste discharge application process flow sheet is attached as Appendix A. Anticipated MOE authorization timelines for both a gasification pilot (~12 months+), and a full scale integrated waste gasification project (~24 months+), are outlined in Appendix B. MOE authorization estimates are based on anticipated time required for the CRD, or its consultants, to complete MOE outlined technical requirements.

RECOMMENDATION

That the Task Force receive the report, Gasification Pilot Regulatory Requirements, for information.

Submitted by:	Russ Smith, Senior Manager, Environmental Resource Management
Concurrence:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services

AB:dd

Terms of Reference

INTEGRATED RESOURCE MANAGEMENT
SELECT COMMITTEE

PREAMBLE

The Capital Regional District (CRD) Integrated Resource Management Select Committee is a select committee established by the CRD Board and will oversee and make recommendations to the Board regarding integrated resource management planning.

The Committee's official name is to be:

Integrated Resource Management Select Committee

1.0 PURPOSE

The mandate of the Committee includes providing advice and making recommendations to the Board regarding the following:

- Recommendations on timing, funding and Terms of Reference for a potential pilot waste to resource program for biosolids, kitchen scraps and/or municipal solid waste
- Recommend options for Board and Core Area Wastewater Treatment Project Board action on governance and implementation for liquids treatment and solids treatment

2.0 ESTABLISHMENT AND AUTHORITY

- The Chair and Vice Chair will be elected from among its membership;
- The committee will report its findings to the Board for consideration; and
- The committee will continue until it has made recommendations to the Board on a potential pilot waste to resource program for biosolids, kitchen scraps and/or municipal solid waste, not later than the September 14, 2016, Board meeting.

3.0 COMPOSITION

- The membership is comprised of the Finance Committee membership plus one additional Board member representing the Saanich Peninsula;
- The CRD Board Chair is an ex-officio member of the Committee;
- The Chair of the Saanich Peninsula Wastewater Commission will sit as a non-voting member of the Committee; and
- All Board members are permitted to participate in standing committee meetings, but not vote, where an item of local significance is on the agenda.

4.0 COMMITTEE GOALS

i. Establish initial goals for an IRM Project
ii. Based on initial goals in i) above, establish goals/outcomes for a pilot and accompanying staff work
iii. Identify potential CRD markets for products of an IRM Project (i.e. energy, heat, solid materials)
iv. Identify options for a pilot, including making a pilot the first phase in a multi-phase project, evaluate and choose an option
v. Produce an RFEOI for a pilot or multi-phase project including evaluation criteria
vi. Consider options and recommend a method for procuring the pilot or multi-phase project
vii. Identify options for future governance of managing liquid and solid wastes together, evaluate and choose one
viii. Based on the options for governance above identify, evaluate and choose an option for cost sharing and funding
ix. Make recommendations to the Board on all of the above

5.0 PROCEDURES

- The CRD Board Procedures Bylaw will apply;
- The committee shall meet as required at the call of the Chair at least once monthly;
- The agenda will be finalized in consultation between CRD staff and the Committee Chair and any committee member may make a request to the Chair to place a matter on the agenda;
- With the approval of the IRM Select Committee Chair and the Board Chair, committee matters of an urgent or time sensitive nature may be forwarded directly to the Board for consideration; and
- A quorum is a majority of the committee membership and is required to conduct committee business.

6.0 RESOURCES AND SUPPORT

- The General Manager of Parks & Environmental Services will lead the coordination and allocation of resources to the Committee;
- Minutes and agendas are prepared and distributed by the Legislative and Information Services Department.

Approved by CRD Board on April 20, 2016
Amended by the CRD Board on June 8, 2016
Amended by the CRD Board on ***MONTH, DD, YYYY***

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ERM 16-55

REPORT TO INTEGRATED RESOURCE MANAGEMENT SELECT COMMITTEE MEETING OF WEDNESDAY, JULY 13, 2016

SUBJECT **Integrated Resource Management Pilot Project**

ISSUE

To provide the Integrated Resource Management (IRM) Select Committee with additional information regarding options for advancing a Gasification Pilot Project.

BACKGROUND

At its June 24, 2016 meeting, the IRM Select Committee directed staff to:

> *Reach out to companies previously engaged by the IRM Task Force to seek information regarding capacity and cost for an out-of-region gasification pilot project.*

In addition, based on comments from Committee members, staff have:

- prepared a staff report providing options and analysis of alternatives for an expedited IRM gasification pilot project; and
- provided clarification regarding the control of solid waste within the CRD

The objective of the pilot project is to determine if IRM gasification technology can process diverse residual waste materials to provide valuable energy recovery and end products, while meeting regional environmental and financial goals.

With the Committee's advice, staff contacted two prospective proponents, Janicki Bioenergy and Pivotal IRM, to gauge interest and capacity to facilitate an out-of-region pilot project using CRD feedstock materials (or equivalent composition). Both proponents have indicated they have a scalable waste processing unit (20 and 11 tonnes/day) available this summer and fall for testing and demonstration purposes. Indications are that results from an out-of-region pilot project procured through a Request for Expressions of Interest (RFEOI) process would not be available until late fall or early 2017.

In addition, a local pilot project at the Saanich Peninsula wastewater treatment plant or the Hartland landfill would require provincial approval, taking at least 12 months, and would also require additional time for construction.

Control of Solid Waste within the CRD:

The CRD Solid Waste Management Plan, or the associated provincial legislation, does not give the CRD control over waste streams within the region unless the material is disposed of at Hartland landfill. Material is collected and controlled by municipalities and the private sector. Municipal government controls 25-30% of the waste feedstock material collected in the region. 70% of the material is controlled by private industry, including residential recycling materials collected through Multi Material BC (MMBC) programs. A breakdown of available feedstock materials will be provided to potential pilot proponents in the RFEOI for determination of the resource recovery potential for their proposed technology (Appendix A).

Municipalities and electoral areas only have control over solid waste to the extent they are interested in passing a bylaw creating a solid waste collection service. Private waste haulers are not regulated by the CRD; they compete for solid waste customers on a price and service basis. Private haulers must abide by applicable provincial and municipal enactments.

ALTERNATIVES

That the Integrated Resource Management Select Committee recommend to the CRD Board:

Alternative 1

That Capital Regional District staff coordinate the development of a white paper that would result in a business case analysis and feasibility review of the gasification of mixed feedstock materials using various technologies.

Alternative 2

That the Capital Regional District (CRD) issue a Request for Expressions of Interest to determine interest and cost for an out-of-region pilot project using existing gasification infrastructure to process a mix of feedstock materials, provided by the CRD or the proponent, meeting CRD waste composition requirements.

FINANCIAL IMPLICATIONS

The estimated cost of Alternative 1, including staff time, is $40,000. As a result of preliminary discussions with two potential proponents, Alternative 2 is estimated at up to $250,000 per week of pilot testing, including the provision of feedstock material, monitoring and reporting.

Green Municipal Fund (GMF) feasibility study grant funding could be available for Alternative 1 or 2 if the project is initiated after receiving and approving the CRD's GMF funding application. It is proposed that any expenditures not eligible for GMF be funded from existing 2016 budget approvals from CRD Solid Waste (45%), Core Area Liquid Waste (45%) and Saanich Peninsula Wastewater (10%).

TECHNICAL IMPLICATIONS

The white paper approach under Alternative 1 relies on interpretation of third-party data and results; however, this alternative allows for a thorough evaluation of third-party gasification projects' environmental and financial benefits by reviewing their operating, maintenance and resource recovery outcomes.

The result for Alternative 2 is dependent on the breadth and depth of the pilot project. A short-term pilot project (less than three months of operation) will provide partial learning, but could result in many unanswered questions. For example, the Select Committee will have a better understanding of the technical feasibility and resource recovery from various feedstock mixes. A short-term pilot will not provide significant information regarding reliability, maintenance and long-term operation. A draft RFEOI for such a short-term pilot is attached as Appendix B.

TIMELINES

The anticipated completion of a white paper is October 1, 2016. If an RFEOI is pursued, document development, award, completion of testing and reporting of results could be completed as early as January 1, 2017.

CONCLUSION

The Integrated Resource Management (IRM) Select Committee is interested in obtaining additional information regarding the feasibility of gasification as an IRM solution for a comingled feedstock of sewage sludge and municipal solid waste. The most timely and comprehensive approach to obtain additional information would be to develop a white paper to assess integrated feedstock gasification alternatives.

RECOMMENDATION

That the Integrated Resource Management Select Committee recommend to the Capital Regional District Board:

That Capital Regional District staff coordinate the development of a white paper that would result in a business case analysis and feasibility review of the gasification of mixed feedstock materials using various technologies.

Submitted by:	Russ Smith, Senior Manager, Environmental Resource Management
Concurrence:	Mike Walton, Acting General Manager, Parks & Environmental Services
Concurrence:	Ted Robbins, B.Sc., C.Tech, General Manager, Integrated Water Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

RS:dd

Attachments: Appendix A - Solid Waste Feedstock Material Summary
Appendix B – Draft Request for Expressions of Interest

MATERIAL SUMMARY (Revised Jan 28/16)

MATERIAL	COLLECTION	CONTROLLER	TONNAGE	percent	GOVERNMENT CONTROLLED FEEDSTOCK
DISPOSAL	**HAULER**				
General Refuse [1]					
paper and paperboard	municipalities, private, self haul bus and res	30% gov't, 70% other	21,888	30%	6,566
food waste	municipalities, private, self haul bus and res	30% gov't, 70% other	19,709	30%	5,913
plastic	municipalities, private, self haul bus and res	30% gov't, 70% other	17,312	30%	5,194
wood and wood products	municipalities, private, self haul bus and res	30% gov't, 70% other	13,133	30%	3,940
construction and demolition	private, self haul bus and res	100% other	30,594	0%	-
textiles	municipalities, private, self haul bus and res	30% gov't, 70% other	7,287	30%	2,186
composite materials	municipalities, private, self haul bus and res	30% gov't, 70% other	6,851	30%	2,055
other	municipalities, private, self haul bus and res	30% gov't, 70% other	6,441	30%	1,932
yard waste	municipalities, private, self haul bus and res	30% gov't, 70% other	4,430	30%	1,329
other organic waste	municipalities, private, self haul bus and res	30% gov't, 70% other	3,134	30%	940
ferrous metals	municipalities, private, self haul bus and res	30% gov't, 70% other	3,134	30%	940
glass	municipalities, private, self haul bus and res	30% gov't, 70% other	2,566	30%	770
electronics	municipalities, private, self haul bus and res	30% gov't, 70% other	2,526	30%	758
hazardous waste	municipalities, private, self haul bus and res	30% gov't, 70% other	1,017	30%	305
rubber	municipalities, private, self haul bus and res	30% gov't, 70% other	939	30%	282
non-ferrous metals	municipalities, private, self haul bus and res	30% gov't, 70% other	845	30%	254
			141,806		**33,364**
Controlled Waste (solid waste)					
waste asbestos	municipalities, private, self haul bus and res	100% other	1,390	0%	-
surface coating waste	municipalities, private haulers	100% other	265	0%	-
out of region asbestos	municipalities, private, self haul bus and res	100% other	182	0%	-
contaminated soil	municipalities, private, self haul bus and res	100% other	151	0%	-
food processing waste	municipalities, private haulers	100% other	148	0%	-
spoiled food	municipalities, private, self haul bus and res	100% other	112	0%	-
misc controlled waste	municipalities, private, self haul bus and res	92% gov't, 8% other	56	92%	52
dead animals	municipalities, private, self haul bus and res	86% gov't, 14% other	37	86%	32
animal fecal waste	municipalities, private, self haul bus and res	100% other	34	0%	-
soot and spent charcoal	private haulers, residents, self haul bus	100% other	24	0%	-
health hazard waste	municipalities, private haulers	100% other	22	0%	-
contaminated drywall	municipalities, private, self haul bus and res	100% other	2	0%	-
			2,423		**83**
Controlled Waste (liquid waste)					
SPWWTP (screenings/sludge)	CRD contractors or staff	100 % gov't	3,601	100%	3,601
Other sludge	private haulers	100% other	675	0%	-
Pumpings (non sewage)	municipalities, private, CRD contractors/staff	70% gov't, 30% other	611	70%	428
Sooke (screenings/sludge)	CRD contractors or staff	100 % gov't	580	100%	580
Clover Point (screenings)	CRD contractors or staff	100 % gov't	392	100%	392
Macaulay Point (screenings)	CRD contractors or staff	100 % gov't	318	100%	318
Other screenings	private haulers	100% other	124	0%	-
Tsawout (screenings/sludge)	private haulers	100 % gov't	17	100%	17
			6,318		**5,336**
TOTAL DISPOSAL 2014			**150,547**		**38,783**

MATERIAL	COLLECTION	CONTROLLER	TONNAGE	percent	GOVERNMENT CONTROLLED FEEDSTOCK
DIVERSION [2]	**RECEIVER**				
Yard Waste	CRD Facilities	100% gov't	18,384	100%	18,384
Paper Fibres [3]	CRD contractors and facilities	100% other (stewards)	13,904	0%	-
Food Waste	Municipalities	100% gov't	8,626	100%	2,185
Mixed Containers [3]	CRD contractors and facilities	100% other (stewards)	5,449	0%	-
Wood Waste	CRD facilities	100% gov't	1,653	100%	1,653
Metals	CRD facilities	100% gov't	590	100%	590
Electronics	CRD contractors and facilities	100% other (stewards)	316	0%	-
Mattresses	CRD facilities	100% gov't	218	100%	218
Paint/Pesticides/Lamps	CRD facilities	100% other (stewards)	167	0%	-
Plastic (Large Rigid)	CRD contractors and facilities	100% gov't	147	100%	147
Metal Appliances	CRD facilities	100% other (stewards)	128	0%	-
Asphalt Shingles	CRD facilities	100% gov't	101	100%	101
HHW Orphans	CRD facilities	100% gov't	66	100%	66
Tires	CRD contractors and facilities	100% other (stewards)	54	0%	-
Books	CRD facilities	100% gov't	50	100%	50
Motor Oil, Filters, Containers	CRD contractors and facilities	100% other (stewards)	36	0%	-
Batteries	CRD facilities	100% other (stewards)	34	0%	-
Plastic (Film)	CRD contractors and facilities	100% other (stewards)	26	0%	-
Propane Tanks/Fire Ext.	CRD facilities	100% gov't	17	100%	17
Polystyrene	CRD contractors and facilities	100% other (stewards)	15	0%	-
Reusable Materials	CRD facilities	100% gov't	12	100%	12
Glass (bottles and jars)	CRD facilities	100% other (stewards)	11	0%	-
Cooking Oil	CRD facilities	100% gov't	3	100%	3
TOTAL DIVERSION 2014			**50,007**		**23,426**

GRAND TOTAL ALL MATERIAL STREAMS	**200,554**		**62,209**

[1] General refuse tonnage by material type is an estimate based on known kitchen scraps diversion and latest waste stream analysis data. Data includes 22,500 tonnes of construction and demolition waste from Tervita Highwest Landfill in Highlands.

[2] 2013 data-Quantity of curbside paper fibres/mixed containers not available with material being managed under stewardship beginning May 2014

[3] Estimated composition by weight = 40% glass, balance is a mixture of plastic, metal and polycoat containers

APPENDIX B



PARKS & ENVIRONMENTAL SERVICES DEPARTMENT

Request for Expressions of Interest

RFEOI No. 16- 1879

Regional Integrated Resource Management Pilot

June 2016

DRAFT

Request for Expression of Interest

Regional Integrated Resource Management Pilot

The Capital Regional District (CRD) invites proponents to submit expressions of interest to establish a Gasification Pilot for managing residues from the Region's existing solid and future liquid waste management facilities.

Purpose

The purpose of this Request for Expressions of Interest ("RFEOI") is to:

(a) Identify interested and qualified companies that are capable of running a pilot project using reliable, cost-effective, sustainable and environmentally sound waste-to-clean-energy technology. Due to the tight timelines the pilot will likely be conducted at an existing out of region facility;
(b) Obtain from interested companies an understanding of the technologies they are offering and how these will meet regional Integrated Resource Management goals, provide valuable energy recovery and end products, and maintain strict environmental controls (such as odours, leachate, emissions, residue, etc.); and
(c) Enter into an agreement with on one or multiple respondents that best meet goals for the pilot and the needs of the CRD.

Background

Gasification is an emerging environmentally friendly alternative to landfilling and producing energy from waste. Due to the complexity associated with typical gasification processes, a pilot plant is needed to better understand and demonstrate the most appropriate thermal conversion process and to produce valuable data for the design of a future full scale facility at the CRD.

Solid and liquid waste management within the CRD are currently driven by different legislative authorities/requirements and under the administration of different regional committees and Boards. The desire is to integrate solid and liquid waste management interests and maximize resource recovery through joint thermal processing of residues and generate valuable energy from waste.

Scope of the Pilot Project

The proposed pilot facility should have the flexibility and scalability to demonstrate that all of the regions residual solid waste in combination with biosolids can be effectively upcycled through thermal conversion technologies.

The CRD is open to the type of processing technology offered. However, the technology must be proven and fully meet all of the CRD's needs including:

- have maximum energy output flexibility
- provide lowest overall cost to the CRD
- have robust feedstock pre-treatment and emission control systems
- high degree of integration with other resource opportunities within the region
- least impact to the public and the environment.

Based on the feedstock information provided below, proponents should assume that the pilot plant is to process a minimum of **10 tonnes** per day of combined residual waste and run for a minimum of run time of **100 hrs.**

Detailed design is not required as part of the RFEOI, however proponents must convince the CRD that their technology and concept will work well based on technical information (feedstock requirements, pre-treatment, properties of syngas, overhead particulates, emissions and testing, residue/slag), existing reference facilities and experience. Proponents are required to provide technology verification details, mass and energy output projections/estimates along with capital and operating costs for similar facilities. It is understood that this will be approximate based on the limited information that is available at this time. Assumptions should be clearly stated. Since pilot data will be instrumental in defining future gasifier technology for the region all of the data gathered from the pilot has to be comprehensive and validated.

The CRD wishes to choose successful proponent the middle of August 2016 and have the pilot operational by November 1, 2017.

Feedstock

Feedstock for the pilot is to be representative of typical of waste collected within the region and would include MSW residual waste, commercial and industrial waste, source separated kitchen scraps and biosolids. A total of 175,000 tonnes of waste was received at Hartland and Tervita landfills in 2014 and is summarized in the following table.

An out of region pilot would source and use simulated MSW with similar elemental waste composition to that of the Capital Region for pilot testing. The last waste composition study completed for the region is attached to the RFEOI for reference and a detailed summary of waste collected in 2014 is tabulated below:

2014 CRD Waste Disposal Summary General Refuse		**Tonnage**
	paper and paperboard	21,888
	food waste	19,709
	plastic	17,312
	wood and wood products	13,133
	construction and demolition	30,594
	textiles	7,287
	composite materials	6,851
	other	6,441
	yard waste	4,430
	other organic waste	3,134
	ferrous metals	3,134
	glass	2,566
	electronics	2,526
	hazardous waste	1,017
	rubber	939
	non-ferrous metals	845
		141,806
Controlled Waste (solid waste)		
	waste asbestos	1,390
	surface coating waste	265
	out of region asbestos	182
	contaminated soil	151
	food processing waste	148
	spoiled food	112
	misc controlled waste	56
	dead animals	37
	animal fecal waste	34
	soot and spent charcoal	24
	health hazard waste	22
	contaminated drywall	2
		2,423
Controlled Waste (liquid waste)		
	Sludge (SPWWTP)	3,566
	Sludge (Coast)	661
	Pumpings (non sewage)	611
	Sludge (Sooke)	559
	Screenings (Clover Point)	392
	Screenings (Macaulay Point)	318
	Screenings (Coast)	102
	Screenings (SPWWTP)	35
	Screenings (other)	22
	Screenings (Sooke)	22
	Sludge (other)	14
	Sludge (Tsawout)	9
	Screenings (Tsawout)	7
		6,318
TOTAL		**150,547**

Proposed Implementation Timelines

1.	Board Authorization to issue RFEOI	July 14, 2016
2.	Issue RFEOI	July 15, 2016
3.	Evaluation of technologies and selection of preferred proponents	August 3rd to 9th , 2016
4.	Board approval of Pilot	August 10th , 2016
5.	Pilot Testing	November/December 2016
6.	Data analysis and reporting	January 2017

Expression of Interest Submission Details

The Expression of Interest ("EOI") should provide the following information:

1. Statement as to how the proponent would assist the CRD in achieving its goals and objectives for the pilot.
2. The experience of the proponent in implementing gasification facilities, including design, construction and long term operation of these facilities.
3. Description of the thermal processing technology, including capacity with a clear indication of required inputs and expected outputs. The technology shall be clearly defined with a schematic flow diagram. Include a step-by-step description of the process, from feedstock entry, pre- processing to final residue management.
4. Provide a mass balance and energy balance as well as an expected net energy production (net of internal consumption and purchased energy) in kWh per tonne of feedstock.
5. Include a basic layout drawing showing major components, buildings and pathways for the pilot. Indicate how these could be expanded in the future.
6. Clearly describe the nature and quality of the syngas expected from the facility.
7. State the proposed form of environmental control for all facets of the process. Indicate where this has been successfully used before.
8. Describe the flexibility of the process to manage greater or lower volumes of waste and the ability to accommodate other waste streams.
9. Indicate detailed feedstock quality requirements.
10. Provide a minimum of three operating reference facilities using the same or very similar technology. Provide location, number of years in operation, capacity, availability, reliability, contact name (with email address and phone number), and indicate if this facility can be visited. Provide also the ownership and operating structure of the reference facilities.
11. Provide approximate capital costs and operating costs per tonne of input material processed for the reference facilities.
12. Propose potential pilot project development process, validation process and final reporting.
13. Provide a draft schedule showing key milestones for the facility to be operable November 1, 2016.

Evaluation

The CRD, in its sole and absolute discretion, may select one or multiple respondents from the RFEOI that demonstrate the greatest combination of qualifications, vision, experience environmental benefits and cost. Evaluations will consider respondents' success with carrying out similar pilots and commitment to develop and operate the waste gasification pilot in a cost-effective and timely manner.

General Terms and Conditions

Issuance of the RFEOI, and/or the decision not to proceed with the pilot, will not cause the CRD to be liable for any costs incurred by Respondents.

The CRD may, in its sole and absolute discretion, independently verify any information in any submission. The CRD reserves the right to debrief both successful and unsuccessful Respondents after the announcement of the Respondents selected under the RFEOI.

This RFEOI does not create a tender or RFP process. This EOI is not an not an offer to contract made by the CRD. By this RFEOI, the CRD reserves to itself the right to consider and analyze the RFEOI's, select short-listed respondents, and sign a future agreement with one or multiple respondents. Without limiting the generality of the foregoing, the CRD reserves the right to:

a. reject any RFEOI, whether or not complete and whether or not it contains all the requested information;
b. require clarification of any RFEOI;
c. request additional information on any RFEOI;
d. reject any or all RFEOI's without any obligation, or any compensation or reimbursement to the Respondents;
e. refuse to proceed with the pilot;
f. modify this RFEOI at any time;
g. proceed with the project in some other manner separate from this RFEOI; and
h. re-advertise for new submissions for this work or for work of a similar nature.

<u>Conflict of Interest</u>

A Respondent must disclose in their Response any actual or potential conflicts of interest and existing business relationships it may have with the CRD, its elected or appointed officials or employees.

<u>Limitation of Liability and No Claim</u>

1. The CRD and its directors, officers, employees, agents, consultants and advisors are not liable or responsible for any oral, verbal or written information, or any advice, or any errors or omissions, which may be contained in this RFEOI or otherwise provided to a Respondent pursuant to this RFEOI. The CRD and its representatives, agents, consultants and advisors will not be liable to any Respondent for any claims, whether for costs, expenses, losses or damages, or loss of anticipated profits, or for any other matter whatsoever, incurred by a Respondent in preparing or making a submission, or

participating in any discussions or negotiations or any other activity related to or arising out of this RFEOI.
2. By responding to this RFEOI a Respondent agrees that it will conduct its own independent investigations and interpretations and will not rely on the CRD with respect to information, advice, or documentation provided by the CRD.
3. For certainty, no contractual relations shall exist between the CRD and any Respondent to this RFEOI, except that by submitting a response to this RFEOI a Respondent acknowledges and accepts the provisions of this section, General Terms and Conditions.

Ownership of Submissions/Confidentiality

1. All documents submitted to the CRD, including RFEOI, and any drawings, plans and models (as applicable), become the property of the CRD and will not be returned to the Respondent. They will be received and held in confidence by the CRD, subject to the provisions of the *Freedom of Information and Protection of Privacy Act* of British Columbia (FOIPPA)
2. FOIPPA governs the collection, use, retention, security, and disclosure of personal information managed by public organizations, including the CRD. FOIPPA also applies to all electronic information accessed or submitted by Respondents. If EOI and any related documents contain protected, proprietary or confidential information, Respondents should identify the specific issue or information and provide supporting reasons why the CRD should not release this information if requested by a FOIPPA inquiry.

Future Process

Participation in this RFEOI and the submission of a response to this RFEOI is not a pre-condition to participation in a subsequent commercial process, if any. If the CRD decides, at its sole and absolute discretion, to implement a subsequent commercial process, the CRD may invite proponents who did not participate in this RFEOI to participate in such subsequent process.

Submission Address and Closing Date

(by courier)
Capital Regional District
625 Fisgard Street
Victoria, BC V8W 1R7
Attention: Joshua Frederick

(by mail)
Capital Regional District
PO Box 1000
Victoria, BC V8W 2S6
Attention: Joshua Frederick

Closing Date and Time: August 3rd at 2:00:00 pm local time.

Late responses may be considered at the sole and absolute discretion of the CRD. However, the CRD is not obligated to consider late responses.

Responses submitted by facsimile communication equipment (FAX) or email will not be considered.

Proponents must register with the Parks & Environmental Services Contracts Coordinator (250-360-3284 or mreilly@crd.bc.ca) to be included on the Registered Proponents List and in order to receive any further communications regarding this RFEOI issued by the Owner.

CAPITAL REGIONAL DISTRICT
SOLID WASTE STREAM COMPOSITION STUDY
2009-2010

Final Report



PREPARED FOR: CAPITAL REGIONAL DISTRICT

PREPARED BY: SPERLING HANSEN ASSOCIATES

September 2010

PRJ09042

SPERLING HANSEN ASSOCIATES

- Landfill Services
- Land Reclamation
- Corporate Management
- Groundwater Hydrogeology

SPERLING HANSEN ASSOCIATES

- Landfill Services
- Land Reclamation
- Corporate Management
- Groundwater Hydrogeology

Sept 1st, 2010 PRJ09042

Ms. Anke Bergner
Environmental Services Department
Capital Regional District
625 Fisgard Street
P.O. Box 1000
Victoria, B.C.
V8W 2S6

Dear Ms. Bergner

Re: Final Report for Solid Waste Composition Study.

We are pleased to submit to you our final report summarizing the results of two sampling rounds of the waste composition study conducted at the Hartland Landfill in 2009 and 2010.

We have enjoyed working with the CRD in conducting the study, and we believe that the information in this report will help the CRD in its efforts to improve it recycling and waste diversion programs.

Yours truly,
SPERLING HANSEN ASSOCIATES INC.



David Kvick M.Sc.
Environmental Scientist

Executive Summary

Since adopting the 50% waste reduction goal in 1991, the Capital Regional District (CRD) has commissioned four studies to analyze the waste composition in the Regional District. Two studies were completed by Cameron Advisory Services in 1990 and 1996, and the third and forth studies were completed by Sperling Hansen Associates (SHA) in 2001, and 2004. The studies have provided valuable benchmark data and analysis for evaluating the success of the solid waste management programs. In August 2009 the CRD contracted SHA to conduct a fifth solid waste composition analysis at Hartland Landfill for the years 2009-2010. This report includes analysis and interpretation of the data collected during the two sorting periods (fall 2009 and spring 2010) completed in this study.

Objectives of the study included determining the overall waste composition by material type, characterizing the waste by generation sector (residential, ICI and DLC), and reviewing trends from different areas of the Regional District.

The most frequently encountered waste component was "Organic Waste" accounting for one third of all residuals. Second was "Paper and Paper Products" representing approximately 16% of the total waste stream. Third was "Plastics", representing about 13% and the fourth most commonly found waste type was "Wood and Wood Products" at 10%. The remaining waste categories represented approximately 30% of the waste stream.

In terms of the waste disposal rates, it was calculated that each person within the Regional District was responsible for 414 kg of landfilled waste in 2009. Included in this total was 126 kg of "Organic Waste", 69 kg of "Paper and Paper Products", 54 kg of "Plastics" and 41 kg of "Wood and Wood Products".

The waste category with the biggest change between the 2004 and 2009 studies was "Organic Waste" which saw a decrease in the disposal rate of 10.1 kg per person per year. The differences between the other categories were not large enough to be statistically significant in terms of waste disposal rates.

In general, waste from the residential and ICI sectors was relatively similar, with very similar distribution in the 14 main waste categories with only one category ("Paper and Paper Products") that had a statistically significant difference. Residential waste had 15.5% of "Paper and Paper Products while ICI had 21.2%. The main difference mainly stemmed from the ICI waste contained more tissue paper, paper towels and napkins.

The comparison between single family dwellings vs. apartments showed noticeably more "Composite Products" (mainly disposable diapers) in the waste from the single family dwellings compared to the apartments.

In the general waste stream, the three most common electronics products being disposed of were "Other Miscellaneous Consumer Electronics", "Display Devices" followed by "Small Appliances". These three categories accounted for over 70% of the electronics waste with annual disposal rates of 783, 753 and 545 tonnes per year respectively.

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APPENDIX D: Detailed Result Tables of Waste Composition for Special ICI Study

1. INTRODUCTION

1.1 General Background

Since adopting the 50% waste reduction goal in 1991, the Capital Regional District (CRD) has commissioned four studies to analyze the waste composition in the Regional District. Two studies were completed by Cameron Advisory Services in 1990 and 1996, and the third and forth studies were completed by Sperling Hansen Associates (SHA) in 2001, and 2004. The studies have provided valuable benchmark data and analysis for evaluating the success of the solid waste management programs. In August 2009 the CRD contracted SHA to conduct a fifth solid waste composition analysis at Hartland Landfill for the year 2009 and 2010. This report includes analysis and interpretation of the data collected during the two sorting periods (fall 2009 and spring 2010) in the study.

1.2 Objectives

The current study includes goals similar to those in the 2004 analysis plus requests for new information regarding the composition of solid waste destined for the Hartland landfill. In the competitive proposal call, the CRD highlighted the following objectives for this study:

- To determine the overall composition of the residual solid waste stream being deposited at Hartland Landfill by material type (sorted into 14 primary and 131 secondary categories).
- To provide the portion of residual solid waste being received from each of three basic waste generation sectors, namely the residential, industrial / commercial / institutional (ICI) and demolition / land-clearing / construction waste (DLC) sources.
- To characterize the residual waste composition by primary and secondary category in each of the three basic waste generation sectors.
- To profile the residual waste composition produced by apartments and condominiums in the Capital Regional District.
- To profile the residual waste composition produced from four residential areas also serviced by blue box recycling programs. Each of the four routes was pre-selected by the CRD within the four core communities.
- To determine the effectiveness of material bans implemented since the 2004 study.
- To produce a specific profile of plastics and household hazardous waste (HHW) being disposed of at Hartland Landfill through the general refuse.
- To identify changes in the nature of the solid waste generation by comparing the results of this study to previous solid waste audits.

The composition of the plastic waste stream is the object of special focus in the current study. The number of sub-categories in this field has been increased from 17, in the 2004 study, to 25 in this audit. The aim of this increase is to further define the composition of this waste stream by identifying the end use of each plastic. This study received financial support from several Industry Product Stewardship

Organizations (IPSOs): the BC Used Oil Management Association (BCUOMA), the Electronics Stewardship Association of British Columbia (ESABC), the Product Care Association (PCA) as well as the Canadian Plastics Industry Association (CPIA). Representatives from these groups observed the sampling process and have expressed an interest in the results.

2. METHODOLOGY

It was the intent of this study to utilize, where practical, the waste sorting methodology outlined in the Canadian Council of the Ministers of the Environment (CCME) guide titled "Recommended Waste Characterization Methodology for Direct Waste Analysis Studies in Canada".

2.1 Staff, Equipment and Work Days

The sorting team consisted of a six-person team made up of Hartland Landfill staff as well as CRD Environmental Services temporary staff.



Photo 2-1. Sorting Crew and CRD Project Coordinator Anke Bergner.

Sperling Hansen Associates staff members were present for the first three days of the first sampling session and for one day during the spring sampling session. Sorting staff orientation and training was held on the first day of the sampling period. General methodology and health & safety training was

provided by SHA staff and additional safety awareness training was provided by Ms. Laraine Fowler, the CRD's Health and Safety Coordinator.

Equipment that was utilized during the sorting program included:

- Safety Equipment (first aid kit, portable CB radio on the Hartland Landfill frequency, portable eyewash, fire extinguisher).
- Protective Equipment (safety boots, Tyvek® overalls, rubber aprons, inner cotton or latex gloves, outer puncture resistant rubber gloves, dust masks and respirators, safety glasses, high visibility vests).
- 2 High-resolution electronic scales complete with power generator.
- 0.9 by 1.8 metre (3'x 6') sorting tables (5).
- 6.0 by 9.0 metre (20'x 30') tent to cover work area.
- Various sorting containers (120 L plastic totes, 70 L garbage cans, 50 L blue boxes).
- Rakes, brooms, shovels, scoops, utility knifes for opening bags and sorting through materials.
- Backhoe with three way front bucket.

Sample sorting was conducted from Monday to Friday during normal landfill hours of operation.

2.2 Sampling Categories

Samples were sorted in accordance with the CCME classification system, with the exception of the household hazardous waste (HHW) and plastics categories. As mentioned previously, the CRD wanted to develop a more detailed profile of plastics and hazardous waste being disposed of at Hartland Landfill (than would be identified using the CCME classification system), and therefore additional plastics and hazardous waste secondary categories were added.

The changes in the Household Hazardous Waste categories reflect the changes that have occurred in the manufacture and distribution of potentially hazardous products available to the consumer today. The new survey has expanded the fluorescent lighting from 1 category to 2 (bulbs and tubes) in the new audit. "Rechargeable batteries" is another new category. Most of the other changes involve the participation of the Product Care Association (PCA) in the current survey. Whereas the 2005 audit had 4 categories for paints and solvents, this year's audit has expanded to 14. The PCA expressed an interest in a breakdown of the paint/solvent category to distinguish between PCA and non-PCA products, as well as full vs. empty PCA/non-PCA containers. The 2005 audit counted pesticides including containers and empty pesticide containers. The current survey differentiated between PCA and non-PCA pesticides and containers, expanding this category from 2 to 4 items.

The plastics category has expanded from 17 items in 2005 to 25 in this year's survey. This was previously a relatively easy category to sort but became more complicated in the 2009 audit. During the first days of the audit, the crew refined their sorting technique to identify the new categories. This year, sorting has been refined to identify not only the type of plastic, but also the end use of the product, differentiating between product packaging for grocery items, and take-out packaging. It was not always easy to determine the end use of the plastic items and the sorting crew did their best based on their experience, for example, they were asked to decide whether polyethylene grocery bags were used only once (for the trip from the store to the home) or re-used as garbage bags.

2.3 Sampling Methodology

To account for the seasonal variability of the waste stream, the sampling program was split into two sampling periods, the first period being from October 19th to November 17th, 2009, and the second from April 19th to May 14th 2010.

The aim of the study was to produce solid waste stream composition profiles for the entire waste stream entering the Hartland Landfill, for selected residential routes, for selected apartment and condominium buildings, and for ICI generators that were specified by the CRD. Experience from previous waste composition studies indicated that with a five to six person sorting crew, it would be possible to complete approximately 90 samples during a four-week period. During the first sorting session (fall 2009), the crew was able to complete a total of 102 samples rather than the targeted 90. The target for the number of samples in the spring sampling session was therefore increased to 100.

Out of the 90 targeted samples for the fall session, 8 samples were designated for the neighbourhood study, 20 samples were designated for the special study of apartment and condominiums, 6 samples for selected ICI generators, 3 for selected electoral areas, and 14 samples designated for the residential waste stream going to Hartland Landfill. The remaining 38 samples were designated for ICI and DLC loads entering the Hartland Landfill. This distribution was adjusted to accommodate 100 samples for the spring sampling session (see Table 2-1).

Table 2-1. Target Distribution of samples.

Category	Number of Samples Phase 1	Number of Samples Phase 2
Residential samples from pre-selected neighbourhoods.	8	8
Residential samples from pre-selected apartment buildings.	20	20
Residential samples based on tonnage to the landfill	14	16
Residential samples from pre-selected electoral areas.	3	6
ICI samples from pre-selected waste generators	7	7
ICI samples based on tonnage to the landfill	28	33
DLC samples based on tonnage to the landfill	10	10
Total	**90**	**100**

An assumption was made that approximately 50% of the waste received at the site comes from the residential sector, and the remaining 50% comes from the ICI and the DLC sectors.

In order to obtain the desired number of samples from each of the service areas, the generation sectors, and the special study areas, a list of targeted vehicles was prepared prior to commencement of the sampling period (see Table 2-3 and 2-4). This was periodically updated when new information was obtained throughout the course of the project.

The list was developed using scale data provided by the CRD, which provided a breakdown of waste haulers using the Hartland Landfill, and personal communication with the haulers that provided details on the actual sources and collection areas.

Whenever a target vehicle was identified by the team leader, the vehicle was directed to unload at a designated area to the side of the active face. Large or bulky items contained in the load were then removed from the load, while the remaining refuse was mixed using the excavator bucket of the backhoe to create a homogenized mixture. A representative sample weighing approximately 125 Kg was then extracted from the homogenized mixture using the three-way front bucket and delivered to the sorting table (see Photo 2-2). The details of the load, including the total load weight and the approximate weight of the oversized materials, were recorded on a sample data sheet (see Appendix A).

Collection and delivery of the loads from targeted apartments, condominiums and ICI generators that were part of the special study were contracted out to the companies that normally service the requested buildings or businesses.



Photo 2-2. Crew at work at the sorting table.

Table 2-2 Waste Sorting Categories

Primary Category	Secondary Category
Paper and Paperboard	Newsprint (including flyers)
	Magazines and mixed recyclable paper
	Corrugated cardboard
	Pizza boxes
	Waxed corrugated cardboard
	Boxboard
	Telephone books
	Books
	Fine paper (writing, computer, envelope, office)
	Tissue paper, paper towels, napkins
	Feminine Hygiene Products (sanitary napkins, tampons)
	Gabletop Cartons - Milk and Milk Substitutes
	Gabletop Cartons - Juice & Other
	Aseptic boxes - Milk and Milk Substitutes
	Aseptic boxes - Juice & Other
	Brown kraft paper, including bags
	Paper Cups
	Other paper (non-recyclable), wall paper, shiny gift bags, frozen juice containers
Glass	Beverage Containers - alcoholic
	Beverage Containers - non alcoholic
	Food Containers
	Other Glass Containers
	Other glass and ceramics (plate, mirrors, light bulbs, ceramics)
Ferrous Metals	Beverage Containers - alcoholic
	Beverage Containers - non alcoholic
	Food Containers
	Large metal appliances (white goods)
	Other ferrous metals
Non-ferrous Metals	Beverage Containers - non alcoholic
	Beverage Containers - alcoholic
	Food Containers
	Aluminum trays & foil
	Other non-ferrous metals
Plastics	Bottles/Jugs - PET beverage bottles (#1) (soft drink, juice)
	Bottles/Jugs - PET other bottles and jars (#1) (cooking oil, dish soap, peanut butter jars)
	Bottles/Jugs - HDPE beverage bottles (#2) (juice)
	Milk Jugs - HDPE
	Bottles/Jugs - HDPE other bottles and jugs (#2) (shampoo, windshield wash)
	Bottles/Jugs - PVC bottles and jars (#3) (lotions, soap, shampoo)
	Bottles/Jugs - other bottles, jars and jugs (#4 LDPE, #5 PP, #7) (ketchup, Tropicana Juice)
	Other Rigid Containers - PET Food take out (#1) (Mc D salad bowls…)
	Other Rigid Containers - PET Other food containers (#1)(Deli containers, berry containers, clamshells)
	Other Rigid Containers - #6 PS rigid take out (clear soft drink cups, sushi trays)
	Other Rigid Containers - #6 PS foam take out (clam shells, cups, soup bowls)
	Other Rigid Containers - #6 PS foam packaging (styrofoam, meat trays, egg cartons)
	Other Rigid Containers - #6 PS rigid packaging (Rx bottles, creamers, seedling trays)
	Other Rigid Containers - #5 PP wide mouth food take out (deli containers)
	Other Rigid Containers - Other wide mouth containers and lids (#2, #4, #5) (dairy - ice cream, yogurt, sour cream)
	Other Rigid Containers - # 2 HDPE & #5 PP Large pails and lids (4-25L) (pails..)
	Other Rigid Containers - All other rigid plastic packages (blister packaging, plant pots, toothpaste, deodorant,
	Film Packaging - Polyethylene plastic bags and film - non carry-out bags (bread bags, produce bags, net bags)
	Film Packaging - Polyethylene retail and grocery carry-out bags empty
	Film Packaging - commercial stretch wrap (pallet wrap)
	Film Packaging - Laminates (vacuum sealed products, meat and fish wrap, cheese wrap, cereal liners, chip bags etc.)
	Film Non Packaging - Polyethylene retail and grocery carry-out bags -reused
	Film Non Packaging - Polyethylene plastic bags and film (kitchen catchers, garbage bags, zip-lock, cling wrap)
	Durable Plastic Products - Non-packaging (VCR tapes, CDs, toys, Tupperware, garden hose, lawn furniture)
	Durable Plastic Products - Vinyl Siding etc.
Organic Waste	Food waste - Backyard Compostable (raw fruit, egg shells, coffee filters and grounds, nuts
	Food Waste - Kitchen Waste (cooked food, meat, seafood, dairy, pasta, bread, candies)
	Food Waste - FOG (**F**ats-**O**il-**G**rease) - Brown grease (grease trap grease - sticky dirty grease)
	Food Waste - FOG (**F**ats-**O**il-**G**rease) - Yellow grease (cooking fat)
	Yard Waste (<3" diameter)
	Animal Faeces
	Other organic waste

Table 2-2 Waste Sorting Categories

Wood & Wood Products	Pallets/skids
	Wood shingles
	Wood furniture (>80% wood) (Accepted at wood waste bin)
	Other wood - Clean
	Other wood - Contaminated (painted, finished, treated)
Construction &	Drywall
Demolition Materials	Asphalt shingles
	Carpet & underlay
	Masonry (bricks, blocks, concrete, ceramic)
	Rock/sand/dirt
	Other C/D wastes
Textiles	Clothing
	Footwear
	Other textiles
Rubber	Vehicle tires
	Other rubber products
Composite Products	Disposable diapers
	Furniture
	Other composites, Q-tips…..
Hazardous Waste	Fluorescent lighting - CFL (Compact Fluorescent Lamps) bulbs
	Fluorescent lighting - CFL (Compact Fluorescent Lamps) tubes
	Batteries - automotive (lead acid)
	Batteries - Dry cell, alkaline, button cell, other non rechargable household batt.
	Batteries - Rechargeable
	Oil - Lubricating (motor, transmission) oil, including containers
	Oil - Empty Lubricating (motor, transmission) oil containers
	Oil Filter - Automotive
	Paint - Latex, including containers, PCA (Product Care Association)
	Paint - Empty latex paint containers (PCA)
	Paint - Oil-based, including containers, (PCA)
	Paint - Empty oil based paint containers, (PCA)
	Paint - (non PCA) paint including container
	Paint - Empty (non PCA) container
	Paint in aerosol cans (PCA)
	Paint - Empty aerosol paint cans (PCA)
	Paint - Aerosol cans (non PCA)
	Paint - Empty aerosol paint cans (non PCA)
	Solvents including containers (<10L) (PCA)
	Solvents - Empty containers (PCA)
	Solvents including containers (non PCA)
	Solvents - Empty containers (non PCA)
	Pesticides including containers (<10L) (PCA)
	Pesticide - Empty pesticide containers (PCA)
	Pesticides including containers (non PCA)
	Pesticide - Empty pesticide containers (non PCA)
	Pharmaceuticals, including containers
	Needles & Sharps
	Other empty aerosol cans (not applicable to above categories)
	Other hazardous waste (record description)
Electronics	Display Devices (monitors/TVs) less than 30"
	Display Devices (monitors/TVs) more than 30"
	Computers (desktops, laptops, desktop servers)
	Desktop Computer printers, copiers, faxes,
	Computer scanners
	Computer Peripherals (keyboards, mice)
	Personal/Portable audio/video playback and/or recording devices
	Vehicle audio/video devices
	Home audio/video playback and/or recording systems
	Non-cellular telephones and answering machines
	Cell phones, PDAs (Personal Digital Assistant) and pagers
	Other miscellaneous electronics - consumer
	Other miscellaneous electronics - commercial
	Small appliances
Other	Cat litter
	Non-distinct fines
	Other wastes, dental floss, …..

Table 2-3 Sample Distribution Phase 1 2009

RESIDENTIAL (Side Load)

AREA	FRACTION OF TOTAL WASTE RECEIVED AT LANDFILL (%)	NUMBER OF SAMPLES	HAULER
North Saanich	0.9	-	
Sidney	1.0	1	Town of Sidney
Central Saanich	1.4	1	Waste Management
Saanich	7.9	3	District of Saanich
Victoria	4.0	2	City of Victoria, Ellice Recycling
Oak Bay	1.6	1	District of Oak Bay
Esquimalt	1.1	1	Township of Esquimalt
View Royal	0.5	-	-
Colwood/Langford	4.5	2	Alpine
Sooke	0.4	1	Alpine
Transfer Station	3.8 (mixed)	2	On-site
	Total	14	

ICI COLLECTION (FRONT LOAD)

HAULER	FRACTION OF TOTAL WASTE RECEIVED AT LANDFILL (%)	NUMBER OF SAMPLES	AREA
BFI Front End	14.6	3	Victoria, Oak Bay
		3	Victoria, Esquimalt
		3	Victoria, Saanich Peninsula
Waste Management	18.9	4	Victoria
		4	Saanich
		3	Saanich, Langford, Sidney
Alpine Disposal	10.7	1	Langford
		1	"
		1	"
		1	Victoria
		1	"
Hartland Bins (mixed)	3.8	3	
CRD selected ICI Generators		7	
	Tot	35	

SPECIAL RESIDENTIAL

STUDY	AREA	NUMBER OF SAMPLES	HAULER
Neighbourhood	Oak Bay	2	District of Oak Bay
	Esquimalt	2	Town of Esquimalt
	Victoria	2	City of Victoria
	Saanich	2	District of Saanich
Apartment/Condominiums	Victoria	12	
	Saanich	2	
	Esquimalt	4	
	Other CRD	2	
Electoral Areas	Port Renfrew	1	
	Saltspring Island	1	
	Southern Golf Is.	1	
	Total	31	

DLC COLLECTION

HAULER	FRACTION OF TOTAL WASTE RECEIVED AT LANDFILL (%)	NUMBER OF SAMPLES
HL Disposal	3.8	3
DL's Trucking and Bins	3.0	2
Parker Johnston	2.3	2
MacNutt Enterprises	0.8	1
Don Mann	0.5	1
Topline Roofing	0.2	1
Paninsula Disposal	0.1	-
	Tot	10

Table 2-4 Sample Distribution Phase 2 2010

RESIDENTIAL (Side Load)

AREA	FRACTION OF TOTAL WASTE RECEIVED AT LANDFILL (%)	NUMBER OF SAMPLES	HAULER
North Saanich	1.0	-	
Sidney	1.1	-	Town of Sidney
Central Saanich	1.3	-	Waste Management
Saanich	9.3	6	District of Saanich
Victoria	4.6	3	City of Victoria, Ellice Recycling
Oak Bay	1.7	1	District of Oak Bay
Esquimalt	1.2	-	Township of Esquimalt
View Royal	0.5	-	-
Colwood/Langford	5.2	4	Alpine
Sooke	0.5	-	-
Hartland Bins (assumed 50/50)	2.4	2	On-site
	Total	16	

ICI COLLECTION (FRONT LOAD)

HAULER	FRACTION OF TOTAL WASTE RECEIVED AT LANDFILL (%)	NUMBER OF SAMPLES	AREA
BFI Front End	15.2	3	Victoria, Oak Bay
		3	Victoria, Esquimalt
		4	Victoria, Saanich Peninsula
Waste Management	19.4	7	Victoria
		3	Saanich
		3	Saanich, Langford, Sidney
Alpine Disposal	10.9	4	Langford
		4	Victoria
Hartland Bins (assumed 50/50)	2.4	2	
CRD selected ICI Generators		7	
	Total	40	

SPECIAL RESIDENTIAL

STUDY	AREA	NUMBER OF SAMPLES	HAULER
Neighbourhood	Oak Bay	2	District of Oak Bay
	Esquimalt	2	Town of Esquimalt
	Victoria	2	City of Victoria
	Saanich	2	District of Saanich
Apartment/Condominiums	Victoria	12	
	Saanich	2	
	Esquimalt	4	
	Other CRD	2	
Electoral Areas	Port Renfrew	1	
	Saltspring Island	3	
	Pender Island	1	
	Mayne Island	1	
	Total	34	

DLC COLLECTION

HAULER	FRACTION OF TOTAL WASTE RECEIVED AT LANDFILL (%)	NUMBER OF SAMPLES
HL Disposal	2.80	3
DL's Trucking and Bins	2.61	3
Parker Johnston	1.00	1
MacNutt Enterprises	0.75	1
Paninsula Disposal	0.50	1
Island Floor	0.17	1
Don Mann	0.10	-
Hourigan Carpet	0.15	-
Sundial Flooring	0.12	-
	Total	10

The ultimate approach, which proved to be very successful, consisted of sampling all materials directly into the 131 secondary categories. The keys to the success of this approach included:

- Assigning two staff members with the job of opening the bags, removing the more prominent (food waste, plastic bags) or bulky wood waste items such as wood waste, and pushing the remaining materials further up the table for additional sorting.
- Designating specific categories (e.g. rigid plastics, textiles) to one staff member and having that person organize the respective bins. As the remaining material was pushed down the table, each individual removed the items that fell within their categories.



Photo 2-3. Electronic items accumulated after seven days of sorting

Once the sort was completed, the material in each secondary class was weighed and recorded. Weights were entered into the master form for each sample (See Appendix A). Household Hazardous Waste items and electronic items were placed beside the sampling tent (See Photo 2-3) for inspection by industry stewards and the contents of the remaining bins were then discarded into a 40-yd^3 bin for future disposal at the active face. All containers and sorting tables were then carefully cleaned in preparation for the next sample.

Typically, five samples were processed each working day. Samples from the residential waste stream usually took longer to sort, while samples of commercial refuse were easier to process because they

were more homogeneous. Visual sorts were conducted on loads that consisted of primarily one material (eg. asphalt/wood shingles), or of a series of oversized (easily discernable) materials.

Completed forms were periodically faxed to SHA's office and the data was entered into Excel spreadsheets by Michael Wade, one of SHA's Environmental Technologists. Special care was taken to ensure that the oversized or bulky items encountered in each load were taken into account.

3. WASTE SORTING RESULTS

3.1 Sample and Sorted Weights

There are two ways of reporting the extent of the waste sort program, based on sample weight and based on sorted weight. The sample weight is a measure of the quantity of material that was dumped at the specified location near the active face and was visually inspected by the sorting crew. The sorted weight is a measure of the quantity of material that was extracted from the sample material by the backhoe and sorted into the 131 secondary categories.

During the two sampling periods, 198 sample loads were diverted to the designated tipping area with a total weight of 1,121,260 kg (see Table 3-1); this represents 4.4% of the total waste accepted at the site during the course of the two sampling periods. From this total, 28,258 kg of material was extracted from the loads and manually sorted into the 131 categories, while 70,177 kg of material was visually sorted; this represents 0.3% of the total waste stream accepted at the site during the course of the two sampling periods. Visual sorts were conducted on loads that consisted of primarily one material (eg. asphalt/wood shingles), or of a series of oversized (easily discernable) materials.

Table 3-1. Total sample and sorted weights for both sampling periods.

	Total weight to landfill during sampling period (kg)	Total weight of sampled loads (kg)	Portion of waste stream sampled (%)	Total weight sorted (kg)
Manual Sort (N=181)	25,481,600	1,051,116	4.1	28,258
Visual Sort (N=17)	25,481,600	70,144	0.3	70,144
Total (N=198)	25,481,600	1,121,260	4.4	98,402

Garbage collection companies work with very tight schedules and only have room to accommodate deliveries of samples on days when they have specific trucks and drivers available, making it difficult to obtain the desired number of samples for the apartment and condominium study. Table 3-2 and Table 3-3 show the targeted and obtained number of samples for the two sampling rounds.

Table 3-2. Targeted and obtained number of samples phase 1 (fall 2009).

Category	Targeted Number of Samples	Obtained Number of Samples
Residential samples from pre-selected neighbourhoods.	8	8
Residential samples from pre-selected apartment buildings.	20	12
Residential samples based on tonnage to the landfill	14	30
Residential samples from three electoral areas	3	2
ICI samples from pre-selected waste generators	7	6
ICI samples based on tonnage to the landfill	28	36
DLC samples based on tonnage to the landfill	10	8
Total	**90**	**102**

Table 3-3. Targeted and obtained number of samples phase 2 (spring 2010).

Category	Targeted Number of Samples	Obtained Number of Samples
Residential samples from pre-selected neighbourhoods.	8	6
Residential samples from pre-selected apartment buildings.	20	12
Residential samples based on tonnage to the landfill	16	22
Residential samples from three electoral areas	6	6
ICI samples from pre-selected waste generators	7	9
ICI samples based on tonnage to the landfill	33	32
DLC samples based on tonnage to the landfill	10	9
Total	**90**	**96**

3.1.1 Statistical Analysis for Normalcy

Prior to applying the study results to the entire waste stream, a statistical analysis was completed to determine the normalcy of said results. Normalcy is determined through a comparison of the actual distribution of the data to an ideal Gaussian distribution.

When conducting a statistical analysis, the first three parameters that are traditionally calculated are the mean, the standard deviation (SD), and the coefficient of variation (COV). These are the base values from which normalcy is determined, but do not actually prove normalcy. The mean is the average of the data. The SD is a measure of variability subject to the value of the mean; the significance of the SD is that if the data follows a bell shaped Gaussian distribution, then 68% of the values lie within one SD of the mean (on either side) and 95% of the values lie within two SD of the mean. The problem with the SD is that, because it is subject to the value of the mean, the larger the mean the larger the possible SD (which can ultimately be misleading). The COV is simply the standard deviation divided by the mean; what the COV provides is a clear indication of the degree of variability expressed as a percent.

To assess the actual normalcy, the D'Agostino & Pearson (DP) test was used. The DP test quantifies the skewness and kurtosis of the sample data to quantify how far from Gaussian the distribution the data is in terms of asymmetry and shape. It then calculates how far each of these values differs from the value expected with a Gaussian distribution, and computes a single P value from the sum of these discrepancies.

The results of the Normalcy testing for each of the primary categories are summarized in Table 3-4. The results indicate that the only categories that were found to meet the normalcy requirements were "Organic Waste" and "Paper and Paper Products". What this means is that, for all of the other categories, care should be taken when inferring the study results to the entire waste stream, especially if the data is to be compared to historic or future results to map trends (i.e. used as an indication of effectiveness of recycling programs, etc.). The occurrences of the other waste components in the waste stream were too inconsistent for those categories to meet normality requirements.

3.2 Overall Waste Composition

Although used as the primary means of reporting results in past studies, waste composition data expressed in terms of "percentage of waste stream" does not lend itself to tracking changes in waste generation and waste composition. This is because diversion of one particular waste stream (e.g. glass beverage containers) results in a drop in the percentage of glass and a corresponding increase in the percentages of all other material categories. To address this problem, we report the sort results in three ways (see Table 3-5 and Appendix B (Table B-1):

1) Composition (percentage),
2) Waste disposal (tonnes/year), and
3) Waste generation (kg/person/day).

Table 3-4. Normalcy test for primary categories

Waste Category	Mean (%) N=198	S.D (%)	Coefficient of Variation	Passing Normality Test
Organic Waste	30.4	16.0	52	Yes
Paper and Paperboard	16.5	8.9	54	Yes
Plastics	13.1	6.8	52	No
Composite Products	9.9	21.8	220	No
Other	6.1	16.2	265	No
Textiles	5.5	5.1	92	No
Wood and Wood Products	5.2	4.8	94	No
Construction and Demolition	4.9	5.4	111	No
Ferrous Metal	2.4	3.4	145	No
Glass	1.9	1.9	99	No
Electronics	1.9	4.9	258	No
Hazardous Waste	0.8	1.7	219	No
Non-Ferrous Metal	0.7	2.3	332	No
Rubber	0.6	0.5	85	No
Total	**100**			

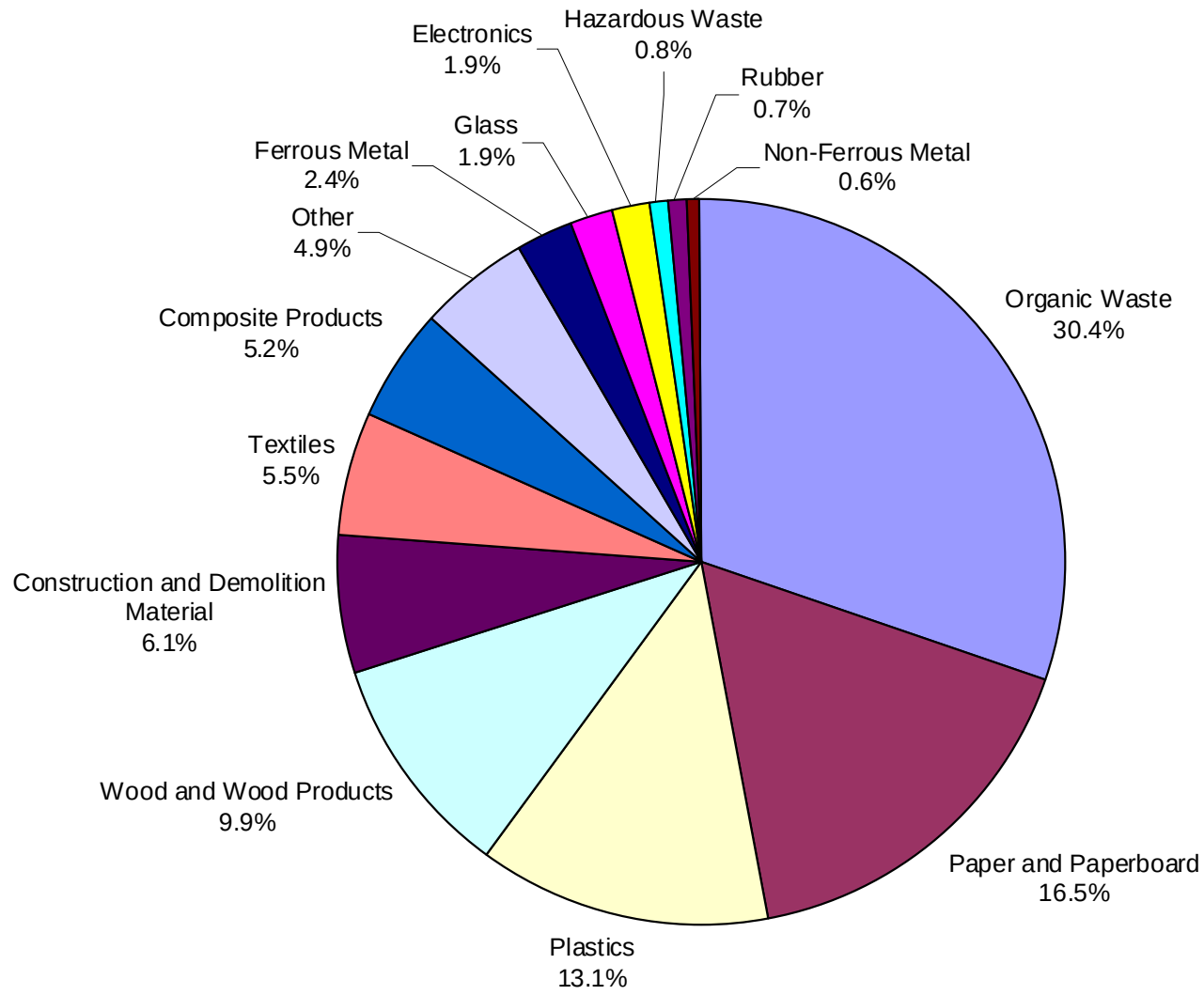
Table 3-5. Overall Waste Composition

Waste Category	Composition (%)	Waste Disposal Rate (Tonnes/year to landfill)	Waste Generation (kg/person/year)
Organic Waste	30.4	46,606	126.0
Paper and Paperboard	16.5	25,362	68.6
Plastics	13.1	20,059	54.2
Wood and Wood Products	9.9	15,225	41.2
Construction and Demolition	6.1	9,385	25.4
Textiles	5.5	8,441	22.8
Composite Products	5.2	7,931	21.4
Other	4.9	7,468	20.2
Ferrous Metal	2.4	3,638	9.8
Glass	1.9	2,974	8.0
Electronics	1.9	2,928	7.9
Hazardous Waste	0.8	1,179	3.2
Rubber	0.7	1,083	2.9
Non-Ferrous Metal	0.6	982	2.7
Total	**100**	**153,263**	**414**

The waste disposal rate for each category was calculated by multiplying the total annual tonnage landfilled in 2009 (153,263 tonnes of waste landfilled) with the composition (percentage) data from the waste sort. To calculate the waste generation rate, the respective disposal rates were divided by the 2009 population for the region (369,791 persons), as provided by CRD Regional Information Services.

In the above table, the categories are listed in order of decreasing weight. Organic waste was the most common category of solid waste encountered during the waste sort, accounting for one third of all residuals. Second was Paper and Paperboard, representing approximately 16% of the total waste stream. Third were Plastics, representing about 13%. Fourth category was Wood and Wood Products at 10%. The remaining waste categories represented 30% of the waste stream.

In terms of the waste generation rate, each person within the Regional District was responsible for 414 kg of landfilled waste in 2009. Included in this total was 126 kg of Organic Waste, 69 kg of Paper and Paper Products, 54 kg of Plastics and 41 kg of Wood and Wood Products. A detailed breakdown of each major waste category into subcategories is presented in Appendix B (Table B-1).



SPERLING HANSEN ASSOCIATES

PROJECT:
CRD Solid Waste Composition Study

TITLE:
Overall Waste Composition 2009-2010

SCALE:	DATE:	PROJECT NO:
N/A	**2010/08/25** yyyy/mm/dd	**PRJ09042**
DESIGNED	**DK**	DRAWING NO:
DRAWN	**DK**	**Figure 3-1**
CHECKED	TS	

3.3 Seasonal Variation

Table 3-6 shows the waste composition for the two sorting periods as well as the combined waste composition. As can be seen in the table, there were relatively small differences between the two sorting periods. The categories that had the large differences between the fall and the spring sorting periods were: "Organic Waste" (decreased 2.7%), "Wood and Wood Products" (increased 2.0%), and "Construction Waste (decreased 1.3%). It should be noted that these small differences fall within the normal variation between samples. As an example, the 95% confidence interval for "Organic Waste" for the entire data set ranged between 28.2% and 32.6% with no statistically significant difference between the two sorting periods. Even though it was not be possible to prove whether or not there is a statistically valid difference between the sorting periods, it does not mean that there is none. Detailed results for each of the two sorting periods can be seen in Table B-2 in Appendix B.

Table 3-6. Comparison between the fall and the spring sampling periods.

Waste Category	**Phase 1** Mean (%) N=102	**Phase 2** Mean (%) N=96	**Total** Mean (%) N=198
Organic Waste	32.2	29.5	30.4
Paper and Paperboard	17.1	16.5	16.5
Plastics	12.9	13.8	13.1
Wood and Wood Products	8.2	10.2	9.9
Construction and Demolition Material	6.3	5.0	6.1
Textiles	5.7	5.5	5.5
Composite Products	5.7	4.7	5.2
Other	4.9	5.0	4.9
Ferrous Metal	1.9	2.9	2.4
Glass	1.7	2.2	1.9
Electronics	1.2	2.8	1.9
Hazardous Waste	0.8	0.7	0.8
Rubber	0.7	0.6	0.7
Non-Ferrous Metal	0.7	0.7	0.6
Total	**100**	**100**	**100**

3.4 Comparison to Previous Waste Composition Studies

Table 3-6 below shows a comparison of the waste generation rates between the 2001, 2004 and the 2009 studies. It should be noted the 2009 study had a separate category for electronics, while the 2001 and 2004 studies did not have a separate category for this. The generation rates for electronic waste was therefore subtracted from the composite category in 2001 and 2004 and added to the electronics category. Table 3-7 shows a comparison of the results for the primary categories from the 2001, 2004 and the 2009 studies. This comparison was based on the waste disposal rate per person per year rather than the total annual tonnage being disposed of at the landfill. Changes in the annual tonnage may have been caused by either changes in the number of people the site is serving or by changes in the disposal behavior of the population. Changes made to bylaws and/or recycling programs could be missed if only tonnage to the landfill was utilized.

As can be seen in Table 3-7 below, there have only been relatively minor changes in the waste disposal pattern over the past 9 years with no statistically significant changes between 2004 and 2009. The large change for the category "Other Waste" between 2001 and 2004 was likely a result of changes in the way the samples were sorted. The number of waste categories have increased significantly between 2001 and 2009 which most likely has caused the crew to spend less time sorting the unidentifiable waste that now end up in the catch-all category of "Other Waste".

Table 3-7. Comparison of 2001, 2004 and 2009/2010 waste generation rates.

Waste Category	**Waste Disposal 2001** (kg/pers/year)	**Waste Disposal 2004** (kg/pers/year)	**Waste Disposal 2009/2010** (kg/pers/year)	**Difference in Disposal Rate 2004-2009** (kg/pers/year)
Organic Waste	134.9	136.7	126.0	-10.7
Paper and Paperboard	62.5	65.9	68.6	2.7
Plastics	53.9	54.9	54.2	-0.7
Wood and Wood Products	36.6	46.8	41.2	-5.6
Construction and Demolition Material	33.4	24.2	25.4	1.2
Textiles	15.2	18.3	22.8	4.5
Composite Products	20.8	25.9	21.4	-4.5
Other	7.6	16.8	20.2	3.4
Ferrous Metal	12.9	10.0	9.8	-0.2
Glass	9.2	7.4	8.0	0.6
Electronics	3.9	11.0	7.9	-3.1
Hazardous Waste	1.4	5.8	3.2	-2.6
Rubber	3.5	2.4	2.9	0.5
Non-Ferrous Metal	2.9	3.2	2.7	-0.5
Total	**398.7**	**429.4**	**414.5**	**-14.9**

4. WASTE COMPOSITION BY SECTOR

The objective of this chapter is to report the portion of residual solid waste being received from each of three basic waste generation sectors, namely the residential, industrial / commercial / institutional (ICI) and demolition / land-clearing / construction waste (DLC) sources, and to characterize the waste from each sector.

4.1 Waste Composition by Sector

During the sampling program, the sampling schedule was arranged such that, among other things, the percentage of samples collected from each sector matched the generation breakdown that had been determined in the evaluation of the scale data. For example, out of the 198 samples sorted during the project, 98 were to be from the residential sector, 83 from the ICI sector, and 17 from the DLC sector.

Table 4-1 and Appendix B (Table B-3) present the typical waste composition (reported as percent of the total sample) from each of the major waste generation sectors, as well as combined results for the entire waste stream.

Since the garbage collection companies collect garbage from both residential clients and from commercial clients during the same route, a number of samples came from loads containing refuse obtained from both sectors. The sector designation for these samples had to be determined by assessing the contents of the samples. A total of 10 samples were considered to consist of a mixture of residential and ICI refuse. The occurrence of components such as diapers, hygiene articles, construction materials, etc. were used to "re-label" these samples to an appropriate category.

Table 4-1. Waste Composition by Sector.

Waste Category	**Residential** Mean (%) N=98	**ICI** Mean (%) N=83	**DLC** Mean (%) N=17	**Total** Mean (%) N=198
Organics	34.6	31.7	0.0	30.4
Paper and Paperboard	15.5	21.2	0.0	16.5
Plastics	14.0	14.7	0.1	13.1
Wood and Wood Products	3.9	6.1	63.4	9.9
Construction and Demolition Material	3.4	3.2	35.9	6.1
Textiles	6.5	5.5	0.0	5.5
Composite Products	6.7	4.4	0.4	5.2
Other	6.6	3.8	0.0	4.9
Ferrous Metal	2.6	2.6	0.2	2.4
Glass	2.4	1.8	0.0	1.9
Electronics	1.8	2.5	0.0	1.9
Hazardous Waste	0.9	0.8	0.0	0.8
Rubber	0.4	1.2	0.0	0.7
Non-Ferrous Metal	0.8	0.5	0.0	0.6
Total (%)	**100.0**	**100.0**	**100.0**	**100.0**

In general, waste from the residential and ICI sectors is relatively similar, with very similar distribution in the 14 main waste categories with only one category ("Paper and Paper Products") that had a statistically significant difference. Residential waste had 15.5% of "Paper and Paper Products while ICI had 21.2%. The main difference mainly stemmed from more tissue paper, paper towels and napkins in the ICI waste.

DLC waste on the other hand is quite unique compared to waste from the other two sectors, with almost 99% of the refuse material falling in the "Wood and Wood Products" (63%), and in the "Construction and Demolition Material" (36%) categories. Primary subcategories include wood shingles (48%), asphalt shingles (21%), other clean wood (9%) and carpet and underlay (6%).

5. SPECIAL STUDIES

5.1 Apartment and Condominium Study

R.A. Malatest & Associates Ltd. recommended in the report "*Sampling for Apartment Study*" that in order to form a reliable picture of the waste stream created from apartments and condominiums in the Victoria area, a total of 20 buildings should be sampled with the distribution shown in Table 5-1. The sampled apartment buildings were selected from a database provided by the CRD. As shown in Table 5-2 and 5-3, it was not possible to collect samples from all recommended buildings due to logistical problems. The summary of the results from the waste sorts for the apartment and condominium study are provided in Table 5-4, and detailed results can be found in Appendix C (Table C-1).

Table 5-1. Apartment sample distribution as proposed by R.A. Malatest & Associates Ltd.

Area	5 to 9 units	10 to 49 units	50 and more units
CRD Total	**1 building**	**10 buildings**	**9 buildings**
Victoria	1	6	5
Saanich		2	2
Esquimalt		1	1
Oak Bay		-	-
Other CRD		1	1

Table 5-2. Completed sample distribution Phase 1 2009.

Area	5 to 9 units	10 to 49 units	50 and more units
CRD Total	**1 building**	**6 buildings**	**7 buildings**
Victoria	-	4	3
Saanich	-	-	1
Esquimalt	-	2	2
Oak Bay	-	-	-
Other CRD	-	1	-

Table 5-3. Completed sample distribution Phase 2 2010.

Area	5 to 9 units	10 to 49 units	50 and more units
CRD Total	**1 building**	**6 buildings**	**7 buildings**
Victoria	-	3	3
Saanich	-	-	1
Esquimalt	-	2	2
Oak Bay	-	-	-
Other CRD	-	1	-

Table 5-4. Composition of the waste stream from apartments and condominiums.

Waste Category	Victoria Mean (%) N=17	Saanich Mean (%) N=2	Esquimalt Mean (%) N=3	Oak Bay Mean (%) N=2	Total Mean (%) N=24
Organics	37.0	50.2	28.9	35.2	36.9
Paper and Paperboard	17.4	14.5	14.1	16.5	16.7
Plastics	13.3	14.9	9.8	13.7	13.0
Other	6.0	6.9	15.7	11.9	7.8
Textiles	6.9	5.4	4.5	2.1	6.1
Composite Products	4.5	2.1	5.1	5.1	4.4
Electronics	3.9	0.4	6.9	2.1	3.8
Glass	3.1	1.3	2.6	3.5	2.9
Ferrous Metal	1.9	1.4	10.2	2.2	2.9
Wood and Wood Products	3.0	1.0	0.1	0.0	2.2
Construction and Demolition Material	1.1	0.9	1.1	6.1	1.5
Non-Ferrous Metal	1.0	0.6	0.6	0.6	0.9
Hazardous Waste	0.8	0.1	0.4	0.8	0.7
Rubber	0.1	0.1	0.1	0.2	0.1
Total (%)	100.0	100.0	100.0	100.0	100.0

5.2 Neighbourhood Study

In order to create a waste composition profile for five residential areas which also are serviced by blue box recycling programs, five routes were pre-selected by the CRD within the five core communities, and individual samples were collected by the respective collection firms and brought directly to the landfill for sampling. Four samples were collected from residential collection routes in Victoria and Saanich, a total of three samples were collected from Oak Bay, two samples were collected from Esquimalt, and one sample was collected from View Royal.

Even though it could not be statistically validated since so few samples were collected from each area, it appears to be noticeably less organic waste in the waste from Oak Bay and View Royal. As can be seen in Table C-2, the Oak Bay and View Royal samples had noticeably less compostable waste. More than 14% of the View Royal sample consisted of animal feces and made up close to 50% of the organic fraction in that sample.

The results from these samples together with data from curbside recycling for the same collection routes will be used by the CDR to calculate the overall disposal and recycling rates for these neighborhoods. The details of the waste sorts for the neighborhood study are provided in Appendix C (Table C-2).

Table 5-5. Composition of the waste stream from single family dwellings.

Waste Category	Victoria Mean (%) N=4	Saanich Mean (%) N=4	Oak Bay Mean (%) N=3	View Royal Mean (%) N=1	Esquimalt Mean (%) N=2	Total Mean (%) N=14
Organics	44.8	41.2	32.9	33.1	40.1	39.7
Paper and Paperboard	13.1	13.7	15.5	11.4	16.2	14.1
Plastics	11.7	12.1	18.1	16.7	12.9	13.7
Composite Products	8.4	7.3	10.9	19.6	8.9	9.5
Other	10.3	7.6	9.9	12.7	9.1	9.4
Textiles	4.7	5.5	4.5	1.1	2.8	4.4
Construction and Demolition Material	0.8	4.9	2.2	0.0	2.8	2.5
Glass	3.0	1.7	2.3	0.5	3.1	2.3
Wood and Wood Products	0.9	1.9	1.1	0.0	1.6	1.3
Ferrous Metal	0.9	1.4	0.7	2.0	1.6	1.2
Non-Ferrous Metal	0.7	1.1	1.2	0.5	0.5	0.9
Electronics	0.4	0.5	0.4	2.0	0.0	0.5
Hazardous Waste	0.3	0.4	0.3	0.2	0.4	0.3
Rubber	0.0	0.6	0.1	0.0	0.0	0.2
Total (%)	100.0	100.0	100.0	100.0	100.0	100.0

5.3 Electoral Areas

In addition to collecting samples from the waste stream from apartments, and urban single family residential areas, a total of eight samples were collected from four electoral areas. A total of four samples were collected from Salt Spring Island, two from Mayne Island and one sample was collected from both Port Renfrew and Pender Island. The results from the samples can be seen in Table C-3 in Appendix C. The variability in the waste composition between the samples was very big making it difficult to determine if the samples collected truly represent the waste being disposed off in the different areas. The combined waste composition for the eight samples from the electoral areas was very similar to that of the residential waste stream from the entire region. The only category that was statistically different from the overall residential waste stream was “Textile”. The overall residential waste stream consisted of 6.5% of textile, while the overall composition from the four electoral areas had 10.7% textile. Even though the difference was statistically valid, the higher percentage noted in the samples from the electoral areas was caused by a load from Port Renfrew which had close to 30% textiles.

5.4 Special ICI Study

One of the objectives for this waste composition study was to obtain information about materials received from a selected number of ICI generators. The CRD provided SHA with a list of selected businesses for sampling. Each sample was labeled ICI-1 to ICI-10 in order not to reveal the business identity.

A total of two samples were collected from ICI-1 to ICI-6, while one sample was collected from each of ICI-7, -8, -9 and -10. With only one or two samples taken from each business and the type of businesses ranging from a dentist office to a heavy industrial outfit it is difficult to draw any big of conclusions when comparing the results, but they provide some insight to what type of waste each business generates. The detailed results of the waste composition of these samples can be seen in Appendix D (Table D-1 and D-2).

5.5 Electronics

The electronics category has been added to this waste audit because of concern about quantities of electronic devices being disposed of in landfills and to measure the effectiveness of existing stewardship programs for certain electronics. Although electronics comprise less than 2% of overall waste composition in this study, it can potentially be hazardous to the environment, especially with heavy metals in electronic circuits and flame retardants in plastics.

Based on the 198 samples collected during this study, it was estimated that a total of 2,928 tonnes of electronics waste (1.9% of the waste stream) is being landfilled at Hartland Landfill every year. The most commonly found components were “Other miscellaneous consumer electronics” (783 tonnes per year), “Display Devices (<30”) (753 tonnes/year), followed by “Small appliances” (545 tonnes/year).

It should be pointed out that this category has extremely high variability and over estimates for larger items may occur. Extremely large items were counted as oversize objects and added as separate items to the entire load, while other items were included in the sorted sample and were weighted as any of the other waste components. Since these items are relatively rare, inclusion of an item in the sample can skew the results if it is not commonly found in the rest of the load

5.6 Recyclable Material

During the course of the this project, the CRD has collected data about the tonnages as well as the composition of the recyclable materials collected from several of the residential routes and apartments that were selected for the special study mentioned in sections 5.1-5.3. The recycling data collected to date was not analyzed or evaluated as part of this study as it needed further processing in order to fill in data gaps. The CRD intend to use the data collected in this waste composition study of disposed waste in combination with data collected from the recycling program at the CRD to create an overall picture of the total waste generation rate for the area.

6. CONCLUSIONS

This study provides valuable benchmark data and analysis for evaluating the success of the solid waste management programs and can be used as a valuable tool when planning for future waste reduction programs not only in the CRD, but also in other municipalities in BC.

The most frequently encountered waste component was "Organic Waste" accounting for one third of all residuals. Second was "Paper and Paper Products" representing approximately 16% of the total waste stream. Third was "Plastics", representing about 13% and the fourth most commonly found waste type was "Wood and Wood Products" at 10%. The remaining waste categories represented 30% of the waste stream.

In terms of the waste disposal rates, each person within the Regional District was responsible for 414 kg of landfilled waste in 2009. Included in this total was 126 kg of "Organic Waste", 69 kg of "Paper and Paper Products", 54 kg of "Plastics" and 41 kg of "Wood and Wood Products".

The category with the biggest change in the waste between the 2004 and 2009 studies was for "Organic Waste" which saw a decrease in the disposal rate of 10.1 kg per person per year. The differences between the other categories were not large enough to be statistically significant in terms of waste disposal rates.

In general, waste from the residential and ICI sectors is relatively similar, with very similar distribution in the 14 main waste categories with only one category ("Paper and Paper Products") that had a statistically significant difference. Residential waste had 15.5% of "Paper and Paper Products" while ICI had 21.2%. The main difference mainly stemmed from more tissue paper, paper towels and napkins in the ICI waste.

The comparison between single family dwellings vs. apartments showed noticeably more "Composite Products" (disposable diapers) in the waste from the single family dwellings compared to the apartments. Even though not possibly to prove statistically, it appears that the waste from the apartments contains noticeably more "Electronics" than the waste from the single family dwellings. One theory for why this is could be that the recycling and /or the disposal bylaws are adhered to better at the single family dwellings as each owner is responsible for his/her own garbage can vs. the residents living in multi family dwellings dispose their refuse in a common bin used by other residents and therefore may not have the same drive to adhere to local bylaws.

In the general waste stream, the three most common electronics products being disposed of were "Other Miscellaneous Consumer Electronics", "Display Devices" followed by "Small Appliances". These three categories accounted for over 70% of the electronics waste with annual disposal rates of 783, 753 and 545 tonnes per year respectively.

7. LIMITATIONS

The waste composition analysis of solid waste residuals at Hartland Landfill has been prepared by Sperling Hansen Associates (SHA) on behalf of the Capital Regional District in accordance with generally accepted engineering practices. The report is based on 198 waste composition samples collected and analyzed by CRD staff over the course of eight weeks in 2009 and in 2010. The report documents our findings and conclusions based on this data.

The report is intended solely for the use of the Capital Regional District. SHA does not accept any responsibility for other uses of the material contained herein.

The report contains intellectual property developed and owned by SHA that has been made available to the Capital Regional District for exclusive use in charting the course of their solid waste management program. Copying of this intellectual property for other purposes is not permitted.

The interpretations presented in this report and the conclusions and recommendations that are drawn are based on information that was made available to SHA during the course of this project. Should additional new data become available in the future, SHA reserves the right to update the findings of this report and modify the conclusions and recommendations drawn, as required.

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APPENDICES

APPENDIX A
Sample Sheets

SAMPLE LOAD DATA SHEET

General Information Sample ID #:_____

Date:_____ Time:_____
Weather Conditions:_____

Hauler:_____ Truck Number:_____ License:_____

Res □ ICI □ DLC □ Details:_____

North Saanich □ Sidney □ Central Saanich □ Saanich □
Victoria □ Oak Bay □ Esquimalt □ View Royal □ Colwood □
Metchosin □ Sooke □ Hartland □ Other:_____

Scale Data Total Weight (Inbound):_____ kg
Total Weight (Outbound):_____ kg

Load Weight (In-out):_____ kg

Oversized Materials
Descriptor 1:_____ Weight:_____ kg
Descriptor 2:_____ Weight:_____ kg
Descriptor 3:_____ Weight:_____ kg
Descriptor 4:_____ Weight:_____ kg
Descriptor 5:_____ Weight:_____ kg

Excess Moisture
Volume:_____ m^3 (approximate)
Details:_____

Sample Material Description
_____
_____

Signatures
Sample taken by:_____ Date:_____
Data sheet received by:_____ Date:_____

Filling out the "Sample Load Data Sheet"

GENERAL INFORMATION

Sample ID # - The identification number for the respective sample. Numbering to include sample day (1 to 20) and sample number that day (usually 1 to 6 samples per day) E.G. Sample ID #: 3-5 (day 3, sample 5)

Date - Date the sample arrived at the working face.
Time - Time the sample arrived at the working face.
Weather Conditions - Brief description of weather at the time the load was processed. Include details on temperature, cloud cover, level of precipitation.

Hauler - Name of hauler.
Truck Number – Identification number for the truck.
License # - License plate number for the truck.

Residential/ICI(Industrial/Commercial/Institutional)/DLC – specify what type of garbage is included within the load. May be that load contains both.
Details – add whatever relevant details are available for the load, such as collection area, major sources (DND/University), etc.

Mark off which areas the waste came from. May be from more than one area.

SCALE DATA

Obtain the inbound and outbound weights of the vehicle from the scale operator.

OVERSIZED MATERIALS

(This section applies if there is a large volume of particular material in a load. The material should be separated out and weight independently).

Descriptor: description of the material – try to follow the subcategory descriptors.
Weight: independent weight of the specific material.

EXCESS MOISTURE

(If large volumes of moisture are noted when the load is being dumped, try to estimate the volume of water. This may be the case if a bin has been sitting out open for a while).

SAMPLE MATERIAL DESCRIPTION

(Add general comments on how thorough the load was mixed when the sample was drawn. Also add general descriptors of the load, if something stands out)

SIGNATURE

Indicate who collected the sample at the active face.

APPENDIX B

ID #: _____

Secondary Category number & Descriptor		Tare Weight (kg)	Sample Weight (kg)	Material Weight (kg)
Category 1 - Paper & Paperboard				
1:1	Newsprint (including flyers)			
1:2	Magazines and mixed recyclable paper			
1:3	Corrugated cardboard			
1:4	Pizza boxes			
1:5	Waxed corrugated cardboard			
1:6	Boxboard			
1:7	Telephone books			
1:8	Books			
1:9	Fine paper (writing, computer, envelope, office)			
1:10	Tissue paper, paper towels, napkins			
1:11	Feminine Hygiene Products (sanitary napkins, tampons)			
1:12	Gabletop Cartons - Milk and Milk Substitutes			
1:13	Gabletop Cartons - Juice & Other			
1:14	Aseptic boxes - Milk and Milk Substitutes			
1:15	Aseptic boxes - Juice & Other			
1:16	Brown kraft paper, including bags			
1:17	Paper Cups			
1:18	Other paper (non-recyclable), wall paper, shiny gift bags, frozen juice containers			
	Total Category Weight (kg)			
Category 2 - Glass				
2:1	Beverage Containers - alcoholic			
2:2	Beverage Containers - non alcoholic			
2:3	Food Containers			
2:4	Other Glass Containers			
2:5	Other glass and ceramics (plate, mirrors, light bulbs, ceramics)			
	Total Category Weight (kg)			
Category 3 - Ferrous Metals				
3:1	Beverage Containers - alcoholic			
3:2	Beverage Containers - non alcoholic			
3:3	Food Containers			
3:4	Large metal appliances (white goods)			
3:5	Other ferrous metals			
	Total Category Weight (kg)			

	Secondary Category number & Descriptor	Tare Weight (kg)	Sample Weight (kg)	Material Weight (kg)
Category 4 - Non-ferrous Metals				
4:1	Beverage Containers - non alcoholic			
4:2	Beverage Containers - alcoholic			
4:3	Food Containers			
4:4	Aluminum trays & foil			
4:5	Other non-ferrous metals			
	Total Category Weight (kg)			
Category 5 - Plastics				
5:1	Bottles/Jugs - PET beverage bottles (#1) (soft drink, juice)			
5:2	Bottles/Jugs - PET other bottles and jars (#1) (cooking oil, dish soap, peanut butter jars)			
5:3	Bottles/Jugs - HDPE beverage bottles (#2) (juice)			
5:4	Milk Jugs - HDPE			
5:5	Bottles/Jugs - HDPE other bottles and jugs (#2) (shampoo, windshield wash)			
5:6	Bottles/Jugs - PVC bottles and jars (#3) (lotions, soap, shampoo)			
5:7	Bottles/Jugs - other bottles, jars and jugs (#4 LDPE, #5 PP, #7) (ketchup, Tropicana Juice)			
5:8	Other Rigid Containers - PET Food take out (#1) (Mc D salad bowls…)			
5:9	Other Rigid Containers - PET Other food containers (#1)(Deli containers, berry containers, clamshells)			
5:10	Other Rigid Containers - #6 PS rigid take out (clear soft drink cups, sushi trays)			
5:11	Other Rigid Containers - #6 PS foam take out (clam shells, cups, soup bowls)			
5:12	Other Rigid Containers - #6 PS foam packaging (styrofoam, meat trays, egg cartons)			
5:13	Other Rigid Containers - #6 PS rigid packaging (Rx bottles, creamers, seedling trays)			
5:14	Other Rigid Containers - #5 PP wide mouth food take out (deli containers)			
5:15	Other Rigid Containers - Other wide mouth containers and lids (#2, #4, #5) (dairy - ice cream, yogurt, sour cream)			
5:16	Other Rigid Containers - # 2 HDPE & #5 PP Large pails and lids (4-25L) (pails..)			
5:17	Other Rigid Containers - All other rigid plastic packages (blister packaging, plant pots, toothpaste, deodorant,			
5:18	Film Packaging - Polyethylene plastic bags and film - non carry-out bags (bread bags, produce bags, net bags)			
5:19	Film Packaging - Polyethylene retail and grocery carry-out bags empty			
5:20	Film Packaging - commercial stretch wrap (pallet wrap)			
5:21	Film Packaging - Laminates (vacuum sealed products, meat and fish wrap, cheese wrap, cereal liners, chip bags, bubble wrap)			
5:22	Film Non Packaging - Polyethylene retail and grocery carry-out bags-**reused**			
5:23	Film Non Packaging - Polyethylene plastic bags and film (kitchen catchers, garbage bags, zip-lock, cling wrap, cookie bags)			
5:24	Durable Plastic Products - Non-packaging (VCR tapes, CDs, toys, Tupperware, garden hose, lawn furniture)			
5:25	Durable Plastic Products - Vinyl Siding			
	Total Category Weight (kg)			
Category 6 - Organic Waste				
6:1	Food waste - Backyard Compostable (raw fruit, egg shells, coffee filters and grounds, nuts			
6:2	Food Waste - Kitchen Waste (cooked food, meat, seafood, dairy, pasta, bread, candies)			
6:3	Food Waste - FOG (**F**ats-**O**il-**G**rease) - Brown grease (grease trap grease - sticky dirty grease)			
6:4	Food Waste - FOG (**F**ats-**O**il-**G**rease) - Yellow grease (cooking fat)			
6:6	Yard Waste (<3" diameter)			
6:7	Animal Faeces			
6:8	Other organic waste			
	Total Category Weight (kg)			

APPENDIX B

Secondary Category number & Descriptor		Tare Weight (kg)	Sample Weight (kg)	Material Weight (kg)
Category 7 - Wood & Wood Products				
7:1	Pallets/skids			
7:2	Wood shingles			
7:3	Wood furniture (>80% wood) (Accepted at wood waste bin)			
7:4	Other wood - Clean			
7:5	Other wood - Contaminated (painted, finished, treated)			
	Total Category Weight (kg)			
Category 8 - Construction/Demolition Material				
8:1	Drywall			
8:2	Asphalt shingles			
8:3	Carpet & underlay			
8:4	Masonry (bricks, blocks, concrete, ceramic)			
8:5	Rock/sand/dirt			
8:6	Other C/D wastes			
	Total Category Weight (kg)			
Category 9 - Textiles				
9:1	Clothing			
9:2	Footwear			
9:3	Other textiles			
	Total Category Weight (kg)			
Category 10 - Rubber				
10:1	Vehicle tires			
10:2	Other rubber products			
	Total Category Weight (kg)			
Category 11 - Composite Products				
11:1	Disposable diapers			
11:2	Furniture			
11:3	Other composites, Q-tips…..			
	Total Category Weight (kg)			

APPENDIX B

Secondary Category number & Descriptor		Tare Weight (kg)	Sample Weight (kg)	Material Weight (kg)
Category 12 - Hazardous Wastes (RECORD UNITS AND VOLUME)				
12:1	Fluorescent lighting - CFL (Compact Fluorescent Lamps)**bulbs**			
12:2	Fluorescent lighting - CFL (Compact Fluorescent Lamps)**tubes**			
12:3	Batteries - automotive (lead acid)			
12:4	Batteries - Dry cell, alkaline, button cell, other non rechargable household batt.			
12:5	Batteries - Rechargeable			
12:6	Oil - Lubricating (motor, transmission) oil, including containers**(assess volume)**			
12:7	Oil - Empty Lubricating (motor, transmission) oil containers (include number of units)			
12:8	Oil Filter - Automotive**(include number of units)**			
12:9	Paint - Latex, including containers, PCA (Product Care Association)			
12:10	Paint - Empty latex paint containers (PCA)			
12:11	Paint - Oil-based, including containers, (PCA)			
12:12	Paint - Empty oil based paint containers, (PCA)			
12:13	Paint - (non PCA) paint including container			
12:14	Paint - Empty (non PCA) container			
12:15	Paint in aerosol cans (PCA)			
12:16	Paint - Empty aerosol paint cans (PCA)			
12:17	Paint - Aerosol cans (non PCA)			
12:18	Paint - Empty aerosol paint cans (non PCA)			
12:19	Solvents including containers (<10L) (PCA)			
12:20	Solvents - Empty containers (PCA)			
12:21	Solvents including containers (non PCA)			
12:22	Solvents - Empty containers (non PCA)			
12:23	Pesticides including containers (<10L) (PCA)			
12:24	Pesticide - Empty pesticide containers (PCA)			
12:25	Pesticides including containers (non PCA)			
12:26	Pesticide - Empty pesticide containers (non PCA)			
12:27	Pharmaceuticals, including containers			
12:28	Needles & Sharps			
12:29	Other empty aerosol cans (not applicable to above categories)			
12:30	Other hazardous waste (record description)			
	Total Category Weight (kg)			

APPENDIX B

Secondary Category number & Descriptor		Tare Weight (kg)	Sample Weight (kg)	Material Weight (kg)
Category 13 - Electronics (COUNT UNITS)				
13:1	Display Devices (monitors/TVs) less than 30"			
13:2	Display Devices (monitors/TVs) more than 30"			
13:3	Computers (desktops, laptops, desktop servers)			
13:4	Desktop Computer printers, copiers, faxes,			
13:5	Computer scanners			
13:6	Computer Peripherals (keyboards, mice)			
13:7	Personal/Portable audio/video playback and/or recording devices			
13:8	Vehicle audio/video devices			
13:9	Home audio/video playback and/or recording systems			
13:10	Non-cellular telephones and answering machines			
13:11	Cell phones, PDAs (Personal Digital Assistant) and pagers			
13:12	Other miscellaneous electronics - consumer			
13:13	Other miscellaneous electronics - commercial			
13:14	Small appliances			
	Total Category Weight (kg)			
Category 14 - Other				
14:1	Cat litter			
14:2	Non-distinct fines			
14:3	Other wastes, dental floss, …..			
	Total Category Weight (kg)			
	Total Sample Weight (kg)			

Start Day: _____ Finished Day: _____

Start Time: _____ Finished Time: _____

Data Recorded By: _____

Reviewed By: _____

APPENDIX B
Detailed Result Tables
Waste Composition Overall and By Sector

Table B-1. Overal Waste Composition 2009-2010

		Waste Compostion (Percentage)			Waste Generation (kg/pers/year)	Waste Disposal (tonnes/year)
		Mean (N=198)	S.D. (%)	C.O.V (%)	Mean (N=198)	Mean (N=198)
Category 1 - Paper and Paperboard						
1:1	Newsprint (including flyers)	1.45	2.58	177	6.02	2,226
1:2	Magazines and mixed recyclable paper	2.57	2.86	111	10.65	3,939
1:3	Corrugated cardboard	1.04	1.47	141	4.30	1,589
1:4	Pizza boxes	0.18	0.42	241	0.73	269
1:5	Waxed corrugated cardboard	0.40	1.78	439	1.66	614
1:6	Boxboard	1.36	0.96	71	5.65	2,090
1:7	Telephone books	0.06	0.30	532	0.23	85
1:8	Books	0.19	0.70	371	0.79	293
1:9	Fine paper	0.42	0.92	218	1.72	637
1:10	Tissue paper, paper towels, napkins	5.34	4.53	85	22.12	8,181
1:11	Feminine Hygiene Products	0.34	1.38	409	1.40	518
1:12	Gabletop Cartons - Milk and Milk Substitutes	0.43	0.65	152	1.79	662
1:13	Gabletop Cartons - Juice & Other	0.04	0.11	317	0.15	54
1:14	Aseptic boxes - Milk and Milk Substitutes	0.06	0.10	160	0.27	99
1:15	Aseptic boxes - Juice & Other	0.07	0.09	132	0.30	110
1:16	Brown kraft paper, including bags	0.45	0.58	129	1.85	684
1:17	Paper Cups	0.76	1.00	132	3.14	1,161
1:18	Other paper (non-recyclable)	1.40	1.28	91	5.82	2,151
	Category 1 - Paper and Paperboard	**16.55**	8.83	53	**68.58**	**25,362**
Category 2 - Glass						
2:1	Beverage Containers - alcoholic	0.31	0.66	215	1.27	469
2:2	Beverage Containers - non alcoholic	0.11	0.24	211	0.47	173
2:3	Food Containers	0.52	0.61	116	2.18	804
2:4	Other Glass Containers	0.08	0.27	351	0.33	123
2:5	Other glass and ceramics (plate, mirrors, light bulbs, ceramics)	0.92	1.39	151	3.80	1,404
	Category 2 - Glass	**1.94**	1.91	99	**8.04**	**2,974**
Category 3 - Ferrous Metals						
3:1	Beverage Containers - alcoholic	0.01	0.19	1,319	0.06	22
3:2	Beverage Containers - non alcoholic	0.01	0.06	763	0.03	11
3:3	Food Containers	0.50	0.48	98	2.06	760
3:4	Large metal appliances (white goods)	0.00	0.00	-	0.00	0
3:5	Other ferrous metals	1.86	3.40	182	7.69	2,845
	Category 3 - Ferrous Metals	**2.37**	3.43	144	**9.84**	**3,638**
Category 4 - Non-ferrous Metals						
4:1	Beverage Containers - non alcoholic	0.06	0.10	163	0.25	94
4:2	Beverage Containers - alcoholic	0.05	0.13	269	0.20	74
4:3	Food Containers	0.04	0.13	305	0.18	67
4:4	Aluminum trays & foil	0.34	0.33	96	1.41	523
4:5	Other non-ferrous metals	0.15	0.37	254	0.61	224
	Category 4 - Non-ferrous Metals	**0.64**	0.54	85	**2.66**	**982**

Table B-1. Overal Waste Composition 2009-2010

		Waste Compostion (Percentage)			Waste Generation (kg/pers/year)	Waste Disposal (tonnes/year)
		Mean (N=198)	S.D. (%)	C.O.V (%)	Mean (N=198)	Mean (N=198)
Category 5 - Plastics						
5:1	Bottles/Jugs - PET beverage bottles (#1) (soft drink, juice)	0.15	0.20	128	0.63	234
5:2	Bottles/Jugs - PET other bottles and jars (#1)	0.22	0.23	105	0.91	336
5:3	Bottles/Jugs - HDPE beverage bottles (#2) (juice)	0.04	0.06	159	0.15	54
5:4	Milk Jugs - HDPE	0.10	0.17	160	0.43	161
5:5	Bottles/Jugs - HDPE other bottles and jugs (#2)	0.38	0.33	88	1.57	580
5:6	Bottles/Jugs - PVC bottles and jars (#3)	0.02	0.07	339	0.09	32
5:7	Bottles/Jugs - other bottles, jars and jugs (#4 LDPE, #5 PP, #7)	0.12	0.18	159	0.48	177
5:8	Other Rigid Containers - PET Food take out (#1)	0.03	0.08	227	0.14	51
5:9	Other Rigid Containers - PET Other food containers (#1)	0.25	0.25	99	1.05	387
5:10	Other Rigid Containers - #6 PS rigid take out	0.38	0.37	97	1.58	585
5:11	Other Rigid Containers - #6 PS foam take out	0.14	0.45	315	0.59	218
5:12	Other Rigid Containers - #6 PS foam packaging	0.68	0.71	104	2.82	1,044
5:13	Other Rigid Containers - #6 PS rigid packaging	0.15	0.21	136	0.64	236
5:14	Other Rigid Containers - #5 PP wide mouth food take out	0.12	0.48	403	0.49	182
5:15	Other Rigid Containers - Other wide mouth containers and lids (#2, #4, #5)	0.30	1.00	335	1.24	459
5:16	Other Rigid Containers - # 2 HDPE & #5 PP Large pails and lids (4-25L)	0.21	0.52	253	0.85	316
5:17	Other Rigid Containers - All other rigid plastic packages	0.37	0.34	92	1.53	565
5:18	Film Packaging - Polyethylene plastic bags and film - non carry-out bags	0.23	0.31	133	0.95	352
5:19	Film Packaging - Polyethylene retail and grocery carry-out bags empty	0.16	0.17	101	0.68	251
5:20	Film Packaging - commercial stretch wrap	0.17	0.46	272	0.70	259
5:21	Film Packaging - Laminates	3.42	4.05	118	14.19	5,248
5:22	Film Non Packaging - Polyethylene retail and grocery carry-out bags - reused	0.63	0.89	141	2.61	965
5:23	Film Non Packaging - Polyethylene plastic bags and film	2.96	1.74	59	12.28	4,540
5:24	Durable Plastic Products - Non-packaging	1.83	1.83	100	7.59	2,808
5:25	Durable Plastic Products - Vinyl Siding	0.01	0.12	874	0.06	21
	Category 5 - Plastics	**13.09**	6.77	52	**54.25**	**20,059**
Category 6 - Organic Waste						
6:1	Food waste - Backyard Compostable	7.98	7.36	93	33.07	12,229
6:2	Food Waste - Kitchen Waste	16.45	10.65	65	68.19	25,218
6:3	Food Waste - FOG (Fats-Oil-Grease) - Brown grease	0.23	3.21	1,396	0.94	348
6:4	Food Waste - FOG (Fats-Oil-Grease) - Yellow grease	0.02	0.12	605	0.08	29
6:6	Yard Waste (<3" diameter)	3.35	6.09	181	13.90	5,139
6:7	Animal Faeces	1.47	5.39	373	6.11	2,258
6:8	Other organic waste	0.90	2.44	269	3.74	1,385
	Category 6 - Organic Waste	**30.41**	15.82	52	**126.03**	**46,606**
Category 7 - Wood and Wood Products						
7:1	Pallets/skids	0.63	6.47	1,011	2.63	971
7:2	Wood shingles	4.12	19.02	457	17.08	6,314
7:3	Wood furniture (>80% wood)	0.58	2.43	415	2.40	887
7:4	Other wood - Clean	2.33	8.87	377	9.65	3,569
7:5	Other wood - Contaminated	2.27	4.27	190	9.42	3,483
	Category 7 - Wood and Wood Products	**9.93**	21.82	218	**41.17**	**15,225**
Category 8 - Construction/Demolition Material						
8:1	Drywall	0.18	0.79	432	0.75	278
8:2	Asphalt shingles	2.05	10.52	664	8.49	3,138
8:3	Carpet & underlay	1.81	7.60	416	7.50	2,773
8:4	Masonry (bricks, blocks, concrete, ceramic)	0.17	0.93	525	0.72	268
8:5	Rock/sand/dirt	0.55	6.76	1,221	2.27	840
8:6	Other C/D wastes	1.36	3.27	237	5.65	2,089
	Category 8 - Construction/Demolition Material	**6.12**	14.92	262	**25.38**	**9,385**

Table B-1. Overal Waste Composition 2009-2010

		Waste Compostion (Percentage)			Waste Generation (kg/pers/year)	Waste Disposal (tonnes/year)
		Mean (N=198)	S.D. (%)	C.O.V (%)	Mean (N=198)	Mean (N=198)
Category 9 - Textiles						
9:1	Clothing	2.10	2.70	129	8.71	3,219
9:2	Footwear	0.61	0.92	151	2.52	933
9:3	Other textiles	2.80	2.96	105	11.60	4,289
	Category 9 - Textiles	**5.51**	5.06	92	**22.83**	**8,441**
Category 10 - Rubber						
10:1	Vehicle tires	0.04	0.43	1,204	0.15	54
10:2	Other rubber products	0.67	2.25	331	2.78	1,029
	Category 10 - Rubber	**0.71**	2.35	329	**2.93**	**1,083**
Category 11 - Composite Products						
11:1	Disposable diapers	3.28	4.46	137	13.61	5,032
11:2	Furniture	0.61	1.93	315	2.52	930
11:3	Other composites, Q-tips…..	1.28	2.05	159	5.33	1,969
	Category 11 - Composite Products	**5.18**	5.01	97	**21.45**	**7,931**
Category 12 - Hazardous Wastes						
12:1	Fluorescent lighting - CFL (Compact Fluorescent Lamps) bulbs	0.0022	0.02	1,017	0.01	3
12:2	Fluorescent lighting - CFL (Compact Fluorescent Lamps) tubes	0.05	0.72	1,396	0.21	79
12:3	Batteries - automotive (lead acid)	0.0011	0.01	1,029	0.00	2
12:4	Batteries - Dry cell, alkaline, button cell, other non rechargable household batt.	0.1150	0.52	455	0.48	176
12:5	Batteries - Rechargeable	0.0031	0.03	856	0.01	5
12:6	Oil - Lubricating (motor, transmission) oil, including containers	0.0147	0.17	1,117	0.06	23
12:7	Oil - Empty Lubricating (motor, transmission) oil containers	0.0527	0.37	686	0.22	81
12:8	Oil Filter - Automotive (include number of units)	0.0147	0.13	896	0.06	23
12:9	Paint - Latex, including containers, PCA	0.0372	0.19	528	0.15	57
12:10	Paint - Empty latex paint containers (PCA)	0.0131	0.07	527	0.05	20
12:11	Paint - Oil-based, including containers, (PCA)	0.0535	0.50	926	0.22	82
12:12	Paint - Empty oil based paint containers, (PCA)	0.0077	0.06	726	0.03	12
12:13	Paint - (non PCA) paint including container	0.0056	0.05	904	0.02	9
12:14	Paint - Empty (non PCA) container	0.0007	0.01	991	0.00	1
12:15	Paint in aerosol cans (PCA)	0.0007	0.01	994	0.00	1
12:16	Paint - Empty aerosol paint cans (PCA)	0.0135	0.10	746	0.06	21
12:17	Paint - Aerosol cans (non PCA)	0.00	0.00	-	0.00	0
12:18	Paint - Empty aerosol paint cans (non PCA)	0.00	0.00	1,396	0.00	0
12:19	Solvents including containers (<10L) (PCA)	0.00	0.00	-	0.00	0
12:20	Solvents - Empty containers (PCA)	0.0150	0.14	947	0.06	23
12:21	Solvents including containers (non PCA)	0.0044	0.05	1,195	0.02	7
12:22	Solvents - Empty containers (non PCA)	0.00	0.00	-	0.00	0
12:23	Pesticides including containers (<10L) (PCA)	0.0015	0.02	1,396	0.01	2
12:24	Pesticide - Empty pesticide containers (PCA)	0.00	0.00	-	0.00	0
12:25	Pesticides including containers (non PCA)	0.00	0.00	-	0.00	0
12:26	Pesticide - Empty pesticide containers (non PCA)	0.00	0.00	1,396	0.00	0
12:27	Pharmaceuticals, including containers	0.0328	0.15	445	0.14	50
12:28	Needles & Sharps	0.0069	0.04	531	0.03	11
12:29	Other empty aerosol cans (not applicable to above categories)	0.1362	0.23	167	0.56	209
12:30	Other hazardous waste (record description)	0.1850	1.13	605	0.77	284
	Category 12 - Hazardous Wastes	**0.769**	1.69	219	**3.19**	**1,179**

Table B-1. Overal Waste Composition 2009-2010

		Waste Compostion (Percentage)			Waste Generation (kg/pers/year)	Waste Disposal (tonnes/year)
		Mean (N=198)	S.D. (%)	C.O.V (%)	Mean (N=198)	Mean (N=198)
Category 13 - Electronics						
13:1	Display Devices (monitors/TVs) less than 30"	0.49	3.94	793	2.04	753
13:2	Display Devices (monitors/TVs) more than 30"	0.01	0.07	1,396	0.02	8
13:3	Computers (desktops, laptops, desktop servers)	0.09	0.50	541	0.38	141
13:4	Desktop Computer printers, copiers, faxes,	0.14	0.81	554	0.60	221
13:5	Computer scanners	0.00	0.00	-	0.00	0
13:6	Computer Peripherals (keyboards, mice)	0.02	0.09	548	0.07	24
13:7	Personal/Portable audio/video playback and/or recording devices	0.119	0.64	536	0.49	182
13:8	Vehicle audio/video devices	0.01	0.09	1,396	0.03	10
13:9	Home audio/video playback and/or recording systems	0.08	0.55	688	0.33	121
13:10	Non-cellular telephones and answering machines	0.01	0.08	636	0.05	20
13:11	Cell phones, PDAs and pagers	0.01	0.04	549	0.03	11
13:12	Other miscellaneous electronics - consumer	0.51	1.14	222	2.12	783
13:13	Other miscellaneous electronics - commercial	0.07	0.44	617	0.29	109
13:14	Small appliances	0.36	1.84	513	1.47	545
	Category 13 - Electronics	**1.91**	4.92	255	**7.92**	**2,928**
Category 14 - Other						
14:1	Cat litter	2.78	4.84	176	11.54	4,267
14:2	Non-distinct fines	1.97	1.63	83	8.15	3,014
14:3	Other wastes, dental floss, …..	0.12	0.77	620	0.51	187
	Category 14 - Other	**4.87**	5.42	112	**20.20**	**7,468**
	Total	**100.00**			**414.46**	**153,263**

Table B-2. Waste Composition By Phase 2009-2010

		PHASE 1	PHASE 2	TOTAL
		Mean (%)	Mean (%)	Mean (%)
		(N=102)	(N=96)	(N=198)
Category 1 - Paper and Paperboard				
1:1	Newsprint (including flyers)	1.36	1.59	1.45
1:2	Magazines and mixed recyclable paper	2.79	2.39	2.57
1:3	Corrugated cardboard	1.09	1.01	1.04
1:4	Pizza boxes	0.22	0.13	0.18
1:5	Waxed corrugated cardboard	0.45	0.36	0.40
1:6	Boxboard	1.38	1.37	1.36
1:7	Telephone books	0.04	0.08	0.06
1:8	Books	0.11	0.29	0.19
1:9	Fine paper	0.39	0.46	0.42
1:10	Tissue paper, paper towels, napkins	5.55	5.22	5.34
1:11	Feminine Hygiene Products	0.22	0.47	0.34
1:12	Gabletop Cartons - Milk and Milk Substitutes	0.46	0.41	0.43
1:13	Gabletop Cartons - Juice & Other	0.04	0.04	0.04
1:14	Aseptic boxes - Milk and Milk Substitutes	0.06	0.07	0.06
1:15	Aseptic boxes - Juice & Other	0.06	0.08	0.07
1:16	Brown kraft paper, including bags	0.48	0.42	0.45
1:17	Paper Cups	0.85	0.68	0.76
1:18	Other paper (non-recyclable)	1.42	1.41	1.40
	Category 1 - Paper and Paperboard	**16.95**	**16.46**	**16.55**
Category 2 - Glass				
2:1	Beverage Containers - alcoholic	0.27	0.35	0.31
2:2	Beverage Containers - non alcoholic	0.10	0.13	0.11
2:3	Food Containers	0.49	0.57	0.52
2:4	Other Glass Containers	0.01	0.16	0.08
2:5	Other glass and ceramics (plate, mirrors, light bulbs, ceramics)	0.82	1.04	0.92
	Category 2 - Glass	**1.70**	**2.24**	**1.94**
Category 3 - Ferrous Metals				
3:1	Beverage Containers - alcoholic	0.03	0.00	0.01
3:2	Beverage Containers - non alcoholic	0.01	0.00	0.01
3:3	Food Containers	0.49	0.51	0.50
3:4	Large metal appliances (white goods)	0.00	0.00	0.00
3:5	Other ferrous metals	1.40	2.39	1.86
	Category 3 - Ferrous Metals	**1.93**	**2.91**	**2.37**
Category 4 - Non-ferrous Metals				
4:1	Beverage Containers - non alcoholic	0.06	0.06	0.06
4:2	Beverage Containers - alcoholic	0.04	0.05	0.05
4:3	Food Containers	0.05	0.04	0.04
4:4	Aluminum trays & foil	0.40	0.28	0.34
4:5	Other non-ferrous metals	0.17	0.12	0.15
	Category 4 - Non-ferrous Metals	**0.73**	**0.55**	**0.64**

Table B-2. Waste Composition By Phase 2009-2010

		PHASE 1	PHASE 2	TOTAL
		Mean (%)	Mean (%)	Mean (%)
		(N=102)	(N=96)	(N=198)
Category 5 - Plastics				
5:1	Bottles/Jugs - PET beverage bottles (#1) (soft drink, juice)	0.15	0.16	0.15
5:2	Bottles/Jugs - PET other bottles and jars (#1)	0.20	0.25	0.22
5:3	Bottles/Jugs - HDPE beverage bottles (#2) (juice)	0.03	0.04	0.04
5:4	Milk Jugs - HDPE	0.10	0.11	0.10
5:5	Bottles/Jugs - HDPE other bottles and jugs (#2)	0.39	0.38	0.38
5:6	Bottles/Jugs - PVC bottles and jars (#3)	0.03	0.01	0.02
5:7	Bottles/Jugs - other bottles, jars and jugs (#4 LDPE, #5 PP, #7)	0.13	0.10	0.12
5:8	Other Rigid Containers - PET Food take out (#1)	0.06	0.01	0.03
5:9	Other Rigid Containers - PET Other food containers (#1)	0.20	0.32	0.25
5:10	Other Rigid Containers - #6 PS rigid take out	0.39	0.38	0.38
5:11	Other Rigid Containers - #6 PS foam take out	0.13	0.15	0.14
5:12	Other Rigid Containers - #6 PS foam packaging	0.70	0.67	0.68
5:13	Other Rigid Containers - #6 PS rigid packaging	0.25	0.05	0.15
5:14	Other Rigid Containers - #5 PP wide mouth food take out	0.07	0.18	0.12
5:15	Other Rigid Containers - Other wide mouth containers and lids (#2, #4, #5)	0.22	0.39	0.30
5:16	Other Rigid Containers - # 2 HDPE & #5 PP Large pails and lids (4-25L)	0.18	0.24	0.21
5:17	Other Rigid Containers - All other rigid plastic packages	0.29	0.46	0.37
5:18	Film Packaging - Polyethylene plastic bags and film - non carry-out bags	0.35	0.10	0.23
5:19	Film Packaging - Polyethylene retail and grocery carry-out bags empty	0.18	0.15	0.16
5:20	Film Packaging - commercial stretch wrap	0.18	0.16	0.17
5:21	Film Packaging - Laminates	2.51	4.49	3.42
5:22	Film Non Packaging - Polyethylene retail and grocery carry-out bags - reused	0.81	0.44	0.63
5:23	Film Non Packaging - Polyethylene plastic bags and film	3.36	2.60	2.96
5:24	Durable Plastic Products - Non-packaging	1.79	1.92	1.83
5:25	Durable Plastic Products - Vinyl Siding	0.01	0.02	0.01
	Category 5 - Plastics	**12.73**	**13.75**	**13.09**
Category 6 - Organic Waste				
6:1	Food waste - Backyard Compostable	6.43	9.83	7.98
6:2	Food Waste - Kitchen Waste	18.68	14.39	16.45
6:3	Food Waste - FOG (Fats-Oil-Grease) - Brown grease	0.00	0.48	0.23
6:4	Food Waste - FOG (Fats-Oil-Grease) - Yellow grease	0.02	0.02	0.02
6:6	Yard Waste (<3" diameter)	3.56	3.20	3.35
6:7	Animal Faeces	1.95	0.98	1.47
6:8	Other organic waste	1.22	0.58	0.90
	Category 6 - Organic Waste	**31.85**	**29.49**	**30.41**
Category 7 - Wood and Wood Products				
7:1	Pallets/skids	0.07	0.30	0.63
7:2	Wood shingles	3.49	4.89	4.12
7:3	Wood furniture (>80% wood)	0.40	0.79	0.58
7:4	Other wood - Clean	2.85	1.78	2.33
7:5	Other wood - Contaminated	2.20	2.40	2.27
	Category 7 - Wood and Wood Products	**9.01**	**10.16**	**9.93**
Category 8 - Construction/Demolition Material				
8:1	Drywall	0.06	0.31	0.18
8:2	Asphalt shingles	1.93	1.19	2.05
8:3	Carpet & underlay	1.47	2.22	1.81
8:4	Masonry (bricks, blocks, concrete, ceramic)	0.10	0.26	0.17
8:5	Rock/sand/dirt	0.94	0.13	0.55
8:6	Other C/D wastes	1.76	0.86	1.36
	Category 8 - Construction/Demolition Material	**6.26**	**4.97**	**6.12**

Table B-2. Waste Composition By Phase 2009-2010

		PHASE 1	PHASE 2	TOTAL
		Mean (%)	Mean (%)	Mean (%)
		(N=102)	(N=96)	(N=198)
Category 9 - Textiles				
9:1	Clothing	2.18	2.06	2.10
9:2	Footwear	0.57	0.66	0.61
9:3	Other textiles	2.90	2.75	2.80
	Category 9 - Textiles	**5.65**	**5.47**	**5.51**
Category 10 - Rubber				
10:1	Vehicle tires	0.01	0.06	0.04
10:2	Other rubber products	0.68	0.67	0.67
	Category 10 - Rubber	**0.69**	**0.74**	**0.71**
Category 11 - Composite Products				
11:1	Disposable diapers	3.71	2.89	3.28
11:2	Furniture	0.55	0.68	0.61
11:3	Other composites, Q-tips…..	1.41	1.18	1.28
	Category 11 - Composite Products	**5.67**	**4.75**	**5.18**
Category 12 - Hazardous Wastes				
12:1	Fluorescent lighting - CFL (Compact Fluorescent Lamps) bulbs	0.00	0.00	0.00
12:2	Fluorescent lighting - CFL (Compact Fluorescent Lamps) tubes	0.00	0.11	0.05
12:3	Batteries - automotive (lead acid)	0.00	0.00	0.00
12:4	Batteries - Dry cell, alkaline, button cell, other non rechargable household batt.	0.16	0.07	0.12
12:5	Batteries - Rechargeable	0.00	0.00	0.00
12:6	Oil - Lubricating (motor, transmission) oil, including containers	0.02	0.01	0.01
12:7	Oil - Empty Lubricating (motor, transmission) oil containers	0.04	0.07	0.05
12:8	Oil Filter - Automotive (include number of units)	0.01	0.02	0.01
12:9	Paint - Latex, including containers, PCA	0.05	0.02	0.04
12:10	Paint - Empty latex paint containers (PCA)	0.01	0.02	0.01
12:11	Paint - Oil-based, including containers, (PCA)	0.07	0.03	0.05
12:12	Paint - Empty oil based paint containers, (PCA)	0.00	0.02	0.01
12:13	Paint - (non PCA) paint including container	0.01	0.00	0.01
12:14	Paint - Empty (non PCA) container	0.00	0.00	0.00
12:15	Paint in aerosol cans (PCA)	0.00	0.00	0.00
12:16	Paint - Empty aerosol paint cans (PCA)	0.00	0.03	0.01
12:17	Paint - Aerosol cans (non PCA)	0.00	0.00	0.00
12:18	Paint - Empty aerosol paint cans (non PCA)	0.00	0.00	0.00
12:19	Solvents including containers (<10L) (PCA)	0.00	0.00	0.00
12:20	Solvents - Empty containers (PCA)	0.00	0.03	0.01
12:21	Solvents including containers (non PCA)	0.01	0.00	0.00
12:22	Solvents - Empty containers (non PCA)	0.00	0.00	0.00
12:23	Pesticides including containers (<10L) (PCA)	0.00	0.00	0.00
12:24	Pesticide - Empty pesticide containers (PCA)	0.00	0.00	0.00
12:25	Pesticides including containers (non PCA)	0.00	0.00	0.00
12:26	Pesticide - Empty pesticide containers (non PCA)	0.00	0.00	0.00
12:27	Pharmaceuticals, including containers	0.03	0.04	0.03
12:28	Needles & Sharps	0.01	0.00	0.01
12:29	Other empty aerosol cans (not applicable to above categories)	0.15	0.13	0.14
12:30	Other hazardous waste (record description)	0.20	0.17	0.19
	Category 12 - Hazardous Wastes	**0.80**	**0.75**	**0.77**

Table B-2. Waste Composition By Phase 2009-2010

		PHASE 1	PHASE 2	TOTAL
		Mean (%)	Mean (%)	Mean (%)
		(N=102)	(N=96)	(N=198)
Category 13 - Electronics				
13:1	Display Devices (monitors/TVs) less than 30"	0.08	0.95	0.49
13:2	Display Devices (monitors/TVs) more than 30"	0.01	0.00	0.01
13:3	Computers (desktops, laptops, desktop servers)	0.10	0.08	0.09
13:4	Desktop Computer printers, copiers, faxes,	0.14	0.15	0.14
13:5	Computer scanners	0.00	0.00	0.00
13:6	Computer Peripherals (keyboards, mice)	0.01	0.02	0.02
13:7	Personal/Portable audio/video playback and/or recording devices	0.00	0.25	0.12
13:8	Vehicle audio/video devices	0.00	0.01	0.01
13:9	Home audio/video playback and/or recording systems	0.07	0.09	0.08
13:10	Non-cellular telephones and answering machines	0.00	0.02	0.01
13:11	Cell phones, PDAs and pagers	0.01	0.01	0.01
13:12	Other miscellaneous electronics - consumer	0.42	0.61	0.51
13:13	Other miscellaneous electronics - commercial	0.07	0.08	0.07
13:14	Small appliances	0.22	0.51	0.36
	Category 13 - Electronics	**1.14**	**2.78**	**1.91**
Category 14 - Other				
14:1	Cat litter	2.45	3.21	2.78
14:2	Non-distinct fines	2.34	1.60	1.97
14:3	Other wastes, dental floss, …..	0.09	0.16	0.12
	Category 14 - Other	**4.87**	**4.98**	**4.87**
	Total	**100**	**100**	**100**

Table B-3. Waste Composition By Sector 2009-2010

		RES	ICI	DLC	TOTAL
		Mean (%)	Mean (%)	Mean (%)	Mean (%)
		(N=98)	(N=83)	(N=17)	(N=198)
Category 1 - Paper and Paperboard					
1:1	Newsprint (including flyers)	1.38	1.83	0.00	1.45
1:2	Magazines and mixed recyclable paper	2.74	2.89	0.00	2.57
1:3	Corrugated cardboard	0.74	1.60	0.00	1.04
1:4	Pizza boxes	0.23	0.15	0.00	0.18
1:5	Waxed corrugated cardboard	0.06	0.88	0.00	0.40
1:6	Boxboard	1.53	1.45	0.00	1.36
1:7	Telephone books	0.08	0.04	0.00	0.06
1:8	Books	0.22	0.20	0.00	0.19
1:9	Fine paper	0.28	0.66	0.00	0.42
1:10	Tissue paper, paper towels, napkins	4.69	7.19	0.00	5.34
1:11	Feminine Hygiene Products	0.39	0.34	0.00	0.34
1:12	Gabletop Cartons - Milk and Milk Substitutes	0.56	0.37	0.00	0.43
1:13	Gabletop Cartons - Juice & Other	0.05	0.03	0.00	0.04
1:14	Aseptic boxes - Milk and Milk Substitutes	0.09	0.04	0.00	0.06
1:15	Aseptic boxes - Juice & Other	0.08	0.07	0.00	0.07
1:16	Brown kraft paper, including bags	0.50	0.47	0.00	0.45
1:17	Paper Cups	0.43	1.30	0.00	0.76
1:18	Other paper (non-recyclable)	1.40	1.69	0.00	1.40
	Category 1 - Paper and Paperboard	**15.47**	**21.20**	**0.00**	**16.55**
Category 2 - Glass					
2:1	Beverage Containers - alcoholic	0.35	0.32	0.00	0.31
2:2	Beverage Containers - non alcoholic	0.10	0.15	0.00	0.11
2:3	Food Containers	0.72	0.40	0.00	0.52
2:4	Other Glass Containers	0.11	0.06	0.00	0.08
2:5	Other glass and ceramics (plate, mirrors, light bulbs, ceramics)	1.10	0.89	0.00	0.92
	Category 2 - Glass	**2.37**	**1.83**	**0.00**	**1.94**
Category 3 - Ferrous Metals					
3:1	Beverage Containers - alcoholic	0.00	0.03	0.00	0.01
3:2	Beverage Containers - non alcoholic	0.01	0.01	0.00	0.01
3:3	Food Containers	0.62	0.46	0.00	0.50
3:4	Large metal appliances (white goods)	0.00	0.00	0.00	0.00
3:5	Other ferrous metals	1.96	2.07	0.19	1.86
	Category 3 - Ferrous Metals	**2.59**	**2.57**	**0.19**	**2.37**
Category 4 - Non-ferrous Metals					
4:1	Beverage Containers - non alcoholic	0.06	0.08	0.00	0.06
4:2	Beverage Containers - alcoholic	0.05	0.06	0.00	0.05
4:3	Food Containers	0.06	0.04	0.00	0.04
4:4	Aluminum trays & foil	0.49	0.23	0.00	0.34
4:5	Other non-ferrous metals	0.19	0.12	0.00	0.15
	Category 4 - Non-ferrous Metals	**0.85**	**0.53**	**0.00**	**0.64**

Table B-3. Waste Composition By Sector 2009-2010

		RES	ICI	DLC	TOTAL
		Mean (%)	Mean (%)	Mean (%)	Mean (%)
		(N=98)	(N=83)	(N=17)	(N=198)
Category 5 - Plastics					
5:1	Bottles/Jugs - PET beverage bottles (#1) (soft drink, juice)	0.13	0.21	0.00	0.15
5:2	Bottles/Jugs - PET other bottles and jars (#1)	0.30	0.17	0.00	0.22
5:3	Bottles/Jugs - HDPE beverage bottles (#2) (juice)	0.03	0.05	0.00	0.04
5:4	Milk Jugs - HDPE	0.13	0.10	0.00	0.10
5:5	Bottles/Jugs - HDPE other bottles and jugs (#2)	0.44	0.39	0.00	0.38
5:6	Bottles/Jugs - PVC bottles and jars (#3)	0.02	0.02	0.00	0.02
5:7	Bottles/Jugs - other bottles, jars and jugs (#4 LDPE, #5 PP, #7)	0.14	0.11	0.00	0.12
5:8	Other Rigid Containers - PET Food take out (#1)	0.04	0.03	0.00	0.03
5:9	Other Rigid Containers - PET Other food containers (#1)	0.29	0.26	0.00	0.25
5:10	Other Rigid Containers - #6 PS rigid take out	0.34	0.51	0.00	0.38
5:11	Other Rigid Containers - #6 PS foam take out	0.19	0.12	0.00	0.14
5:12	Other Rigid Containers - #6 PS foam packaging	0.78	0.70	0.00	0.68
5:13	Other Rigid Containers - #6 PS rigid packaging	0.16	0.18	0.00	0.15
5:14	Other Rigid Containers - #5 PP wide mouth food take out	0.16	0.09	0.00	0.12
5:15	Other Rigid Containers - Other wide mouth containers and lids (#2, #4, #5)	0.32	0.34	0.00	0.30
5:16	Other Rigid Containers - # 2 HDPE & #5 PP Large pails and lids (4-25L)	0.09	0.38	0.00	0.21
5:17	Other Rigid Containers - All other rigid plastic packages	0.45	0.35	0.00	0.37
5:18	Film Packaging - Polyethylene plastic bags and film - non carry-out bags	0.32	0.17	0.00	0.23
5:19	Film Packaging - Polyethylene retail and grocery carry-out bags empty	0.20	0.15	0.00	0.16
5:20	Film Packaging - commercial stretch wrap	0.05	0.33	0.04	0.17
5:21	Film Packaging - Laminates	3.96	3.50	0.00	3.42
5:22	Film Non Packaging - Polyethylene retail and grocery carry-out bags - reused	0.92	0.41	0.00	0.63
5:23	Film Non Packaging - Polyethylene plastic bags and film	2.84	3.72	0.00	2.96
5:24	Durable Plastic Products - Non-packaging	1.63	2.44	0.04	1.83
5:25	Durable Plastic Products - Vinyl Siding	0.01	0.02	0.00	0.01
	Category 5 - Plastics	**13.95**	**14.73**	**0.08**	**13.09**
Category 6 - Organic Waste					
6:1	Food waste - Backyard Compostable	9.54	7.77	0.00	7.98
6:2	Food Waste - Kitchen Waste	18.90	16.93	0.00	16.45
6:3	Food Waste - FOG (Fats-Oil-Grease) - Brown grease	0.00	0.54	0.00	0.23
6:4	Food Waste - FOG (Fats-Oil-Grease) - Yellow grease	0.04	0.00	0.00	0.02
6:6	Yard Waste (<3" diameter)	3.50	3.87	0.00	3.35
6:7	Animal Faeces	1.57	1.66	0.00	1.47
6:8	Other organic waste	1.01	0.96	0.00	0.90
	Category 6 - Organic Waste	**34.56**	**31.74**	**0.00**	**30.41**
Category 7 - Wood and Wood Products					
7:1	Pallets/skids	0.00	0.35	5.63	0.63
7:2	Wood shingles	0.00	0.00	47.99	4.12
7:3	Wood furniture (>80% wood)	0.74	0.51	0.00	0.58
7:4	Other wood - Clean	1.44	1.96	9.25	2.33
7:5	Other wood - Contaminated	1.71	3.30	0.51	2.27
	Category 7 - Wood and Wood Products	**3.90**	**6.12**	**63.38**	**9.93**
Category 8 - Construction/Demolition Material					
8:1	Drywall	0.17	0.23	0.00	0.18
8:2	Asphalt shingles	0.41	0.14	20.77	2.05
8:3	Carpet & underlay	1.48	1.36	5.88	1.81
8:4	Masonry (bricks, blocks, concrete, ceramic)	0.16	0.22	0.00	0.17
8:5	Rock/sand/dirt	0.06	0.10	5.56	0.55
8:6	Other C/D wastes	1.14	1.14	3.71	1.36
	Category 8 - Construction/Demolition Material	**3.43**	**3.20**	**35.93**	**6.12**

Table B-3. Waste Composition By Sector 2009-2010

		RES	ICI	DLC	TOTAL
		Mean (%)	Mean (%)	Mean (%)	Mean (%)
		(N=98)	(N=83)	(N=17)	(N=198)
Category 9 - Textiles					
9:1	Clothing	2.83	1.67	0.00	2.10
9:2	Footwear	0.81	0.49	0.00	0.61
9:3	Other textiles	2.86	3.30	0.00	2.80
	Category 9 - Textiles	**6.50**	**5.46**	**0.00**	**5.51**
Category 10 - Rubber					
10:1	Vehicle tires	0.00	0.08	0.00	0.04
10:2	Other rubber products	0.42	1.10	0.00	0.67
	Category 10 - Rubber	**0.42**	**1.19**	**0.00**	**0.71**
Category 11 - Composite Products					
11:1	Disposable diapers	4.89	2.06	0.00	3.28
11:2	Furniture	0.42	0.86	0.43	0.61
11:3	Other composites, Q-tips…..	1.39	1.43	0.00	1.28
	Category 11 - Composite Products	**6.69**	**4.35**	**0.43**	**5.18**
Category 12 - Hazardous Wastes					
12:1	Fluorescent lighting - CFL (Compact Fluorescent Lamps) bulbs	0.00	0.00	0.00	0.00
12:2	Fluorescent lighting - CFL (Compact Fluorescent Lamps) tubes	0.00	0.12	0.00	0.05
12:3	Batteries - automotive (lead acid)	0.00	0.00	0.00	0.00
12:4	Batteries - Dry cell, alkaline, button cell, other non rechargable household batt.	0.17	0.07	0.00	0.12
12:5	Batteries - Rechargeable	0.01	0.00	0.00	0.00
12:6	Oil - Lubricating (motor, transmission) oil, including containers	0.03	0.00	0.00	0.01
12:7	Oil - Empty Lubricating (motor, transmission) oil containers	0.02	0.10	0.00	0.05
12:8	Oil Filter - Automotive (include number of units)	0.00	0.04	0.00	0.01
12:9	Paint - Latex, including containers, PCA	0.03	0.05	0.00	0.04
12:10	Paint - Empty latex paint containers (PCA)	0.02	0.01	0.00	0.01
12:11	Paint - Oil-based, including containers, (PCA)	0.10	0.01	0.00	0.05
12:12	Paint - Empty oil based paint containers, (PCA)	0.01	0.01	0.00	0.01
12:13	Paint - (non PCA) paint including container	0.01	0.00	0.00	0.01
12:14	Paint - Empty (non PCA) container	0.00	0.00	0.00	0.00
12:15	Paint in aerosol cans (PCA)	0.00	0.00	0.00	0.00
12:16	Paint - Empty aerosol paint cans (PCA)	0.01	0.02	0.00	0.01
12:17	Paint - Aerosol cans (non PCA)	0.00	0.00	0.00	0.00
12:18	Paint - Empty aerosol paint cans (non PCA)	0.00	0.00	0.00	0.00
12:19	Solvents including containers (<10L) (PCA)	0.00	0.00	0.00	0.00
12:20	Solvents - Empty containers (PCA)	0.00	0.03	0.00	0.01
12:21	Solvents including containers (non PCA)	0.00	0.01	0.00	0.00
12:22	Solvents - Empty containers (non PCA)	0.00	0.00	0.00	0.00
12:23	Pesticides including containers (<10L) (PCA)	0.00	0.00	0.00	0.00
12:24	Pesticide - Empty pesticide containers (PCA)	0.00	0.00	0.00	0.00
12:25	Pesticides including containers (non PCA)	0.00	0.00	0.00	0.00
12:26	Pesticide - Empty pesticide containers (non PCA)	0.00	0.00	0.00	0.00
12:27	Pharmaceuticals, including containers	0.05	0.02	0.00	0.03
12:28	Needles & Sharps	0.01	0.00	0.00	0.01
12:29	Other empty aerosol cans (not applicable to above categories)	0.21	0.08	0.00	0.14
12:30	Other hazardous waste (record description)	0.17	0.24	0.00	0.19
	Category 12 - Hazardous Wastes	**0.85**	**0.83**	**0.00**	**0.77**

Table B-3. Waste Composition By Sector 2009-2010

		RES	ICI	DLC	TOTAL
		Mean (%)	Mean (%)	Mean (%)	Mean (%)
		(N=98)	(N=83)	(N=17)	(N=198)
Category 13 - Electronics					
13:1	Display Devices (monitors/TVs) less than 30"	0.49	0.59	0.00	0.49
13:2	Display Devices (monitors/TVs) more than 30"	0.01	0.00	0.00	0.01
13:3	Computers (desktops, laptops, desktop servers)	0.06	0.15	0.00	0.09
13:4	Desktop Computer printers, copiers, faxes,	0.02	0.32	0.00	0.14
13:5	Computer scanners	0.00	0.00	0.00	0.00
13:6	Computer Peripherals (keyboards, mice)	0.02	0.01	0.00	0.02
13:7	Personal/Portable audio/video playback and/or recording devices	0.20	0.05	0.00	0.12
13:8	Vehicle audio/video devices	0.00	0.02	0.00	0.01
13:9	Home audio/video playback and/or recording systems	0.05	0.12	0.00	0.08
13:10	Non-cellular telephones and answering machines	0.02	0.01	0.00	0.01
13:11	Cell phones, PDAs and pagers	0.01	0.00	0.00	0.01
13:12	Other miscellaneous electronics - consumer	0.42	0.72	0.00	0.51
13:13	Other miscellaneous electronics - commercial	0.07	0.09	0.00	0.07
13:14	Small appliances	0.38	0.40	0.00	0.36
	Category 13 - Electronics	**1.76**	**2.48**	**0.00**	**1.91**
Category 14 - Other					
14:1	Cat litter	4.18	1.71	0.00	2.78
14:2	Non-distinct fines	2.35	1.92	0.00	1.97
14:3	Other wastes, dental floss, …..	0.12	0.15	0.00	0.12
	Category 14 - Other	**6.65**	**3.77**	**0.00**	**4.87**
	Total	**100**	**100**	**100**	**100**

APPENDIX C
Detailed Result Tables
Apartment and Condominium Study
Neighbourhood Study

Table C-1. Waste Composition Appartments By Area 2009-2010.

		VICTORIA	SAANICH	ESQUIMALT	OAK BAY	TOTAL
		Mean (%)	Mean (%)	Mean (%)	Mean (%)	Mean (%)
		(N=17)	(N=2)	(N=3)	(N=2)	(N=24)
Category 1 - Paper and Paperboard						
1:1	Newsprint (including flyers)	2.58	0.56	0.81	1.16	2.07
1:2	Magazines and mixed recyclable paper	3.55	1.44	1.89	2.02	3.04
1:3	Corrugated cardboard	0.98	0.45	0.45	0.48	0.83
1:4	Pizza boxes	0.19	0.40	0.21	0.50	0.24
1:5	Waxed corrugated cardboard	0.00	0.00	0.00	0.00	0.00
1:6	Boxboard	1.97	0.89	1.80	3.50	1.99
1:7	Telephone books	0.18	0.00	0.00	0.00	0.13
1:8	Books	0.26	0.00	0.00	0.00	0.18
1:9	Fine paper	0.23	0.15	0.20	0.06	0.21
1:10	Tissue paper, paper towels, napkins	4.74	7.90	5.47	4.45	5.07
1:11	Feminine Hygiene Products	0.27	0.19	1.28	1.96	0.53
1:12	Gabletop Cartons - Milk and Milk Substitutes	0.47	0.62	0.32	0.44	0.46
1:13	Gabletop Cartons - Juice & Other	0.02	0.01	0.02	0.00	0.02
1:14	Aseptic boxes - Milk and Milk Substitutes	0.09	0.13	0.04	0.09	0.09
1:15	Aseptic boxes - Juice & Other	0.10	0.13	0.09	0.00	0.09
1:16	Brown kraft paper, including bags	0.50	0.53	0.43	0.39	0.48
1:17	Paper Cups	0.32	0.20	0.32	0.34	0.31
1:18	Other paper (non-recyclable)	0.95	0.93	0.81	1.10	0.94
	Category 1 - Paper and Paperboard	**17.40**	**14.54**	**14.15**	**16.50**	**16.68**
Category 2 - Glass						
2:1	Beverage Containers - alcoholic	0.30	0.00	0.08	0.99	0.30
2:2	Beverage Containers - non alcoholic	0.12	0.00	0.00	0.14	0.10
2:3	Food Containers	0.97	0.50	0.53	1.87	0.95
2:4	Other Glass Containers	0.03	0.13	0.00	0.22	0.05
2:5	Other glass and ceramics (plate, mirrors, light bulbs, ceramics)	1.65	0.69	1.94	0.33	1.50
	Category 2 - Glass	**3.08**	**1.32**	**2.55**	**3.54**	**2.91**
Category 3 - Ferrous Metals						
3:1	Beverage Containers - alcoholic	0.00	0.00	0.00	0.00	0.00
3:2	Beverage Containers - non alcoholic	0.04	0.04	0.00	0.00	0.03
3:3	Food Containers	0.73	1.01	0.71	0.51	0.73
3:4	Large metal appliances (white goods)	0.00	0.00	0.00	0.00	0.00
3:5	Other ferrous metals	1.15	0.39	9.53	1.67	2.18
	Category 3 - Ferrous Metals	**1.92**	**1.45**	**10.24**	**2.18**	**2.94**
Category 4 - Non-ferrous Metals						
4:1	Beverage Containers - non alcoholic	0.03	0.03	0.03	0.10	0.04
4:2	Beverage Containers - alcoholic	0.07	0.02	0.00	0.04	0.05
4:3	Food Containers	0.04	0.03	0.12	0.05	0.05
4:4	Aluminum trays & foil	0.52	0.51	0.41	0.40	0.49
4:5	Other non-ferrous metals	0.31	0.00	0.00	0.00	0.22
	Category 4 - Non-ferrous Metals	**0.97**	**0.59**	**0.56**	**0.58**	**0.86**

Table C-1. Waste Composition Appartments By Area 2009-2010.

		VICTORIA	SAANICH	ESQUIMALT	OAK BAY	TOTAL
		Mean (%)	Mean (%)	Mean (%)	Mean (%)	Mean (%)
		(N=17)	(N=2)	(N=3)	(N=2)	(N=24)
Category 5 - Plastics						
5:1	Bottles/Jugs - PET beverage bottles (#1) (soft drink, juice)	0.10	0.19	0.10	0.21	0.12
5:2	Bottles/Jugs - PET other bottles and jars (#1)	0.34	1.55	0.32	0.36	0.44
5:3	Bottles/Jugs - HDPE beverage bottles (#2) (juice)	0.03	0.04	0.06	0.00	0.03
5:4	Milk Jugs - HDPE	0.21	0.13	0.10	0.41	0.21
5:5	Bottles/Jugs - HDPE other bottles and jugs (#2)	0.56	0.51	0.29	0.84	0.54
5:6	Bottles/Jugs - PVC bottles and jars (#3)	0.01	0.03	0.04	0.03	0.02
5:7	Bottles/Jugs - other bottles, jars and jugs (#4 LDPE, #5 PP, #7)	0.10	0.51	0.18	0.11	0.14
5:8	Other Rigid Containers - PET Food take out (#1)	0.03	0.18	0.03	0.00	0.04
5:9	Other Rigid Containers - PET Other food containers (#1)	0.34	0.43	0.23	0.21	0.32
5:10	Other Rigid Containers - #6 PS rigid take out	0.42	0.46	0.26	0.16	0.38
5:11	Other Rigid Containers - #6 PS foam take out	0.11	0.15	0.15	0.14	0.12
5:12	Other Rigid Containers - #6 PS foam packaging	0.73	0.94	0.81	0.73	0.76
5:13	Other Rigid Containers - #6 PS rigid packaging	0.22	0.24	0.13	0.35	0.22
5:14	Other Rigid Containers - #5 PP wide mouth food take out	0.10	0.09	0.16	0.05	0.10
5:15	Other Rigid Containers - Other wide mouth containers and lids (#2, #4, #5)	0.32	0.96	0.40	0.46	0.39
5:16	Other Rigid Containers - # 2 HDPE & #5 PP Large pails and lids (4-25L)	0.02	0.00	0.00	1.64	0.15
5:17	Other Rigid Containers - All other rigid plastic packages	0.50	0.40	0.41	0.56	0.49
5:18	Film Packaging - Polyethylene plastic bags and film - non carry-out bags	0.34	0.19	0.23	0.23	0.30
5:19	Film Packaging - Polyethylene retail and grocery carry-out bags empty	0.22	0.13	0.09	0.17	0.19
5:20	Film Packaging - commercial stretch wrap	0.01	0.00	0.03	0.00	0.01
5:21	Film Packaging - Laminates	3.07	3.22	2.58	3.12	3.02
5:22	Film Non Packaging - Polyethylene retail and grocery carry-out bags - reused	1.42	1.22	0.65	1.26	1.29
5:23	Film Non Packaging - Polyethylene plastic bags and film	2.95	2.30	2.05	1.65	2.67
5:24	Durable Plastic Products - Non-packaging	1.16	1.04	0.46	1.05	1.05
5:25	Durable Plastic Products - Vinyl Siding	0.00	0.00	0.00	0.00	0.00
	Category 5 - Plastics	**13.31**	**14.91**	**9.77**	**13.73**	**13.03**
Category 6 - Organic Waste						
6:1	Food waste - Backyard Compostable	13.14	15.03	12.24	12.93	13.16
6:2	Food Waste - Kitchen Waste	20.32	21.41	14.82	16.63	19.42
6:3	Food Waste - FOG (Fats-Oil-Grease) - Brown grease	0.00	0.00	0.00	0.00	0.00
6:4	Food Waste - FOG (Fats-Oil-Grease) - Yellow grease	0.07	0.00	0.00	0.00	0.05
6:6	Yard Waste (<3" diameter)	2.35	12.74	1.53	0.92	2.99
6:7	Animal Faeces	0.34	0.78	0.00	3.88	0.63
6:8	Other organic waste	0.76	0.30	0.27	0.81	0.66
	Category 6 - Organic Waste	**36.98**	**50.25**	**28.85**	**35.18**	**36.92**
Category 7 - Wood and Wood Products						
7:1	Pallets/skids	0.00	0.00	0.00	0.00	0.00
7:2	Wood shingles	0.00	0.00	0.00	0.00	0.00
7:3	Wood furniture (>80% wood)	0.28	0.00	0.00	0.00	0.20
7:4	Other wood - Clean	0.35	0.00	0.10	0.00	0.26
7:5	Other wood - Contaminated	2.38	0.99	0.00	0.00	1.76
	Category 7 - Wood and Wood Products	**3.00**	**0.99**	**0.10**	**0.00**	**2.22**
Category 8 - Construction/Demolition Material						
8:1	Drywall	0.00	0.00	0.00	0.00	0.00
8:2	Asphalt shingles	0.00	0.00	0.00	0.00	0.00
8:3	Carpet & underlay	0.71	0.92	1.14	0.26	0.74
8:4	Masonry (bricks, blocks, concrete, ceramic)	0.25	0.00	0.00	0.00	0.18
8:5	Rock/sand/dirt	0.00	0.00	0.00	0.00	0.00
8:6	Other C/D wastes	0.13	0.00	0.00	5.89	0.58
	Category 8 - Construction/Demolition Material	**1.09**	**0.92**	**1.14**	**6.14**	**1.50**

Table C-1. Waste Composition Appartments By Area 2009-2010.

		VICTORIA	SAANICH	ESQUIMALT	OAK BAY	TOTAL
		Mean (%)	Mean (%)	Mean (%)	Mean (%)	Mean (%)
		(N=17)	(N=2)	(N=3)	(N=2)	(N=24)
Category 9 - Textiles						
9:1	Clothing	3.54	1.70	1.89	0.92	2.97
9:2	Footwear	0.83	1.94	0.02	0.40	0.79
9:3	Other textiles	2.57	1.77	2.60	0.77	2.35
	Category 9 - Textiles	**6.94**	**5.40**	**4.52**	**2.09**	**6.11**
Category 10 - Rubber						
10:1	Vehicle tires	0.00	0.00	0.00	0.00	0.00
10:2	Other rubber products	0.10	0.08	0.08	0.20	0.11
	Category 10 - Rubber	**0.10**	**0.08**	**0.08**	**0.20**	**0.11**
Category 11 - Composite Products						
11:1	Disposable diapers	3.04	1.08	0.00	4.43	2.61
11:2	Furniture	0.05	0.00	4.13	0.00	0.55
11:3	Other composites, Q-tips…..	1.42	1.07	0.96	0.67	1.27
	Category 11 - Composite Products	**4.51**	**2.14**	**5.09**	**5.10**	**4.43**
Category 12 - Hazardous Wastes						
12:1	Fluorescent lighting - CFL (Compact Fluorescent Lamps) bulbs	0.02	0.00	0.00	0.00	0.01
12:2	Fluorescent lighting - CFL (Compact Fluorescent Lamps) tubes	0.00	0.00	0.00	0.00	0.00
12:3	Batteries - automotive (lead acid)	0.00	0.03	0.00	0.00	0.00
12:4	Batteries - Dry cell, alkaline, button cell, other non rechargable household batt.	0.12	0.03	0.03	0.05	0.10
12:5	Batteries - Rechargeable	0.00	0.00	0.00	0.00	0.00
12:6	Oil - Lubricating (motor, transmission) oil, including containers	0.13	0.00	0.00	0.00	0.09
12:7	Oil - Empty Lubricating (motor, transmission) oil containers	0.00	0.00	0.00	0.00	0.00
12:8	Oil Filter - Automotive (include number of units)	0.00	0.00	0.00	0.00	0.00
12:9	Paint - Latex, including containers, PCA	0.07	0.00	0.00	0.19	0.06
12:10	Paint - Empty latex paint containers (PCA)	0.00	0.00	0.00	0.00	0.00
12:11	Paint - Oil-based, including containers, (PCA)	0.05	0.00	0.00	0.00	0.03
12:12	Paint - Empty oil based paint containers, (PCA)	0.00	0.00	0.18	0.00	0.02
12:13	Paint - (non PCA) paint including container	0.00	0.00	0.00	0.00	0.00
12:14	Paint - Empty (non PCA) container	0.00	0.00	0.00	0.00	0.00
12:15	Paint in aerosol cans (PCA)	0.00	0.00	0.00	0.00	0.00
12:16	Paint - Empty aerosol paint cans (PCA)	0.00	0.00	0.08	0.00	0.01
12:17	Paint - Aerosol cans (non PCA)	0.00	0.00	0.00	0.00	0.00
12:18	Paint - Empty aerosol paint cans (non PCA)	0.00	0.00	0.00	0.00	0.00
12:19	Solvents including containers (<10L) (PCA)	0.00	0.00	0.00	0.00	0.00
12:20	Solvents - Empty containers (PCA)	0.00	0.00	0.00	0.00	0.00
12:21	Solvents including containers (non PCA)	0.00	0.00	0.00	0.00	0.00
12:22	Solvents - Empty containers (non PCA)	0.00	0.00	0.00	0.00	0.00
12:23	Pesticides including containers (<10L) (PCA)	0.00	0.00	0.00	0.00	0.00
12:24	Pesticide - Empty pesticide containers (PCA)	0.00	0.00	0.00	0.00	0.00
12:25	Pesticides including containers (non PCA)	0.00	0.00	0.00	0.00	0.00
12:26	Pesticide - Empty pesticide containers (non PCA)	0.00	0.00	0.00	0.00	0.00
12:27	Pharmaceuticals, including containers	0.02	0.03	0.00	0.00	0.02
12:28	Needles & Sharps	0.03	0.00	0.00	0.00	0.02
12:29	Other empty aerosol cans (not applicable to above categories)	0.25	0.00	0.10	0.40	0.22
12:30	Other hazardous waste (record description)	0.08	0.00	0.00	0.19	0.07
	Category 12 - Hazardous Wastes	**0.78**	**0.09**	**0.39**	**0.83**	**0.68**

Table C-1. Waste Composition Appartments By Area 2009-2010.

		VICTORIA	SAANICH	ESQUIMALT	OAK BAY	TOTAL
		Mean (%)	Mean (%)	Mean (%)	Mean (%)	Mean (%)
		(N=17)	(N=2)	(N=3)	(N=2)	(N=24)
Category 13 - Electronics						
13:1	Display Devices (monitors/TVs) less than 30"	2.78	0.00	0.00	0.00	1.97
13:2	Display Devices (monitors/TVs) more than 30"	0.00	0.00	0.00	0.00	0.00
13:3	Computers (desktops, laptops, desktop servers)	0.03	0.00	0.00	0.00	0.02
13:4	Desktop Computer printers, copiers, faxes,	0.00	0.00	0.00	0.00	0.00
13:5	Computer scanners	0.00	0.00	0.00	0.00	0.00
13:6	Computer Peripherals (keyboards, mice)	0.04	0.00	0.00	0.00	0.03
13:7	Personal/Portable audio/video playback and/or recording devices	0.00	0.00	1.64	0.00	0.20
13:8	Vehicle audio/video devices	0.00	0.00	0.00	0.00	0.00
13:9	Home audio/video playback and/or recording systems	0.00	0.00	0.00	0.00	0.00
13:10	Non-cellular telephones and answering machines	0.00	0.00	0.00	0.00	0.00
13:11	Cell phones, PDAs and pagers	0.00	0.00	0.00	0.00	0.00
13:12	Other miscellaneous electronics - consumer	0.99	0.00	0.12	2.06	0.89
13:13	Other miscellaneous electronics - commercial	0.00	0.00	0.00	0.00	0.00
13:14	Small appliances	0.05	0.44	5.12	0.00	0.71
	Category 13 - Electronics	**3.89**	**0.44**	**6.88**	**2.06**	**3.82**
Category 14 - Other						
14:1	Cat litter	2.71	2.96	12.76	8.39	4.46
14:2	Non-distinct fines	3.32	3.95	2.92	3.48	3.34
14:3	Other wastes, dental floss, …..	0.00	0.00	0.00	0.00	0.00
	Category 14 - Other	**6.03**	**6.90**	**15.69**	**11.86**	**7.80**
	Total	**100**	**100**	**100**	**100**	**100**

Table C-2. Waste Composition Neighbourhood Study By Area (Single family Residential)

		VICTORIA	SAANICH	OAK BAY	VIEW ROYAL	ESQUIMALT	TOTAL
		Mean (%)	Mean (%)	Mean (%)	Mean (%)	Mean (%)	Mean (%)
		(N=4)	(N=4)	(N=3)	(N=1)	(N=2)	(N=14)
Category 1 - Paper and Paperboard							
1:1	Newsprint (including flyers)	0.41	0.56	1.49	0.23	1.66	0.85
1:2	Magazines and mixed recyclable paper	1.73	1.96	1.94	1.25	1.78	1.81
1:3	Corrugated cardboard	0.35	0.95	0.71	0.47	0.73	0.66
1:4	Pizza boxes	0.14	0.08	0.11	0.27	0.92	0.23
1:5	Waxed corrugated cardboard	0.00	0.08	0.08	0.00	0.00	0.04
1:6	Boxboard	1.13	1.75	0.79	0.94	1.78	1.31
1:7	Telephone books	0.00	0.00	0.00	0.00	0.00	0.00
1:8	Books	0.27	0.00	0.00	0.00	0.00	0.08
1:9	Fine paper	0.11	0.10	0.16	0.09	0.11	0.12
1:10	Tissue paper, paper towels, napkins	4.04	4.43	6.11	4.81	4.29	4.68
1:11	Feminine Hygiene Products	0.22	0.93	0.83	0.09	1.97	0.80
1:12	Gabletop Cartons - Milk and Milk Substitutes	0.64	0.51	0.69	0.64	1.00	0.66
1:13	Gabletop Cartons - Juice & Other	0.04	0.01	0.03	0.06	0.03	0.03
1:14	Aseptic boxes - Milk and Milk Substitutes	0.13	0.17	0.07	0.03	0.09	0.12
1:15	Aseptic boxes - Juice & Other	0.08	0.11	0.09	0.06	0.07	0.09
1:16	Brown kraft paper, including bags	0.45	0.50	0.89	0.53	0.34	0.55
1:17	Paper Cups	0.48	0.33	0.25	0.45	0.26	0.35
1:18	Other paper (non-recyclable)	2.85	1.26	1.22	1.46	1.20	1.71
	Category 1 - Paper and Paperboard	**13.06**	**13.72**	**15.47**	**11.40**	**16.23**	**14.10**
Category 2 - Glass							
2:1	Beverage Containers - alcoholic	0.15	0.22	0.62	0.00	0.20	0.27
2:2	Beverage Containers - non alcoholic	0.11	0.00	0.12	0.00	0.00	0.06
2:3	Food Containers	0.82	0.47	0.55	0.03	1.35	0.68
2:4	Other Glass Containers	0.13	0.07	0.12	0.00	0.76	0.19
2:5	Other glass and ceramics (plate, mirrors, light bulbs, ceramics)	1.74	0.98	0.86	0.52	0.77	1.11
	Category 2 - Glass	**2.95**	**1.74**	**2.27**	**0.55**	**3.08**	**2.31**
Category 3 - Ferrous Metals							
3:1	Beverage Containers - alcoholic	0.00	0.00	0.00	0.00	0.00	0.00
3:2	Beverage Containers - non alcoholic	0.00	0.00	0.00	0.00	0.00	0.00
3:3	Food Containers	0.40	0.40	0.46	0.41	0.63	0.45
3:4	Large metal appliances (white goods)	0.00	0.00	0.00	0.00	0.00	0.00
3:5	Other ferrous metals	0.51	1.03	0.20	1.58	0.95	0.73
	Category 3 - Ferrous Metals	**0.91**	**1.43**	**0.66**	**1.99**	**1.58**	**1.18**
Category 4 - Non-ferrous Metals							
4:1	Beverage Containers - non alcoholic	0.06	0.01	0.12	0.00	0.04	0.05
4:2	Beverage Containers - alcoholic	0.01	0.04	0.14	0.00	0.01	0.05
4:3	Food Containers	0.06	0.03	0.05	0.06	0.08	0.05
4:4	Aluminum trays & foil	0.49	0.45	0.72	0.41	0.36	0.50
4:5	Other non-ferrous metals	0.08	0.55	0.13	0.08	0.00	0.21
	Category 4 - Non-ferrous Metals	**0.71**	**1.07**	**1.16**	**0.55**	**0.49**	**0.87**

Table C-2. Waste Composition Neighbourhood Study By Area (Single family Residential)

		VICTORIA	SAANICH	OAK BAY	VIEW ROYAL	ESQUIMALT	TOTAL
		Mean (%)	Mean (%)	Mean (%)	Mean (%)	Mean (%)	Mean (%)
		(N=4)	(N=4)	(N=3)	(N=1)	(N=2)	(N=14)
Category 5 - Plastics							
5:1	Bottles/Jugs - PET beverage bottles (#1) (soft drink, juice)	0.08	0.07	0.08	0.05	0.16	0.08
5:2	Bottles/Jugs - PET other bottles and jars (#1)	0.34	0.21	0.29	0.17	0.31	0.28
5:3	Bottles/Jugs - HDPE beverage bottles (#2) (juice)	0.03	0.00	0.02	0.00	0.01	0.01
5:4	Milk Jugs - HDPE	0.03	0.06	0.08	0.05	0.49	0.12
5:5	Bottles/Jugs - HDPE other bottles and jugs (#2)	0.32	0.31	0.28	0.41	0.34	0.31
5:6	Bottles/Jugs - PVC bottles and jars (#3)	0.01	0.00	0.01	0.00	0.00	0.00
5:7	Bottles/Jugs - other bottles, jars and jugs (#4 LDPE, #5 PP, #7)	0.13	0.15	0.02	0.00	0.16	0.11
5:8	Other Rigid Containers - PET Food take out (#1)	0.00	0.03	0.02	0.00	0.06	0.02
5:9	Other Rigid Containers - PET Other food containers (#1)	0.32	0.24	0.14	0.30	0.47	0.28
5:10	Other Rigid Containers - #6 PS rigid take out	0.41	0.33	0.29	0.30	0.25	0.33
5:11	Other Rigid Containers - #6 PS foam take out	0.04	0.12	0.09	0.02	0.03	0.07
5:12	Other Rigid Containers - #6 PS foam packaging	0.75	0.71	0.96	1.41	0.64	0.82
5:13	Other Rigid Containers - #6 PS rigid packaging	0.18	0.11	0.28	0.36	0.21	0.20
5:14	Other Rigid Containers - #5 PP wide mouth food take out	0.07	0.14	0.24	0.03	0.02	0.12
5:15	Other Rigid Containers - Other wide mouth containers and lids (#2, #4, #5)	0.35	0.37	0.22	0.17	0.46	0.33
5:16	Other Rigid Containers - # 2 HDPE & #5 PP Large pails and lids (4-25L)	0.08	0.00	0.13	0.00	0.00	0.05
5:17	Other Rigid Containers - All other rigid plastic packages	0.40	0.39	0.39	0.33	0.43	0.39
5:18	Film Packaging - Polyethylene plastic bags and film - non carry-out bags	0.18	0.21	0.53	0.41	0.23	0.29
5:19	Film Packaging - Polyethylene retail and grocery carry-out bags empty	0.14	0.18	0.28	0.25	0.59	0.25
5:20	Film Packaging - commercial stretch wrap	0.00	0.00	0.00	0.00	0.03	0.00
5:21	Film Packaging - Laminates	3.35	4.13	6.14	3.44	2.99	4.12
5:22	Film Non Packaging - Polyethylene retail and grocery carry-out bags - reused	0.63	0.48	3.58	1.57	0.82	1.31
5:23	Film Non Packaging - Polyethylene plastic bags and film	2.68	3.10	3.31	3.05	3.11	3.02
5:24	Durable Plastic Products - Non-packaging	1.20	0.76	0.71	4.38	1.11	1.18
5:25	Durable Plastic Products - Vinyl Siding	0.00	0.00	0.00	0.00	0.00	0.00
	Category 5 - Plastics	**11.75**	**12.06**	**18.06**	**16.70**	**12.91**	**13.71**
Category 6 - Organic Waste							
6:1	Food waste - Backyard Compostable	12.51	11.71	5.24	5.32	8.92	9.69
6:2	Food Waste - Kitchen Waste	17.12	23.67	20.71	13.38	22.51	20.26
6:3	Food Waste - FOG (Fats-Oil-Grease) - Brown grease	0.00	0.00	0.00	0.00	0.00	0.00
6:4	Food Waste - FOG (Fats-Oil-Grease) - Yellow grease	0.00	0.21	0.00	0.00	0.00	0.06
6:6	Yard Waste (<3" diameter)	8.16	2.62	4.82	0.00	1.99	4.40
6:7	Animal Faeces	1.59	2.23	1.34	14.03	5.86	3.22
6:8	Other organic waste	5.42	0.81	0.84	0.41	0.78	2.10
	Category 6 - Organic Waste	**44.79**	**41.24**	**32.94**	**33.14**	**40.06**	**39.73**
Category 7 - Wood and Wood Products							
7:1	Pallets/skids	0.00	0.00	0.00	0.00	0.00	0.00
7:2	Wood shingles	0.00	0.00	0.00	0.00	0.00	0.00
7:3	Wood furniture (>80% wood)	0.00	0.00	0.00	0.00	0.00	0.00
7:4	Other wood - Clean	0.00	1.36	0.00	0.00	0.00	0.39
7:5	Other wood - Contaminated	0.88	0.52	1.09	0.00	1.61	0.86
	Category 7 - Wood and Wood Products	**0.88**	**1.88**	**1.09**	**0.00**	**1.61**	**1.25**
Category 8 - Construction/Demolition Material							
8:1	Drywall	0.00	0.00	0.00	0.00	0.15	0.02
8:2	Asphalt shingles	0.00	0.00	0.00	0.00	0.00	0.00
8:3	Carpet & underlay	0.81	4.05	0.46	0.00	1.26	1.67
8:4	Masonry (bricks, blocks, concrete, ceramic)	0.00	0.03	0.00	0.00	0.00	0.01
8:5	Rock/sand/dirt	0.00	0.00	0.00	0.00	0.00	0.00
8:6	Other C/D wastes	0.03	0.81	1.76	0.00	1.36	0.81
	Category 8 - Construction/Demolition Material	**0.84**	**4.89**	**2.22**	**0.00**	**2.77**	**2.51**

Table C-2. Waste Composition Neighbourhood Study By Area (Single family Residential)

		VICTORIA	SAANICH	OAK BAY	VIEW ROYAL	ESQUIMALT	TOTAL
		Mean (%)	Mean (%)	Mean (%)	Mean (%)	Mean (%)	Mean (%)
		(N=4)	(N=4)	(N=3)	(N=1)	(N=2)	(N=14)
Category 9 - Textiles							
9:1	Clothing	2.18	2.97	2.04	0.63	1.10	2.11
9:2	Footwear	0.77	0.65	0.54	0.00	0.25	0.56
9:3	Other textiles	1.73	1.92	1.97	0.47	1.47	1.71
	Category 9 - Textiles	**4.68**	**5.54**	**4.54**	**1.10**	**2.82**	**4.38**
Category 10 - Rubber							
10:1	Vehicle tires	0.00	0.00	0.00	0.00	0.00	0.00
10:2	Other rubber products	0.02	0.55	0.08	0.05	0.04	0.19
	Category 10 - Rubber	**0.02**	**0.55**	**0.08**	**0.05**	**0.04**	**0.19**
Category 11 - Composite Products							
11:1	Disposable diapers	7.83	5.21	9.50	15.26	7.66	7.95
11:2	Furniture	0.00	1.29	0.00	0.00	0.00	0.37
11:3	Other composites, Q-tips…..	0.58	0.82	1.39	4.32	1.23	1.18
	Category 11 - Composite Products	**8.41**	**7.32**	**10.89**	**19.58**	**8.89**	**9.50**
Category 12 - Hazardous Wastes							
12:1	Fluorescent lighting - CFL (Compact Fluorescent Lamps) bulbs	0.00	0.00	0.00	0.00	0.00	0.00
12:2	Fluorescent lighting - CFL (Compact Fluorescent Lamps) tubes	0.00	0.00	0.00	0.00	0.00	0.00
12:3	Batteries - automotive (lead acid)	0.00	0.00	0.00	0.00	0.00	0.00
12:4	Batteries - Dry cell, alkaline, button cell, other non rechargable household batt.	0.09	0.13	0.14	0.06	0.11	0.11
12:5	Batteries - Rechargeable	0.00	0.00	0.00	0.00	0.00	0.00
12:6	Oil - Lubricating (motor, transmission) oil, including containers	0.00	0.00	0.00	0.00	0.00	0.00
12:7	Oil - Empty Lubricating (motor, transmission) oil containers	0.00	0.00	0.00	0.00	0.00	0.00
12:8	Oil Filter - Automotive (include number of units)	0.00	0.00	0.00	0.00	0.00	0.00
12:9	Paint - Latex, including containers, PCA	0.17	0.00	0.00	0.00	0.00	0.05
12:10	Paint - Empty latex paint containers (PCA)	0.01	0.00	0.00	0.00	0.00	0.00
12:11	Paint - Oil-based, including containers, (PCA)	0.00	0.00	0.00	0.00	0.00	0.00
12:12	Paint - Empty oil based paint containers, (PCA)	0.00	0.00	0.00	0.00	0.00	0.00
12:13	Paint - (non PCA) paint including container	0.00	0.00	0.00	0.00	0.00	0.00
12:14	Paint - Empty (non PCA) container	0.00	0.00	0.00	0.00	0.00	0.00
12:15	Paint in aerosol cans (PCA)	0.00	0.02	0.00	0.00	0.00	0.00
12:16	Paint - Empty aerosol paint cans (PCA)	0.00	0.00	0.00	0.00	0.00	0.00
12:17	Paint - Aerosol cans (non PCA)	0.00	0.00	0.00	0.00	0.00	0.00
12:18	Paint - Empty aerosol paint cans (non PCA)	0.00	0.00	0.00	0.00	0.00	0.00
12:19	Solvents including containers (<10L) (PCA)	0.00	0.00	0.00	0.00	0.00	0.00
12:20	Solvents - Empty containers (PCA)	0.00	0.00	0.00	0.00	0.00	0.00
12:21	Solvents including containers (non PCA)	0.00	0.00	0.00	0.00	0.00	0.00
12:22	Solvents - Empty containers (non PCA)	0.00	0.00	0.00	0.00	0.00	0.00
12:23	Pesticides including containers (<10L) (PCA)	0.00	0.00	0.00	0.00	0.00	0.00
12:24	Pesticide - Empty pesticide containers (PCA)	0.00	0.00	0.00	0.00	0.00	0.00
12:25	Pesticides including containers (non PCA)	0.00	0.00	0.00	0.00	0.00	0.00
12:26	Pesticide - Empty pesticide containers (non PCA)	0.00	0.00	0.00	0.00	0.00	0.00
12:27	Pharmaceuticals, including containers	0.00	0.00	0.03	0.00	0.00	0.01
12:28	Needles & Sharps	0.00	0.00	0.00	0.00	0.00	0.00
12:29	Other empty aerosol cans (not applicable to above categories)	0.08	0.21	0.14	0.16	0.29	0.16
12:30	Other hazardous waste (record description)	0.00	0.05	0.00	0.00	0.00	0.01
	Category 12 - Hazardous Wastes	**0.34**	**0.40**	**0.30**	**0.22**	**0.40**	**0.35**

Table C-2. Waste Composition Neighbourhood Study By Area (Single family Residential)

		VICTORIA	SAANICH	OAK BAY	VIEW ROYAL	ESQUIMALT	TOTAL
		Mean (%)	Mean (%)	Mean (%)	Mean (%)	Mean (%)	Mean (%)
		(N=4)	(N=4)	(N=3)	(N=1)	(N=2)	(N=14)
Category 13 - Electronics							
13:1	Display Devices (monitors/TVs) less than 30"	0.00	0.00	0.00	0.00	0.00	0.00
13:2	Display Devices (monitors/TVs) more than 30"	0.00	0.25	0.00	0.00	0.00	0.07
13:3	Computers (desktops, laptops, desktop servers)	0.00	0.00	0.00	0.00	0.00	0.00
13:4	Desktop Computer printers, copiers, faxes,	0.00	0.00	0.00	0.00	0.00	0.00
13:5	Computer scanners	0.00	0.00	0.00	0.00	0.00	0.00
13:6	Computer Peripherals (keyboards, mice)	0.00	0.00	0.00	0.00	0.00	0.00
13:7	Personal/Portable audio/video playback and/or recording devices	0.00	0.00	0.00	0.00	0.00	0.00
13:8	Vehicle audio/video devices	0.00	0.00	0.00	0.00	0.00	0.00
13:9	Home audio/video playback and/or recording systems	0.00	0.00	0.00	1.64	0.00	0.12
13:10	Non-cellular telephones and answering machines	0.00	0.06	0.00	0.00	0.00	0.02
13:11	Cell phones, PDAs and pagers	0.00	0.00	0.00	0.00	0.05	0.01
13:12	Other miscellaneous electronics - consumer	0.38	0.21	0.43	0.38	0.00	0.29
13:13	Other miscellaneous electronics - commercial	0.00	0.00	0.00	0.00	0.00	0.00
13:14	Small appliances	0.00	0.00	0.00	0.00	0.00	0.00
	Category 13 - Electronics	**0.38**	**0.52**	**0.43**	**2.02**	**0.05**	**0.50**
Category 14 - Other							
14:1	Cat litter	8.66	3.15	7.10	9.49	7.52	6.65
14:2	Non-distinct fines	1.62	4.48	2.78	3.22	1.54	2.79
14:3	Other wastes, dental floss, …..	0.00	0.00	0.00	0.00	0.00	0.00
	Category 14 - Other	**10.28**	**7.63**	**9.89**	**12.71**	**9.06**	**9.44**
	Total	**100**	**100**	**100**	**100**	**100**	**100**

Table C-3. Waste Composition Electoral Areas

		Mayne Island	Pender Island	Port Renfrew	Salt Spring Island	Total
		(%)	(%)	(%)	(%)	(%)
		(N=2)	(N=1)	(N=1)	(N=4)	(N=8)
Category 1 - Paper and Paperboard						
1:1	Newsprint (including flyers)	1.28	4.35	0.23	0.34	1.06
1:2	Magazines and mixed recyclable paper	0.87	3.20	0.74	4.84	3.13
1:3	Corrugated cardboard	0.15	1.27	1.54	0.41	0.59
1:4	Pizza boxes	0.00	0.00	0.00	0.00	0.00
1:5	Waxed corrugated cardboard	0.00	0.00	0.00	0.00	0.00
1:6	Boxboard	1.00	2.12	1.03	1.41	1.35
1:7	Telephone books	0.00	0.00	0.00	0.00	0.00
1:8	Books	0.00	0.33	0.00	0.52	0.30
1:9	Fine paper	0.02	0.56	0.00	0.30	0.22
1:10	Tissue paper, paper towels, napkins	5.02	8.67	2.24	4.29	4.76
1:11	Feminine Hygiene Products	0.08	0.62	0.02	0.11	0.15
1:12	Gabletop Cartons - Milk and Milk Substitutes	0.14	0.37	0.21	0.18	0.20
1:13	Gabletop Cartons - Juice & Other	0.03	0.00	0.05	0.00	0.02
1:14	Aseptic boxes - Milk and Milk Substitutes	0.16	0.05	0.05	0.07	0.09
1:15	Aseptic boxes - Juice & Other	0.06	0.05	0.00	0.04	0.04
1:16	Brown kraft paper, including bags	0.25	0.17	0.33	0.48	0.36
1:17	Paper Cups	0.16	0.11	0.10	0.17	0.15
1:18	Other paper (non-recyclable)	0.86	4.07	0.98	1.29	1.49
	Category 1 - Paper and Paperboard	**10.07**	**25.93**	**7.52**	**14.44**	**13.92**
Category 2 - Glass						
2:1	Beverage Containers - alcoholic	0.66	0.00	0.00	0.33	0.33
2:2	Beverage Containers - non alcoholic	0.08	0.37	0.00	0.32	0.23
2:3	Food Containers	0.99	1.16	0.70	0.76	0.86
2:4	Other Glass Containers	0.00	0.80	0.24	0.21	0.23
2:5	Other glass and ceramics (plate, mirrors, light bulbs, ceramics)	0.35	0.98	0.53	1.36	0.96
	Category 2 - Glass	**2.08**	**3.31**	**1.46**	**2.98**	**2.61**
Category 3 - Ferrous Metals						
3:1	Beverage Containers - alcoholic	0.00	0.00	0.00	0.00	0.00
3:2	Beverage Containers - non alcoholic	0.00	0.04	0.00	0.00	0.01
3:3	Food Containers	0.37	1.58	0.98	0.44	0.63
3:4	Large metal appliances (white goods)	0.00	0.00	0.00	0.00	0.00
3:5	Other ferrous metals	0.50	0.07	0.67	1.50	0.97
	Category 3 - Ferrous Metals	**0.87**	**1.70**	**1.65**	**1.94**	**1.61**
Category 4 - Non-ferrous Metals						
4:1	Beverage Containers - non alcoholic	0.18	0.05	0.02	0.02	0.06
4:2	Beverage Containers - alcoholic	0.26	0.00	0.00	0.01	0.07
4:3	Food Containers	0.05	0.17	0.02	0.05	0.06
4:4	Aluminum trays & foil	0.74	0.19	0.30	0.83	0.66
4:5	Other non-ferrous metals	0.31	0.04	0.00	0.35	0.26
	Category 4 - Non-ferrous Metals	**1.54**	**0.45**	**0.34**	**1.26**	**1.12**

Table C-3. Waste Composition Electoral Areas

		Mayne Island	Pender Island	Port Renfrew	Salt Spring Island	Total
		(%)	(%)	(%)	(%)	(%)
		(N=2)	(N=1)	(N=1)	(N=4)	(N=8)
Category 5 - Plastics						
5:1	Bottles/Jugs - PET beverage bottles (#1) (soft drink, juice)	0.06	0.07	0.00	0.31	0.18
5:2	Bottles/Jugs - PET other bottles and jars (#1)	0.34	0.44	0.10	0.26	0.28
5:3	Bottles/Jugs - HDPE beverage bottles (#2) (juice)	0.04	0.00	0.00	0.04	0.03
5:4	Milk Jugs - HDPE	0.04	0.19	0.00	0.04	0.05
5:5	Bottles/Jugs - HDPE other bottles and jugs (#2)	0.23	0.40	0.13	0.64	0.44
5:6	Bottles/Jugs - PVC bottles and jars (#3)	0.00	0.01	0.00	0.00	0.00
5:7	Bottles/Jugs - other bottles, jars and jugs (#4 LDPE, #5 PP, #7)	0.01	0.07	0.07	0.05	0.05
5:8	Other Rigid Containers - PET Food take out (#1)	0.00	0.02	0.00	0.00	0.00
5:9	Other Rigid Containers - PET Other food containers (#1)	0.31	0.32	0.10	0.31	0.29
5:10	Other Rigid Containers - #6 PS rigid take out	0.24	0.17	0.10	0.16	0.17
5:11	Other Rigid Containers - #6 PS foam take out	3.10	0.07	0.01	0.04	0.80
5:12	Other Rigid Containers - #6 PS foam packaging	1.01	0.85	0.86	1.57	1.25
5:13	Other Rigid Containers - #6 PS rigid packaging	0.15	0.04	0.01	0.09	0.09
5:14	Other Rigid Containers - #5 PP wide mouth food take out	0.06	0.11	0.05	0.08	0.08
5:15	Other Rigid Containers - Other wide mouth containers and lids (#2, #4, #5)	0.19	0.19	0.07	0.25	0.21
5:16	Other Rigid Containers - # 2 HDPE & #5 PP Large pails and lids (4-25L)	0.07	0.07	0.00	0.06	0.06
5:17	Other Rigid Containers - All other rigid plastic packages	0.37	0.50	0.24	0.74	0.55
5:18	Film Packaging - Polyethylene plastic bags and film - non carry-out bags	0.31	0.07	0.07	0.19	0.19
5:19	Film Packaging - Polyethylene retail and grocery carry-out bags empty	0.14	0.19	0.10	0.21	0.18
5:20	Film Packaging - commercial stretch wrap	0.00	0.00	0.00	0.21	0.10
5:21	Film Packaging - Laminates	4.62	4.47	3.88	5.30	4.85
5:22	Film Non Packaging - Polyethylene retail and grocery carry-out bags - reused	1.00	0.36	0.34	0.46	0.57
5:23	Film Non Packaging - Polyethylene plastic bags and film	3.22	2.96	3.77	2.59	2.94
5:24	Durable Plastic Products - Non-packaging	1.31	2.09	1.72	3.51	2.56
5:25	Durable Plastic Products - Vinyl Siding	0.00	0.00	0.00	0.00	0.00
	Category 5 - Plastics	**16.82**	**13.69**	**11.61**	**17.12**	**15.93**
Category 6 - Organic Waste						
6:1	Food waste - Backyard Compostable	26.14	13.36	4.11	5.73	11.58
6:2	Food Waste - Kitchen Waste	21.95	26.29	8.00	16.82	18.18
6:3	Food Waste - FOG (Fats-Oil-Grease) - Brown grease	0.00	0.00	0.00	0.00	0.00
6:4	Food Waste - FOG (Fats-Oil-Grease) - Yellow grease	0.00	0.00	0.00	0.00	0.00
6:6	Yard Waste (<3" diameter)	0.60	0.12	0.00	1.45	0.89
6:7	Animal Faeces	1.02	0.92	0.00	0.81	0.78
6:8	Other organic waste	0.31	3.34	0.00	0.91	0.95
	Category 6 - Organic Waste	**50.01**	**44.02**	**12.11**	**25.72**	**32.38**
Category 7 - Wood and Wood Products						
7:1	Pallets/skids	0.00	0.00	0.00	0.08	0.04
7:2	Wood shingles	0.00	0.00	0.00	0.00	0.00
7:3	Wood furniture (>80% wood)	0.00	0.00	4.91	0.13	0.68
7:4	Other wood - Clean	0.00	0.00	3.77	2.97	1.96
7:5	Other wood - Contaminated	0.91	0.00	7.25	3.75	3.01
	Category 7 - Wood and Wood Products	**0.91**	**0.00**	**15.94**	**6.93**	**5.68**
Category 8 - Construction/Demolition Material						
8:1	Drywall	0.00	0.00	0.71	0.00	0.09
8:2	Asphalt shingles	0.00	0.00	0.00	0.06	0.03
8:3	Carpet & underlay	0.00	0.00	0.00	2.74	1.37
8:4	Masonry (bricks, blocks, concrete, ceramic)	0.00	0.00	0.00	0.17	0.09
8:5	Rock/sand/dirt	0.00	0.00	0.00	0.00	0.00
8:6	Other C/D wastes	0.78	0.00	0.30	5.91	3.19
	Category 8 - Construction/Demolition Material	**0.78**	**0.00**	**1.01**	**8.88**	**4.76**

Table C-3. Waste Composition Electoral Areas

		Mayne Island	Pender Island	Port Renfrew	Salt Spring Island	Total
		(%)	(%)	(%)	(%)	(%)
		(N=2)	(N=1)	(N=1)	(N=4)	(N=8)
Category 9 - Textiles						
9:1	Clothing	5.18	1.00	17.68	2.51	4.88
9:2	Footwear	1.38	0.00	1.52	1.13	1.10
9:3	Other textiles	1.87	0.91	10.74	5.51	4.68
	Category 9 - Textiles	**8.43**	**1.91**	**29.94**	**9.15**	**10.66**
Category 10 - Rubber						
10:1	Vehicle tires	0.00	0.00	0.00	0.00	0.00
10:2	Other rubber products	0.14	0.00	2.58	0.70	0.71
	Category 10 - Rubber	**0.14**	**0.00**	**2.58**	**0.70**	**0.71**
Category 11 - Composite Products						
11:1	Disposable diapers	3.74	2.24	4.11	2.19	2.82
11:2	Furniture	0.00	0.00	0.98	0.17	0.21
11:3	Other composites, Q-tips…..	0.73	0.22	3.27	1.00	1.12
	Category 11 - Composite Products	**4.47**	**2.46**	**8.36**	**3.37**	**4.15**
Category 12 - Hazardous Wastes						
12:1	Fluorescent lighting - CFL (Compact Fluorescent Lamps) bulbs	0.00	0.00	0.06	0.00	0.01
12:2	Fluorescent lighting - CFL (Compact Fluorescent Lamps) tubes	0.00	0.00	0.00	0.00	0.00
12:3	Batteries - automotive (lead acid)	0.00	0.00	0.00	0.00	0.00
12:4	Batteries - Dry cell, alkaline, button cell, other non rechargable household batt.	0.21	0.00	0.03	0.11	0.11
12:5	Batteries - Rechargeable	0.00	0.00	0.00	0.00	0.00
12:6	Oil - Lubricating (motor, transmission) oil, including containers	0.00	0.00	0.00	0.00	0.00
12:7	Oil - Empty Lubricating (motor, transmission) oil containers	0.00	0.00	0.00	0.07	0.04
12:8	Oil Filter - Automotive (include number of units)	0.00	0.00	0.00	0.00	0.00
12:9	Paint - Latex, including containers, PCA	0.00	0.00	0.00	0.00	0.00
12:10	Paint - Empty latex paint containers (PCA)	0.00	0.00	0.00	0.04	0.02
12:11	Paint - Oil-based, including containers, (PCA)	0.00	0.08	0.00	0.00	0.01
12:12	Paint - Empty oil based paint containers, (PCA)	0.09	0.00	0.00	0.00	0.02
12:13	Paint - (non PCA) paint including container	0.00	0.00	0.00	0.00	0.00
12:14	Paint - Empty (non PCA) container	0.00	0.00	0.00	0.00	0.00
12:15	Paint in aerosol cans (PCA)	0.00	0.00	0.00	0.00	0.00
12:16	Paint - Empty aerosol paint cans (PCA)	0.00	0.00	0.00	0.00	0.00
12:17	Paint - Aerosol cans (non PCA)	0.00	0.00	0.00	0.00	0.00
12:18	Paint - Empty aerosol paint cans (non PCA)	0.00	0.00	0.00	0.00	0.00
12:19	Solvents including containers (<10L) (PCA)	0.00	0.00	0.00	0.00	0.00
12:20	Solvents - Empty containers (PCA)	0.00	0.00	0.00	0.00	0.00
12:21	Solvents including containers (non PCA)	0.00	0.00	0.00	0.00	0.00
12:22	Solvents - Empty containers (non PCA)	0.00	0.00	0.00	0.00	0.00
12:23	Pesticides including containers (<10L) (PCA)	0.00	0.00	0.00	0.00	0.00
12:24	Pesticide - Empty pesticide containers (PCA)	0.00	0.00	0.00	0.00	0.00
12:25	Pesticides including containers (non PCA)	0.00	0.00	0.00	0.00	0.00
12:26	Pesticide - Empty pesticide containers (non PCA)	0.00	0.00	0.00	0.00	0.00
12:27	Pharmaceuticals, including containers	0.04	0.00	0.00	0.09	0.05
12:28	Needles & Sharps	0.00	0.00	0.00	0.02	0.01
12:29	Other empty aerosol cans (not applicable to above categories)	0.32	0.12	0.06	0.20	0.20
12:30	Other hazardous waste (record description)	0.19	0.07	0.34	0.09	0.14
	Category 12 - Hazardous Wastes	**0.85**	**0.28**	**0.49**	**0.61**	**0.61**

Table C-3. Waste Composition Electoral Areas

		Mayne Island	Pender Island	Port Renfrew	Salt Spring Island	Total
		(%)	(%)	(%)	(%)	(%)
		(N=2)	(N=1)	(N=1)	(N=4)	(N=8)
Category 13 - Electronics						
13:1	Display Devices (monitors/TVs) less than 30"	0.00	0.00	0.00	0.00	0.00
13:2	Display Devices (monitors/TVs) more than 30"	0.00	0.00	0.00	0.00	0.00
13:3	Computers (desktops, laptops, desktop servers)	0.00	0.00	0.00	0.00	0.00
13:4	Desktop Computer printers, copiers, faxes,	0.00	0.54	0.00	0.00	0.07
13:5	Computer scanners	0.00	0.00	0.00	0.00	0.00
13:6	Computer Peripherals (keyboards, mice)	0.24	0.00	0.00	0.00	0.06
13:7	Personal/Portable audio/video playback and/or recording devices	0.00	0.00	0.00	0.94	0.47
13:8	Vehicle audio/video devices	0.00	0.00	0.00	0.00	0.00
13:9	Home audio/video playback and/or recording systems	0.00	0.00	0.00	0.00	0.00
13:10	Non-cellular telephones and answering machines	0.00	0.60	0.00	0.09	0.12
13:11	Cell phones, PDAs and pagers	0.00	0.00	0.00	0.00	0.00
13:12	Other miscellaneous electronics - consumer	0.26	1.51	0.00	0.31	0.41
13:13	Other miscellaneous electronics - commercial	0.00	0.00	0.00	0.00	0.00
13:14	Small appliances	0.00	0.00	0.00	0.42	0.21
	Category 13 - Electronics	**0.49**	**2.66**	**0.00**	**1.75**	**1.33**
Category 14 - Other						
14:1	Cat litter	0.57	1.34	4.75	4.06	2.93
14:2	Non-distinct fines	1.96	2.25	2.24	1.11	1.60
14:3	Other wastes, dental floss, …..	0.00	0.00	0.00	0.00	0.00
	Category 14 - Other	**2.53**	**3.59**	**6.99**	**5.16**	**4.54**
	Total	**100**	**100**	**100**	**100**	**100**

Table C-4. Residential Waste Composition By Type 2009-2010 (Special Study Samples)

		APPARTMENTS	SINGLE FAMILY	ELECTORAL AREAS	TOTAL (*)
		Mean (%)	Mean (%)	Mean (%)	Mean (%)
		(N=24)	(N=14)	(N=8)	(N=98)
Category 1 - Paper and Paperboard					
1:1	Newsprint (including flyers)	2.07	0.85	1.06	1.38
1:2	Magazines and mixed recyclable paper	3.04	1.81	3.13	2.74
1:3	Corrugated cardboard	0.83	0.66	0.59	0.74
1:4	Pizza boxes	0.24	0.23	0.00	0.23
1:5	Waxed corrugated cardboard	0.00	0.04	0.00	0.06
1:6	Boxboard	1.99	1.31	1.35	1.53
1:7	Telephone books	0.13	0.00	0.00	0.08
1:8	Books	0.18	0.08	0.30	0.22
1:9	Fine paper	0.21	0.12	0.22	0.28
1:10	Tissue paper, paper towels, napkins	5.07	4.68	4.76	4.69
1:11	Feminine Hygiene Products	0.53	0.80	0.15	0.39
1:12	Gabletop Cartons - Milk and Milk Substitutes	0.46	0.66	0.20	0.56
1:13	Gabletop Cartons - Juice & Other	0.02	0.03	0.02	0.05
1:14	Aseptic boxes - Milk and Milk Substitutes	0.09	0.12	0.09	0.09
1:15	Aseptic boxes - Juice & Other	0.09	0.09	0.04	0.08
1:16	Brown kraft paper, including bags	0.48	0.55	0.36	0.50
1:17	Paper Cups	0.31	0.35	0.15	0.43
1:18	Other paper (non-recyclable)	0.94	1.71	1.49	1.40
	Category 1 - Paper and Paperboard	**16.68**	**14.10**	**13.92**	**15.47**
Category 2 - Glass					
2:1	Beverage Containers - alcoholic	0.30	0.27	0.33	0.35
2:2	Beverage Containers - non alcoholic	0.10	0.06	0.23	0.10
2:3	Food Containers	0.95	0.68	0.86	0.72
2:4	Other Glass Containers	0.05	0.19	0.23	0.11
2:5	Other glass and ceramics (plate, mirrors, light bulbs, ceramics)	1.50	1.11	0.96	1.10
	Category 2 - Glass	**2.91**	**2.31**	**2.61**	**2.37**
Category 3 - Ferrous Metals					
3:1	Beverage Containers - alcoholic	0.00	0.00	0.00	0.00
3:2	Beverage Containers - non alcoholic	0.03	0.00	0.01	0.01
3:3	Food Containers	0.73	0.45	0.63	0.62
3:4	Large metal appliances (white goods)	0.00	0.00	0.00	0.00
3:5	Other ferrous metals	2.18	0.73	0.97	1.96
	Category 3 - Ferrous Metals	**2.94**	**1.18**	**1.61**	**2.59**
Category 4 - Non-ferrous Metals					
4:1	Beverage Containers - non alcoholic	0.04	0.05	0.06	0.06
4:2	Beverage Containers - alcoholic	0.05	0.05	0.07	0.05
4:3	Food Containers	0.05	0.05	0.06	0.06
4:4	Aluminum trays & foil	0.49	0.50	0.66	0.49
4:5	Other non-ferrous metals	0.22	0.21	0.26	0.19
	Category 4 - Non-ferrous Metals	**0.86**	**0.87**	**1.12**	**0.85**

Table C-4. Residential Waste Composition By Type 2009-2010 (Special Study Samples)

		APPARTMENTS	SINGLE FAMILY	ELECTORAL AREAS	TOTAL (*)
		Mean (%)	Mean (%)	Mean (%)	Mean (%)
		(N=24)	(N=14)	(N=8)	(N=98)
Category 5 - Plastics					
5:1	Bottles/Jugs - PET beverage bottles (#1) (soft drink, juice)	0.12	0.08	0.18	0.13
5:2	Bottles/Jugs - PET other bottles and jars (#1)	0.44	0.28	0.28	0.30
5:3	Bottles/Jugs - HDPE beverage bottles (#2) (juice)	0.03	0.01	0.03	0.03
5:4	Milk Jugs - HDPE	0.21	0.12	0.05	0.13
5:5	Bottles/Jugs - HDPE other bottles and jugs (#2)	0.54	0.31	0.44	0.44
5:6	Bottles/Jugs - PVC bottles and jars (#3)	0.02	0.00	0.00	0.02
5:7	Bottles/Jugs - other bottles, jars and jugs (#4 LDPE, #5 PP, #7)	0.14	0.11	0.05	0.14
5:8	Other Rigid Containers - PET Food take out (#1)	0.04	0.02	0.00	0.04
5:9	Other Rigid Containers - PET Other food containers (#1)	0.32	0.28	0.29	0.29
5:10	Other Rigid Containers - #6 PS rigid take out	0.38	0.33	0.17	0.34
5:11	Other Rigid Containers - #6 PS foam take out	0.12	0.07	0.80	0.19
5:12	Other Rigid Containers - #6 PS foam packaging	0.76	0.82	1.25	0.78
5:13	Other Rigid Containers - #6 PS rigid packaging	0.22	0.20	0.09	0.16
5:14	Other Rigid Containers - #5 PP wide mouth food take out	0.10	0.12	0.08	0.16
5:15	Other Rigid Containers - Other wide mouth containers and lids (#2, #4, #5)	0.39	0.33	0.21	0.32
5:16	Other Rigid Containers - # 2 HDPE & #5 PP Large pails and lids (4-25L)	0.15	0.05	0.06	0.09
5:17	Other Rigid Containers - All other rigid plastic packages	0.49	0.39	0.55	0.45
5:18	Film Packaging - Polyethylene plastic bags and film - non carry-out bags	0.30	0.29	0.19	0.32
5:19	Film Packaging - Polyethylene retail and grocery carry-out bags empty	0.19	0.25	0.18	0.20
5:20	Film Packaging - commercial stretch wrap	0.01	0.00	0.10	0.05
5:21	Film Packaging - Laminates	3.02	4.12	4.85	3.96
5:22	Film Non Packaging - Polyethylene retail and grocery carry-out bags - reused	1.29	1.31	0.57	0.92
5:23	Film Non Packaging - Polyethylene plastic bags and film	2.67	3.02	2.94	2.84
5:24	Durable Plastic Products - Non-packaging	1.05	1.18	2.56	1.63
5:25	Durable Plastic Products - Vinyl Siding	0.00	0.00	0.00	0.01
	Category 5 - Plastics	**13.03**	**13.71**	**15.93**	**13.95**
Category 6 - Organic Waste					
6:1	Food waste - Backyard Compostable	13.16	9.69	11.58	9.54
6:2	Food Waste - Kitchen Waste	19.42	20.26	18.18	18.90
6:3	Food Waste - FOG (Fats-Oil-Grease) - Brown grease	0.00	0.00	0.00	0.00
6:4	Food Waste - FOG (Fats-Oil-Grease) - Yellow grease	0.05	0.06	0.00	0.04
6:6	Yard Waste (<3" diameter)	2.99	4.40	0.89	3.50
6:7	Animal Faeces	0.63	3.22	0.78	1.57
6:8	Other organic waste	0.66	2.10	0.95	1.01
	Category 6 - Organic Waste	**36.92**	**39.73**	**32.38**	**34.56**
Category 7 - Wood and Wood Products					
7:1	Pallets/skids	0.00	0.00	0.04	0.00
7:2	Wood shingles	0.00	0.00	0.00	0.00
7:3	Wood furniture (>80% wood)	0.20	0.00	0.68	0.74
7:4	Other wood - Clean	0.26	0.39	1.96	1.44
7:5	Other wood - Contaminated	1.76	0.86	3.01	1.71
	Category 7 - Wood and Wood Products	**2.22**	**1.25**	**5.68**	**3.90**
Category 8 - Construction/Demolition Material					
8:1	Drywall	0.00	0.02	0.09	0.17
8:2	Asphalt shingles	0.00	0.00	0.03	0.41
8:3	Carpet & underlay	0.74	1.67	1.37	1.48
8:4	Masonry (bricks, blocks, concrete, ceramic)	0.18	0.01	0.09	0.16
8:5	Rock/sand/dirt	0.00	0.00	0.00	0.06
8:6	Other C/D wastes	0.58	0.81	3.19	1.14
	Category 8 - Construction/Demolition Material	**1.50**	**2.51**	**4.76**	**3.43**

Table C-4. Residential Waste Composition By Type 2009-2010 (Special Study Samples)

		APPARTMENTS	SINGLE FAMILY	ELECTORAL AREAS	TOTAL (*)
		Mean (%)	Mean (%)	Mean (%)	Mean (%)
		(N=24)	(N=14)	(N=8)	(N=98)
Category 9 - Textiles					
9:1	Clothing	2.97	2.11	4.88	2.83
9:2	Footwear	0.79	0.56	1.10	0.81
9:3	Other textiles	2.35	1.71	4.68	2.86
	Category 9 - Textiles	**6.11**	**4.38**	**10.66**	**6.50**
Category 10 - Rubber					
10:1	Vehicle tires	0.00	0.00	0.00	0.00
10:2	Other rubber products	0.11	0.19	0.71	0.42
	Category 10 - Rubber	**0.11**	**0.19**	**0.71**	**0.42**
Category 11 - Composite Products					
11:1	Disposable diapers	2.61	7.95	2.82	4.89
11:2	Furniture	0.55	0.37	0.21	0.42
11:3	Other composites, Q-tips…..	1.27	1.18	1.12	1.39
	Category 11 - Composite Products	**4.43**	**9.50**	**4.15**	**6.69**
Category 12 - Hazardous Wastes					
12:1	Fluorescent lighting - CFL (Compact Fluorescent Lamps) bulbs	0.01	0.00	0.01	0.00
12:2	Fluorescent lighting - CFL (Compact Fluorescent Lamps) tubes	0.00	0.00	0.00	0.00
12:3	Batteries - automotive (lead acid)	0.00	0.00	0.00	0.00
12:4	Batteries - Dry cell, alkaline, button cell, other non rechargable household batt.	0.10	0.11	0.11	0.17
12:5	Batteries - Rechargeable	0.00	0.00	0.00	0.01
12:6	Oil - Lubricating (motor, transmission) oil, including containers	0.09	0.00	0.00	0.03
12:7	Oil - Empty Lubricating (motor, transmission) oil containers	0.00	0.00	0.04	0.02
12:8	Oil Filter - Automotive (include number of units)	0.00	0.00	0.00	0.00
12:9	Paint - Latex, including containers, PCA	0.06	0.05	0.00	0.03
12:10	Paint - Empty latex paint containers (PCA)	0.00	0.00	0.02	0.02
12:11	Paint - Oil-based, including containers, (PCA)	0.03	0.00	0.01	0.10
12:12	Paint - Empty oil based paint containers, (PCA)	0.02	0.00	0.02	0.01
12:13	Paint - (non PCA) paint including container	0.00	0.00	0.00	0.01
12:14	Paint - Empty (non PCA) container	0.00	0.00	0.00	0.00
12:15	Paint in aerosol cans (PCA)	0.00	0.00	0.00	0.00
12:16	Paint - Empty aerosol paint cans (PCA)	0.01	0.00	0.00	0.01
12:17	Paint - Aerosol cans (non PCA)	0.00	0.00	0.00	0.00
12:18	Paint - Empty aerosol paint cans (non PCA)	0.00	0.00	0.00	0.00
12:19	Solvents including containers (<10L) (PCA)	0.00	0.00	0.00	0.00
12:20	Solvents - Empty containers (PCA)	0.00	0.00	0.00	0.00
12:21	Solvents including containers (non PCA)	0.00	0.00	0.00	0.00
12:22	Solvents - Empty containers (non PCA)	0.00	0.00	0.00	0.00
12:23	Pesticides including containers (<10L) (PCA)	0.00	0.00	0.00	0.00
12:24	Pesticide - Empty pesticide containers (PCA)	0.00	0.00	0.00	0.00
12:25	Pesticides including containers (non PCA)	0.00	0.00	0.00	0.00
12:26	Pesticide - Empty pesticide containers (non PCA)	0.00	0.00	0.00	0.00
12:27	Pharmaceuticals, including containers	0.02	0.01	0.05	0.05
12:28	Needles & Sharps	0.02	0.00	0.01	0.01
12:29	Other empty aerosol cans (not applicable to above categories)	0.22	0.16	0.20	0.21
12:30	Other hazardous waste (record description)	0.07	0.01	0.14	0.17
	Category 12 - Hazardous Wastes	**0.68**	**0.35**	**0.61**	**0.85**

Table C-4. Residential Waste Composition By Type 2009-2010 (Special Study Samples)

		APPARTMENTS	SINGLE FAMILY	ELECTORAL AREAS	TOTAL (*)
		Mean (%)	Mean (%)	Mean (%)	Mean (%)
		(N=24)	(N=14)	(N=8)	(N=98)
Category 13 - Electronics					
13:1	Display Devices (monitors/TVs) less than 30"	1.97	0.00	0.00	0.49
13:2	Display Devices (monitors/TVs) more than 30"	0.00	0.07	0.00	0.01
13:3	Computers (desktops, laptops, desktop servers)	0.02	0.00	0.00	0.06
13:4	Desktop Computer printers, copiers, faxes,	0.00	0.00	0.07	0.02
13:5	Computer scanners	0.00	0.00	0.00	0.00
13:6	Computer Peripherals (keyboards, mice)	0.03	0.00	0.06	0.02
13:7	Personal/Portable audio/video playback and/or recording devices	0.20	0.00	0.47	0.20
13:8	Vehicle audio/video devices	0.00	0.00	0.00	0.00
13:9	Home audio/video playback and/or recording systems	0.00	0.12	0.00	0.05
13:10	Non-cellular telephones and answering machines	0.00	0.02	0.12	0.02
13:11	Cell phones, PDAs and pagers	0.00	0.01	0.00	0.01
13:12	Other miscellaneous electronics - consumer	0.89	0.29	0.41	0.42
13:13	Other miscellaneous electronics - commercial	0.00	0.00	0.00	0.07
13:14	Small appliances	0.71	0.00	0.21	0.38
	Category 13 - Electronics	**3.82**	**0.50**	**1.33**	**1.76**
Category 14 - Other					
14:1	Cat litter	4.46	6.65	2.93	4.18
14:2	Non-distinct fines	3.34	2.79	1.60	2.35
14:3	Other wastes, dental floss, …..	0.00	0.00	0.00	0.12
	Category 14 - Other	**7.80**	**9.44**	**4.54**	**6.65**
	Total	**100**	**100**	**100**	**100**

Note: (*) Total residential waste composition was bases on all collected residential waste samples.

APPENDIX D
Detailed Result Tables
Special ICI Study

Table D-1. Waste Composition Select ICI Generators 1-6.

	ICI Generator ID	ICI-1		ICI-2	ICI-3		ICI-4		ICI-5		ICI-6	
	Sample Number	13-4	11-1	13-4	15-4	17-4	19-1	20-1	19-3	15-2	19-4	19-4
	Sorting Season	Fall	Spring	Fall	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring
		(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
		(N=1)	N=1	(N=1)	(N=1)	N=1	(N=1)	N=1	(N=1)	(N=1)	(N=1)	(N=1)
Category 1 - Paper and Paperboard												
1:1	Newsprint (including flyers)	2.40	0.70	4.01	0.00	1.40	0.00	0.00	0.28	0.00	5.05	0.00
1:2	Magazines and mixed recyclable paper	2.61	0.35	1.11	0.83	1.32	0.23	1.06	0.84	1.08	0.00	4.76
1:3	Corrugated cardboard	0.71	0.41	0.15	0.00	0.23	0.00	0.49	1.40	7.32	0.00	0.00
1:4	Pizza boxes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1:5	Waxed corrugated cardboard	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1:6	Boxboard	0.56	0.30	2.37	1.56	0.47	0.23	0.00	0.42	0.54	2.72	3.17
1:7	Telephone books	0.00	0.00	0.00	0.00	0.00	0.00	1.31	0.00	0.00	0.00	0.00
1:8	Books	0.00	0.35	0.37	0.00	0.00	0.00	0.00	0.00	7.85	0.00	0.00
1:9	Fine paper	0.00	0.16	0.00	0.00	0.29	0.05	0.18	0.15	0.00	4.54	3.49
1:10	Tissue paper, paper towels, napkins	10.69	7.18	15.64	18.34	18.26	6.39	23.00	23.19	16.25	18.56	25.24
1:11	Feminine Hygiene Products	0.08	0.00	0.04	0.00	0.00	0.06	0.14	0.00	0.00	0.00	0.63
1:12	Gabletop Cartons - Milk and Milk Substitutes	1.62	0.71	0.39	0.00	0.09	0.13	0.18	0.22	0.13	0.00	0.00
1:13	Gabletop Cartons - Juice & Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1:14	Aseptic boxes - Milk and Milk Substitutes	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00
1:15	Aseptic boxes - Juice & Other	0.00	0.00	0.06	0.00	0.00	0.00	0.07	0.06	0.30	0.00	0.00
1:16	Brown kraft paper, including bags	0.13	0.08	0.13	0.17	0.06	0.10	0.23	0.34	0.46	0.00	0.00
1:17	Paper Cups	0.00	1.09	4.92	2.58	1.37	0.83	2.83	1.02	0.19	1.32	1.27
1:18	Other paper (non-recyclable)	1.10	0.54	5.24	0.42	0.72	0.41	2.14	1.48	1.21	1.79	1.90
	Category 1 - Paper and Paperboard	**19.90**	**11.87**	**34.44**	**23.90**	**24.20**	**8.41**	**31.73**	**29.39**	**35.32**	**33.97**	**40.48**
Category 2 - Glass												
2:1	Beverage Containers - alcoholic	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	5.72	0.00	0.00
2:2	Beverage Containers - non alcoholic	0.00	0.00	0.00	0.00	0.00	0.00	0.43	0.00	0.00	0.00	0.00
2:3	Food Containers	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.18	0.00	3.17
2:4	Other Glass Containers	0.00	0.00	0.00	0.00	0.25	0.00	0.59	0.00	0.00	0.00	0.00
2:5	Other glass and ceramics (plate, mirrors, light bulbs, ceramics)	0.00	0.00	0.00	0.00	0.33	0.00	0.06	0.21	0.34	0.00	0.00
	Category 2 - Glass	**0.00**	**0.25**	**0.00**	**0.00**	**0.67**	**0.00**	**1.07**	**0.21**	**6.25**	**0.00**	**3.17**
Category 3 - Ferrous Metals												
3:1	Beverage Containers - alcoholic	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3:2	Beverage Containers - non alcoholic	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3:3	Food Containers	0.01	0.00	0.94	0.00	0.09	0.02	0.18	0.25	0.13	0.00	0.00
3:4	Large metal appliances (white goods)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3:5	Other ferrous metals	0.08	0.00	0.12	0.00	1.57	0.00	2.06	1.55	1.64	0.00	0.00
	Category 3 - Ferrous Metals	**0.10**	**0.00**	**1.05**	**0.00**	**1.66**	**0.02**	**2.24**	**1.80**	**1.76**	**0.00**	**0.00**
Category 4 - Non-ferrous Metals												
4:1	Beverage Containers - non alcoholic	0.00	0.00	0.06	0.00	0.00	0.00	0.15	0.00	0.77	0.16	0.00
4:2	Beverage Containers - alcoholic	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.09	0.00	0.00
4:3	Food Containers	0.00	0.00	0.00	0.00	0.02	1.55	0.00	0.00	0.03	0.00	0.00
4:4	Aluminum trays & foil	0.79	0.19	0.09	0.00	0.09	0.02	0.26	0.08	0.13	0.23	0.00
4:5	Other non-ferrous metals	0.08	0.00	0.00	0.00	0.00	0.13	0.67	0.04	0.00	0.00	0.00
	Category 4 - Non-ferrous Metals	**0.87**	**0.19**	**0.15**	**0.00**	**0.12**	**1.69**	**1.11**	**0.13**	**1.02**	**0.39**	**0.00**

Table D-1. Waste Composition Select ICI Generators 1-6.

	ICI Generator ID	ICI-1		ICI-2	ICI-3		ICI-4		ICI-5		ICI-6	
	Sample Number	13-4	11-1	13-4	15-4	17-4	19-1	20-1	19-3	15-2	19-4	19-4
	Sorting Season	Fall	Spring	Fall	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring
		(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
		(N=1)	N=1	(N=1)	(N=1)	N=1	(N=1)	N=1	(N=1)	(N=1)	(N=1)	(N=1)
Category 5 - Plastics												
5:1	Bottles/Jugs - PET beverage bottles (#1) (soft drink, juice)	0.08	0.00	0.39	0.00	0.09	0.00	0.26	0.15	0.13	0.04	0.00
5:2	Bottles/Jugs - PET other bottles and jars (#1)	0.30	0.18	0.01	0.00	0.00	0.18	0.10	0.50	0.13	0.00	0.00
5:3	Bottles/Jugs - HDPE beverage bottles (#2) (juice)	0.00	0.00	0.31	0.00	0.00	0.03	0.06	0.07	0.08	0.00	0.00
5:4	Milk Jugs - HDPE	0.06	0.00	0.00	0.00	0.00	0.03	0.10	0.00	0.29	0.00	0.00
5:5	Bottles/Jugs - HDPE other bottles and jugs (#2)	0.16	0.00	0.09	0.00	0.60	0.18	0.43	0.71	0.56	0.12	0.63
5:6	Bottles/Jugs - PVC bottles and jars (#3)	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00
5:7	Bottles/Jugs - other bottles, jars and jugs (#4 LDPE, #5 PP, #7)	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.15	0.29	0.00	0.00
5:8	Other Rigid Containers - PET Food take out (#1)	0.00	0.00	0.43	0.00	0.00	0.05	0.11	0.13	0.00	0.16	0.00
5:9	Other Rigid Containers - PET Other food containers (#1)	0.20	0.00	0.13	0.00	0.10	0.00	0.83	0.13	0.14	0.00	0.00
5:10	Other Rigid Containers - #6 PS rigid take out	1.54	0.00	1.16	0.35	0.37	0.27	0.15	0.41	0.68	0.16	1.11
5:11	Other Rigid Containers - #6 PS foam take out	0.11	0.00	0.01	0.11	0.05	0.03	0.00	0.11	0.13	0.00	0.63
5:12	Other Rigid Containers - #6 PS foam packaging	0.63	0.02	1.34	0.83	0.17	1.53	0.57	0.98	1.08	0.78	7.94
5:13	Other Rigid Containers - #6 PS rigid packaging	1.17	0.18	0.03	0.33	0.05	0.00	0.00	0.22	0.13	0.08	0.00
5:14	Other Rigid Containers - #5 PP wide mouth food take out	0.00	0.86	0.13	0.04	0.10	0.09	0.11	0.06	0.05	0.00	0.00
5:15	Other Rigid Containers - Other wide mouth containers and lids (#2, #4, #5)	0.01	0.00	0.16	0.00	0.13	0.13	0.34	0.36	0.24	0.43	0.00
5:16	Other Rigid Containers - # 2 HDPE & #5 PP Large pails and lids (4-25L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5:17	Other Rigid Containers - All other rigid plastic packages	0.23	0.00	0.09	0.11	0.87	0.07	0.18	0.22	0.24	0.04	1.90
5:18	Film Packaging - Polyethylene plastic bags and film - non carry-out bags	1.21	0.07	0.16	0.00	0.00	0.07	0.00	0.08	0.00	0.00	0.00
5:19	Film Packaging - Polyethylene retail and grocery carry-out bags empty	0.16	0.00	0.09	0.00	0.00	0.13	0.10	0.08	0.00	0.23	0.00
5:20	Film Packaging - commercial stretch wrap	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.98	0.97	0.00	0.00
5:21	Film Packaging - Laminates	3.60	4.15	3.27	1.29	2.10	0.51	3.36	2.24	5.70	0.78	15.87
5:22	Film Non Packaging - Polyethylene retail and grocery carry-out bags reused	0.00	0.00	0.00	0.00	0.00	0.00	0.82	0.00	0.00	0.00	0.00
5:23	Film Non Packaging - Polyethylene plastic bags and film	3.17	1.87	7.27	2.67	3.58	1.65	5.97	4.47	3.87	3.11	4.76
5:24	Durable Plastic Products - Non-packaging	0.00	0.00	0.37	0.92	1.52	7.05	3.90	3.42	2.32	2.14	4.13
5:25	Durable Plastic Products - Vinyl Siding	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Category 5 - Plastics	**12.62**	**7.32**	**15.45**	**6.64**	**9.84**	**12.04**	**17.37**	**15.48**	**17.02**	**8.04**	**36.98**
Category 6 - Organic Waste												
6:1	Food waste - Backyard Compostable	1.69	12.97	7.94	2.94	3.27	2.39	15.96	5.66	5.06	2.33	4.76
6:2	Food Waste - Kitchen Waste	39.98	57.88	33.77	2.76	5.36	1.53	3.85	11.67	6.67	7.96	0.00
6:3	Food Waste - FOG (Fats-Oil-Grease) - Brown grease	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6:4	Food Waste - FOG (Fats-Oil-Grease) - Yellow grease	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6:6	Yard Waste (<3" diameter)	8.39	0.00	0.00	2.67	2.02	0.00	0.00	0.00	0.00	0.00	0.00
6:7	Animal Faeces	0.00	0.00	0.00	0.66	4.21	68.22	0.00	0.00	0.00	0.00	0.00
6:8	Other organic waste	0.79	0.00	0.31	0.00	1.18	0.00	1.41	1.34	1.10	0.00	0.00
	Category 6 - Organic Waste	**50.85**	**70.84**	**42.02**	**9.03**	**16.05**	**72.14**	**21.21**	**18.67**	**12.83**	**10.29**	**4.76**
Category 7 - Wood and Wood Products												
7:1	Pallets/skids	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7:2	Wood shingles	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7:3	Wood furniture (>80% wood)	0.00	0.00	0.00	2.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7:4	Other wood - Clean	0.00	0.00	0.00	0.00	0.00	0.00	0.74	0.00	0.00	0.00	0.00
7:5	Other wood - Contaminated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.74	4.30	0.00	0.00
	Category 7 - Wood and Wood Products	**0.00**	**0.00**	**0.00**	**2.76**	**0.00**	**0.00**	**0.74**	**11.74**	**4.30**	**0.00**	**0.00**
Category 8 - Construction/Demolition Material												
8:1	Drywall	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8:2	Asphalt shingles	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8:3	Carpet & underlay	0.00	0.00	0.00	0.00	0.00	0.00	4.66	0.00	0.00	0.00	0.00
8:4	Masonry (bricks, blocks, concrete, ceramic)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8:5	Rock/sand/dirt	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8:6	Other C/D wastes	0.00	0.00	0.00	5.21	0.00	0.00	4.03	0.29	0.00	10.91	0.00
	Category 8 - Construction/Demolition Material	**0.00**	**0.00**	**0.00**	**5.21**	**0.00**	**0.00**	**8.69**	**0.29**	**0.00**	**10.91**	**0.00**

Table D-1. Waste Composition Select ICI Generators 1-6.

	ICI Generator ID	ICI-1		ICI-2	ICI-3		ICI-4		ICI-5		ICI-6	
	Sample Number	13-4	11-1	13-4	15-4	17-4	19-1	20-1	19-3	15-2	19-4	19-4
	Sorting Season	Fall	Spring	Fall	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring
		(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
		(N=1)	N=1	(N=1)	(N=1)	N=1	(N=1)	N=1	(N=1)	(N=1)	(N=1)	(N=1)
Category 9 - Textiles												
9:1	Clothing	0.00	0.00	0.00	0.00	0.00	0.06	0.46	1.89	0.00	0.00	0.00
9:2	Footwear	0.75	0.00	0.00	0.00	0.00	0.00	0.00	1.48	0.00	0.00	0.00
9:3	Other textiles	0.00	0.00	0.82	3.31	2.99	0.11	1.88	11.81	3.66	3.11	3.17
	Category 9 - Textiles	**0.75**	**0.00**	**0.82**	**3.31**	**2.99**	**0.17**	**2.34**	**15.18**	**3.66**	**3.11**	**3.17**
Category 10 - Rubber												
10:1	Vehicle tires	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.92	0.00	0.00
10:2	Other rubber products	0.04	0.00	0.42	3.00	3.59	1.40	1.82	2.14	5.29	26.90	11.43
	Category 10 - Rubber	**0.04**	**0.00**	**0.42**	**3.00**	**3.59**	**1.40**	**1.82**	**2.14**	**11.21**	**26.90**	**11.43**
Category 11 - Composite Products												
11:1	Disposable diapers	0.00	0.00	1.93	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00
11:2	Furniture	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11:3	Other composites, Q-tips…..	1.99	5.44	0.00	15.27	0.33	2.68	0.43	1.55	0.00	0.00	0.00
	Category 11 - Composite Products	**1.99**	**5.44**	**1.93**	**15.27**	**0.33**	**2.68**	**0.75**	**1.55**	**0.00**	**0.00**	**0.00**
Category 12 - Hazardous Wastes												
12:1	Fluorescent lighting - CFL (Compact Fluorescent Lamps) bulbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12:2	Fluorescent lighting - CFL (Compact Fluorescent Lamps) tubes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12:3	Batteries - automotive (lead acid)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00
12:4	Batteries - Dry cell, alkaline, button cell, other non rechargable household batt.	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.06	0.03	0.00	0.00
12:5	Batteries - Rechargeable	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12:6	Oil - Lubricating (motor, transmission) oil, including containers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12:7	Oil - Empty Lubricating (motor, transmission) oil containers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.95	0.00	0.00
12:8	Oil Filter - Automotive (include number of units)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12:9	Paint - Latex, including containers, PCA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12:10	Paint - Empty latex paint containers (PCA)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12:11	Paint - Oil-based, including containers, (PCA)	0.00	0.00	0.00	0.00	0.00	0.00	1.06	0.00	0.00	0.00	0.00
12:12	Paint - Empty oil based paint containers, (PCA)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12:13	Paint - (non PCA) paint including container	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12:14	Paint - Empty (non PCA) container	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12:15	Paint in aerosol cans (PCA)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12:16	Paint - Empty aerosol paint cans (PCA)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12:17	Paint - Aerosol cans (non PCA)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12:18	Paint - Empty aerosol paint cans (non PCA)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12:19	Solvents including containers (<10L) (PCA)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12:20	Solvents - Empty containers (PCA)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.00	0.00
12:21	Solvents including containers (non PCA)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12:22	Solvents - Empty containers (non PCA)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12:23	Pesticides including containers (<10L) (PCA)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12:24	Pesticide - Empty pesticide containers (PCA)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12:25	Pesticides including containers (non PCA)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12:26	Pesticide - Empty pesticide containers (non PCA)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12:27	Pharmaceuticals, including containers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12:28	Needles & Sharps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12:29	Other empty aerosol cans (not applicable to above categories)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00
12:30	Other hazardous waste (record description)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Category 12 - Hazardous Wastes	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.06**	**1.06**	**0.13**	**5.30**	**0.16**	**0.00**

Table D-1. Waste Composition Select ICI Generators 1-6.

ICI Generator ID		ICI-1		ICI-2	ICI-3		ICI-4		ICI-5		ICI-6	
Sample Number		13-4	11-1	13-4	15-4	17-4	19-1	20-1	19-3	15-2	19-4	19-4
Sorting Season		Fall	Spring	Fall	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring
		(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
		(N=1)	N=1	(N=1)	(N=1)	N=1	(N=1)	N=1	(N=1)	(N=1)	(N=1)	(N=1)
Category 13 - Electronics												
13:1	Display Devices (monitors/TVs) less than 30"	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13:2	Display Devices (monitors/TVs) more than 30"	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13:3	Computers (desktops, laptops, desktop servers)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13:4	Desktop Computer printers, copiers, faxes,	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13:5	Computer scanners	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13:6	Computer Peripherals (keyboards, mice)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13:7	Personal/Portable audio/video playback and/or recording devices	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13:8	Vehicle audio/video devices	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13:9	Home audio/video playback and/or recording systems	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00
13:10	Non-cellular telephones and answering machines	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13:11	Cell phones, PDAs and pagers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13:12	Other miscellaneous electronics - consumer	4.02	0.00	0.00	0.00	0.00	0.00	1.23	0.00	0.22	0.00	0.00
13:13	Other miscellaneous electronics - commercial	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13:14	Small appliances	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Category 13 - Electronics	**4.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.11**	**1.23**	**0.00**	**0.22**	**0.00**	**0.00**
Category 14 - Other												
14:1	Cat litter	3.17	0.00	0.00	27.54	31.57	0.00	6.73	0.00	0.00	0.00	0.00
14:2	Non-distinct fines	5.68	4.10	3.73	3.33	0.95	1.26	1.90	3.30	1.10	6.25	0.00
14:3	Other wastes, dental floss, …..	0.00	0.00	0.00	0.00	8.02	0.00	0.00	0.00	0.00	0.00	0.00
	Category 14 - Other	**8.86**	**4.10**	**3.73**	**30.87**	**40.55**	**1.26**	**8.63**	**3.30**	**1.10**	**6.25**	**0.00**
	Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Table D-2. Waste Composition Select ICI Generators 7-10.

	ICI Generator ID	ICI-7	ICI-8	ICI-9	ICI-10
	Sample Number	9-2	14-2	18-2	4-3
	Sorting Season	Spring	Spring	Spring	Spring
		(%)	(%)	(%)	(%)
		(N=1)	(N=1)	(N=1)	(N=1)
Category 1 - Paper and Paperboard					
1:1	Newsprint (including flyers)	2.47	2.27	1.03	0.00
1:2	Magazines and mixed recyclable paper	7.45	7.16	13.88	0.47
1:3	Corrugated cardboard	0.30	1.54	0.28	11.00
1:4	Pizza boxes	0.00	0.00	0.00	0.30
1:5	Waxed corrugated cardboard	1.08	0.00	0.00	0.00
1:6	Boxboard	1.73	1.47	2.16	2.19
1:7	Telephone books	0.00	0.00	0.00	0.00
1:8	Books	0.00	0.11	0.00	0.00
1:9	Fine paper	0.71	0.48	0.00	0.00
1:10	Tissue paper, paper towels, napkins	2.60	9.13	0.00	4.70
1:11	Feminine Hygiene Products	0.17	0.00	18.09	0.00
1:12	Gabletop Cartons - Milk and Milk Substitutes	0.22	0.08	0.11	0.00
1:13	Gabletop Cartons - Juice & Other	0.04	0.03	0.00	0.00
1:14	Aseptic boxes - Milk and Milk Substitutes	0.00	0.00	0.00	0.00
1:15	Aseptic boxes - Juice & Other	0.18	0.12	0.00	0.00
1:16	Brown kraft paper, including bags	0.08	0.79	0.22	0.00
1:17	Paper Cups	2.82	2.01	1.30	1.53
1:18	Other paper (non-recyclable)	5.25	1.95	1.99	4.39
	Category 1 - Paper and Paperboard	**25.08**	**27.14**	**39.07**	**24.57**
Category 2 - Glass					
2:1	Beverage Containers - alcoholic	0.00	0.35	0.00	0.00
2:2	Beverage Containers - non alcoholic	0.00	0.68	0.00	0.00
2:3	Food Containers	0.00	0.11	0.30	0.00
2:4	Other Glass Containers	0.22	0.48	0.00	0.00
2:5	Other glass and ceramics (plate, mirrors, light bulbs, ceramics)	2.29	0.48	0.54	0.00
	Category 2 - Glass	**2.50**	**2.11**	**0.84**	**0.00**
Category 3 - Ferrous Metals					
3:1	Beverage Containers - alcoholic	0.00	0.00	0.16	0.00
3:2	Beverage Containers - non alcoholic	0.00	0.00	0.00	0.00
3:3	Food Containers	1.10	0.55	0.77	1.85
3:4	Large metal appliances (white goods)	0.00	0.00	0.00	0.00
3:5	Other ferrous metals	0.22	0.62	4.44	0.04
	Category 3 - Ferrous Metals	**1.32**	**1.16**	**5.37**	**1.89**
Category 4 - Non-ferrous Metals					
4:1	Beverage Containers - non alcoholic	0.00	0.12	0.03	0.00
4:2	Beverage Containers - alcoholic	0.00	0.00	0.03	0.00
4:3	Food Containers	0.08	0.02	0.00	0.00
4:4	Aluminum trays & foil	0.61	0.28	0.07	0.31
4:5	Other non-ferrous metals	0.00	0.08	0.00	0.00
	Category 4 - Non-ferrous Metals	**0.69**	**0.50**	**0.12**	**0.31**

Table D-2. Waste Composition Select ICI Generators 7-10.

	ICI Generator ID	ICI-7	ICI-8	ICI-9	ICI-10
	Sample Number	9-2	14-2	18-2	4-3
	Sorting Season	Spring	Spring	Spring	Spring
		(%)	(%)	(%)	(%)
		(N=1)	(N=1)	(N=1)	(N=1)
Category 5 - Plastics					
5:1	Bottles/Jugs - PET beverage bottles (#1) (soft drink, juice)	0.41	0.21	0.11	0.13
5:2	Bottles/Jugs - PET other bottles and jars (#1)	0.32	0.08	0.16	0.31
5:3	Bottles/Jugs - HDPE beverage bottles (#2) (juice)	0.32	0.05	0.00	0.00
5:4	Milk Jugs - HDPE	0.08	0.08	0.11	0.00
5:5	Bottles/Jugs - HDPE other bottles and jugs (#2)	0.61	0.41	0.35	0.43
5:6	Bottles/Jugs - PVC bottles and jars (#3)	0.00	0.00	0.00	0.00
5:7	Bottles/Jugs - other bottles, jars and jugs (#4 LDPE, #5 PP, #7)	0.00	0.21	0.00	0.49
5:8	Other Rigid Containers - PET Food take out (#1)	0.00	0.00	0.00	0.00
5:9	Other Rigid Containers - PET Other food containers (#1)	0.13	0.12	0.92	0.37
5:10	Other Rigid Containers - #6 PS rigid take out	1.38	0.99	1.05	0.34
5:11	Other Rigid Containers - #6 PS foam take out	0.27	0.28	0.68	0.00
5:12	Other Rigid Containers - #6 PS foam packaging	1.58	0.33	0.66	2.31
5:13	Other Rigid Containers - #6 PS rigid packaging	0.00	0.01	0.25	0.01
5:14	Other Rigid Containers - #5 PP wide mouth food take out	0.00	0.05	0.00	0.64
5:15	Other Rigid Containers - Other wide mouth containers and lids (#2, #4, #5)	0.12	0.08	0.00	0.10
5:16	Other Rigid Containers - # 2 HDPE & #5 PP Large pails and lids (4-25L)	2.63	0.21	0.49	0.00
5:17	Other Rigid Containers - All other rigid plastic packages	0.51	0.28	0.11	0.25
5:18	Film Packaging - Polyethylene plastic bags and film - non carry-out bags	0.07	0.05	0.11	0.13
5:19	Film Packaging - Polyethylene retail and grocery carry-out bags empty	0.61	0.21	0.00	0.00
5:20	Film Packaging - commercial stretch wrap	0.39	0.00	0.00	2.72
5:21	Film Packaging - Laminates	10.26	7.76	3.67	8.58
5:22	Film Non Packaging - Polyethylene retail and grocery carry-out bags reused	4.83	0.00	0.00	0.00
5:23	Film Non Packaging - Polyethylene plastic bags and film	4.14	3.55	3.38	4.38
5:24	Durable Plastic Products - Non-packaging	5.31	3.39	0.15	2.76
5:25	Durable Plastic Products - Vinyl Siding	0.00	0.00	0.00	0.00
	Category 5 - Plastics	**33.96**	**18.37**	**12.21**	**23.93**
Category 6 - Organic Waste					
6:1	Food waste - Backyard Compostable	14.79	9.84	10.53	6.74
6:2	Food Waste - Kitchen Waste	11.04	24.29	18.90	32.06
6:3	Food Waste - FOG (Fats-Oil-Grease) - Brown grease	0.00	0.00	0.00	0.00
6:4	Food Waste - FOG (Fats-Oil-Grease) - Yellow grease	0.00	0.00	0.00	0.00
6:6	Yard Waste (<3" diameter)	0.00	0.00	0.00	4.50
6:7	Animal Faeces	0.00	0.00	0.00	0.00
6:8	Other organic waste	0.00	0.21	0.00	0.00
	Category 6 - Organic Waste	**25.84**	**34.34**	**29.43**	**43.30**
Category 7 - Wood and Wood Products					
7:1	Pallets/skids	0.00	0.00	0.00	0.00
7:2	Wood shingles	0.00	0.00	0.00	0.00
7:3	Wood furniture (>80% wood)	0.00	0.00	0.00	0.00
7:4	Other wood - Clean	0.00	2.27	8.27	0.00
7:5	Other wood - Contaminated	0.00	0.00	0.00	0.00
	Category 7 - Wood and Wood Products	**0.00**	**2.27**	**8.27**	**0.00**
Category 8 - Construction/Demolition Material					
8:1	Drywall	0.00	0.00	0.00	0.00
8:2	Asphalt shingles	0.00	0.00	0.00	0.00
8:3	Carpet & underlay	0.00	0.00	0.00	0.00
8:4	Masonry (bricks, blocks, concrete, ceramic)	0.00	0.00	0.00	0.00
8:5	Rock/sand/dirt	0.00	0.00	0.00	0.00
8:6	Other C/D wastes	0.00	0.00	0.00	0.00
	Category 8 - Construction/Demolition Material	**0.00**	**0.00**	**0.00**	**0.00**

Table D-2. Waste Composition Select ICI Generators 7-10.

	ICI Generator ID	ICI-7	ICI-8	ICI-9	ICI-10
	Sample Number	9-2	14-2	18-2	4-3
	Sorting Season	Spring	Spring	Spring	Spring
		(%)	(%)	(%)	(%)
		(N=1)	(N=1)	(N=1)	(N=1)
Category 9 - Textiles					
9:1	Clothing	0.75	1.38	0.00	0.09
9:2	Footwear	1.70	3.43	0.49	0.15
9:3	Other textiles	3.45	0.80	0.94	0.18
	Category 9 - Textiles	**5.90**	**5.61**	**1.43**	**0.42**
Category 10 - Rubber					
10:1	Vehicle tires	0.00	0.00	0.00	0.00
10:2	Other rubber products	0.00	1.49	0.00	0.25
	Category 10 - Rubber	**0.00**	**1.49**	**0.00**	**0.25**
Category 11 - Composite Products					
11:1	Disposable diapers	0.00	0.54	0.14	0.00
11:2	Furniture	0.00	0.00	0.00	0.00
11:3	Other composites, Q-tips…..	0.00	0.88	0.68	1.83
	Category 11 - Composite Products	**0.00**	**1.42**	**0.82**	**1.83**
Category 12 - Hazardous Wastes					
12:1	Fluorescent lighting - CFL (Compact Fluorescent Lamps) bulbs	0.00	0.00	0.00	0.00
12:2	Fluorescent lighting - CFL (Compact Fluorescent Lamps) tubes	0.00	0.00	0.00	0.00
12:3	Batteries - automotive (lead acid)	0.00	0.00	0.00	0.00
12:4	Batteries - Dry cell, alkaline, button cell, other non rechargable household batt.	0.00	0.42	0.00	0.02
12:5	Batteries - Rechargeable	0.00	0.00	0.00	0.00
12:6	Oil - Lubricating (motor, transmission) oil, including containers	0.00	0.00	0.00	0.00
12:7	Oil - Empty Lubricating (motor, transmission) oil containers	0.00	0.00	0.00	0.00
12:8	Oil Filter - Automotive (include number of units)	0.00	0.00	0.00	0.00
12:9	Paint - Latex, including containers, PCA	0.00	0.00	0.00	0.00
12:10	Paint - Empty latex paint containers (PCA)	0.00	0.00	0.00	0.00
12:11	Paint - Oil-based, including containers, (PCA)	0.00	0.00	0.00	0.00
12:12	Paint - Empty oil based paint containers, (PCA)	0.26	0.00	0.00	0.00
12:13	Paint - (non PCA) paint including container	0.00	0.00	0.00	0.00
12:14	Paint - Empty (non PCA) container	0.00	0.00	0.00	0.00
12:15	Paint in aerosol cans (PCA)	0.00	0.00	0.00	0.00
12:16	Paint - Empty aerosol paint cans (PCA)	0.00	0.00	0.00	0.00
12:17	Paint - Aerosol cans (non PCA)	0.00	0.00	0.00	0.00
12:18	Paint - Empty aerosol paint cans (non PCA)	0.00	0.00	0.00	0.00
12:19	Solvents including containers (<10L) (PCA)	0.00	0.00	0.00	0.00
12:20	Solvents - Empty containers (PCA)	0.00	0.00	0.00	0.00
12:21	Solvents including containers (non PCA)	0.00	0.00	0.00	0.00
12:22	Solvents - Empty containers (non PCA)	0.00	0.00	0.00	0.00
12:23	Pesticides including containers (<10L) (PCA)	0.00	0.00	0.00	0.00
12:24	Pesticide - Empty pesticide containers (PCA)	0.00	0.00	0.00	0.00
12:25	Pesticides including containers (non PCA)	0.00	0.00	0.00	0.00
12:26	Pesticide - Empty pesticide containers (non PCA)	0.00	0.00	0.00	0.00
12:27	Pharmaceuticals, including containers	0.00	0.00	0.00	0.12
12:28	Needles & Sharps	0.00	0.00	0.00	0.00
12:29	Other empty aerosol cans (not applicable to above categories)	0.00	0.07	0.08	0.00
12:30	Other hazardous waste (record description)	0.00	0.00	0.00	0.00
	Category 12 - Hazardous Wastes	**0.26**	**0.49**	**0.08**	**0.14**

Table D-2. Waste Composition Select ICI Generators 7-10.

	ICI Generator ID	ICI-7	ICI-8	ICI-9	ICI-10
	Sample Number	9-2	14-2	18-2	4-3
	Sorting Season	Spring	Spring	Spring	Spring
		(%)	(%)	(%)	(%)
		(N=1)	(N=1)	(N=1)	(N=1)
Category 13 - Electronics					
13:1	Display Devices (monitors/TVs) less than 30"	0.00	0.00	0.00	0.00
13:2	Display Devices (monitors/TVs) more than 30"	0.00	0.00	0.00	0.00
13:3	Computers (desktops, laptops, desktop servers)	0.00	0.00	0.00	0.00
13:4	Desktop Computer printers, copiers, faxes,	0.00	2.54	0.00	0.00
13:5	Computer scanners	0.00	0.00	0.00	0.00
13:6	Computer Peripherals (keyboards, mice)	0.00	0.00	0.00	0.00
13:7	Personal/Portable audio/video playback and/or recording devices	0.00	0.00	0.00	0.00
13:8	Vehicle audio/video devices	0.00	0.00	0.00	0.00
13:9	Home audio/video playback and/or recording systems	0.00	0.00	0.00	0.00
13:10	Non-cellular telephones and answering machines	0.00	0.00	0.00	0.00
13:11	Cell phones, PDAs and pagers	0.00	0.00	0.00	0.00
13:12	Other miscellaneous electronics - consumer	0.00	1.20	0.00	3.37
13:13	Other miscellaneous electronics - commercial	0.00	0.00	0.00	0.00
13:14	Small appliances	0.00	0.00	0.00	0.00
	Category 13 - Electronics	**0.00**	**3.75**	**0.00**	**3.37**
Category 14 - Other					
14:1	Cat litter	0.00	0.00	0.00	0.00
14:2	Non-distinct fines	4.46	1.35	2.37	0.00
14:3	Other wastes, dental floss, …..	0.00	0.00	0.00	0.00
	Category 14 - Other	**4.46**	**1.35**	**2.37**	**0.00**
	Total	**100**	**100**	**100**	**100**

Table D-2. Waste Composition Select ICI Generators 7-10.

	ICI Generator ID	ICI-7	ICI-8	ICI-9	ICI-10
	Sample Number	9-2	14-2	18-2	4-3
	Sorting Season	Spring	Spring	Spring	Spring
		(%)	(%)	(%)	(%)
		(N=1)	(N=1)	(N=1)	(N=1)
Category 13 - Electronics					
13:1	Display Devices (monitors/TVs) less than 30"	0.00	0.00	0.00	0.00
13:2	Display Devices (monitors/TVs) more than 30"	0.00	0.00	0.00	0.00
13:3	Computers (desktops, laptops, desktop servers)	0.00	0.00	0.00	0.00
13:4	Desktop Computer printers, copiers, faxes,	0.00	2.54	0.00	0.00
13:5	Computer scanners	0.00	0.00	0.00	0.00
13:6	Computer Peripherals (keyboards, mice)	0.00	0.00	0.00	0.00
13:7	Personal/Portable audio/video playback and/or recording devices	0.00	0.00	0.00	0.00
13:8	Vehicle audio/video devices	0.00	0.00	0.00	0.00
13:9	Home audio/video playback and/or recording systems	0.00	0.00	0.00	0.00
13:10	Non-cellular telephones and answering machines	0.00	0.00	0.00	0.00
13:11	Cell phones, PDAs and pagers	0.00	0.00	0.00	0.00
13:12	Other miscellaneous electronics - consumer	0.00	1.20	0.00	3.37
13:13	Other miscellaneous electronics - commercial	0.00	0.00	0.00	0.00
13:14	Small appliances	0.00	0.00	0.00	0.00
	Category 13 - Electronics	**0.00**	**3.75**	**0.00**	**3.37**
Category 14 - Other					
14:1	Cat litter	0.00	0.00	0.00	0.00
14:2	Non-distinct fines	4.46	1.35	2.37	0.00
14:3	Other wastes, dental floss, …..	0.00	0.00	0.00	0.00
	Category 14 - Other	**4.46**	**1.35**	**2.37**	**0.00**
	Total	**100**	**100**	**100**	**100**

Making a difference...together

EHQ 16-35

REPORT TO CAPITAL REGIONAL DISTRICT BOARD
MEETING OF WEDNESDAY, APRIL 13, 2016

SUBJECT **Follow Up on Integrated Resource Management Task Force Referral to Staff**

ISSUE

The Capital Regional District (CRD) Board referred the recommendations of the Integrated Resource Management Task Force to staff for a report on implementation, including funding and governance.

BACKGROUND

The Integrated Resource Management Task Force reported to the Board on March 9, 2016 (see Appendix A). The Board referred the recommendations to staff for a report back at the next meeting.

Since that time, the CRD Board submitted a conditional amendment for the Core Area Liquid Waste Management Plan to the Minister of Environment. Under this amendment, the CRD has established a two-plant distributed base case for wastewater treatment with solids processing at Hartland Landfill, along with a Project Concept Call to be completed by September 2016. The Project Concept Call will invite submissions for project concepts for wastewater treatment and biosolids processing, possibly in combination with solid waste streams, to achieve the goals of the Project Charter. The submissions would include sufficient detail to allow for meaningful evaluation of the project concepts against each other and against the base case, including details regarding sites, technology, a feasibility assessment, demonstration of compatibility with current infrastructure, compliance with provincial and federal requirements and demonstration of significant fiscal advantages and/or environmental advantages over the base case, including financial backing.

ALTERNATIVES

Alternative 1

1. That the Terms of Reference for the Integrated Resource Management Select Committee as outlined in Appendix B be approved; and

2. That staff be directed to retain the Evaluation Team consultants, to be funded as outlined, and report on progress to the Integrated Resource Management Select Committee meeting to be held in late April.

Alternative 2

1. That the Core Area Liquid Waste Management Committee be maintained as the oversight committee for the Project Concept Call; and

2. That staff be directed to retain the Evaluation Team consultants, to be funded as outlined, and report on progress to the next Core Area Liquid Waste Management Committee meeting.

GOVERNANCE IMPLICATIONS

Moving forward with integrated resource management planning and decision-making challenges the existing established services and governance structure. The Environmental Services Committee is responsible for the solid waste service, a regional service for all municipalities and electoral areas in the CRD. The Saanich Peninsula Wastewater Commission has delegated authority from the Board to manage the Saanich Peninsula Liquid Waste Management Plan, in addition to capital and operating for the wastewater service for the three participating municipalities on the Peninsula. The Core Area Liquid Waste Management Committee is responsible for the Core Area LWMP, which has been submitted to the Province with an integrated waste management approach. The Wastewater Program Commission is responsible for implementation of the Core Area wastewater program under the terms of the funding agreement with the Province, with delegated authority from the Board.

For the upcoming six-month period, it is proposed that a new Select Committee be struck to oversee the Project Concept Call, made up of members of the Finance Committee and one additional Board representative from the Peninsula. The Finance Committee membership represents the Chairs of all standing committees, in addition to a Board representative from the Peninsula, Core Area and Western Communities. In addition to the above-noted members, it is proposed that the Chair of the Wastewater Program Commission and the Chair of the Saanich Peninsula Wastewater Commission sit as non-voting members. Draft Terms of Reference for the Integrated Resource Management Select Committee are attached as Appendix B.

A new Project Manager will be retained to manage the Project Concept Call, reporting to the Chief Administrative Officer. The Project Manager will oversee the detailed Planning Phase of the Core Area project (see revised Workplan Overlay, attached as Appendix C) and transition the project to the Wastewater Commission, at which time a Project Director will be retained.

The Project Manager will be supported by a team of consultants with such expertise as integrated resource management innovation, greenhouse gas mitigation, procurement and procurement law, and business case evaluation. A provincial representative will sit on the evaluation team to ensure the Province's funding and regulatory interests are met. A fairness advisor will also be engaged to ensure the rigour, confidentiality and due diligence of the procurement process. An organizational chart is attached as Appendix D.

The Saanich Peninsula Wastewater Commission, at its meeting on March 17, passed the following motions:

> *That the Saanich Peninsula Wastewater Commission appoint Mayor Ryan Windsor as a 'voting' member from the Peninsula Wastewater Commission to the select committee.*
>
> *That the Saanich Peninsula Wastewater Commission appoint Mike Williams as a 'non-voting liaison' from the Saanich Peninsula Wastewater Commission to the select committee.*

That the Saanich Peninsula Wastewater Commission supports the idea of Integrated Resource Management.

That the Saanich Peninsula Wastewater Commission advise the Select Committee they are open to the idea of an Integrated Resource Management (IRM) pilot on the Saanich Peninsula Wastewater Treatment Plant site, but would also like consideration given to an IRM pilot at Hartland Landfill, and other alternative sites on the Peninsula, based on information from staff.

ECONOMIC IMPLICATIONS

Funding for the Project Concept call, including expenses for the Project Manager and team of evaluation consultants, is anticipated to total $250,000 and will be drawn from the Core Area Liquid Waste Management Plan operating budget and the solid waste operating budget on a 50/50 basis. It is proposed that $15,000 be funded from the Saanich Peninsula Wastewater service, drawn from the $100,000 allocated for an IRM pilot. In September 2016, a new budget and funding model will be established once it is apparent how the project components will move to advanced planning and/or RFP.

INTERGOVERNMENTAL IMPLICATIONS

In a letter from Minister Fassbender to Minister Sohi, the Province has committed to provide active facilitation support to enable the region to determine an immediate and positive path forward for the Project. This facilitation includes support of Partnerships BC (PBC), focused on a contribution to the development of the Project Concept Call. Staff have held an introductory orientation discussion with PBC staff and understand they are scheduled to complete their work by May 2016. In addition, the Province will assign a specialized facilitator whose task will be to work with the region to find consensus and the way forward respecting implementation. It is anticipated that this work would complete due diligence on behalf of the Province to enable the Project Concept Call to proceed as a pre-procurement phase. As this is part of the procurement process, provincial and federal funders would have to be satisfied that their interests are protected. Advancing this work will also require the development and approval of evaluation criteria prior to the release of the Call.

Minister Fassbender and a representative from PBC, Amanda Farrell, President and CEO, plan to attend the April 13 Core Area Liquid Waste Management Committee meeting.

CONCLUSION

In order to advance the Project Concept Call with an integrated resource management approach, a new Select Committee is proposed to provide oversight and recommendations to the Board. Draft Terms of Reference for the Select Committee are attached for the Board's consideration. The Province of BC has also offered to facilitate the process, both through procurement expertise offered by PBC and specialized facilitation for decision making.

RECOMMENDATION

1. That the Terms of Reference for the Integrated Resource Management Select Committee as outlined in Appendix B be approved; and

2. That staff be directed to retain the Evaluation Team consultants, to be funded as outlined, and report on progress to the Integrated Resource Management Select Committee meeting to be held in late April.

Submitted by:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services
Concurrence:	Kevin Lorette, P.Eng., MBA, Acting Chief Administrative Officer

LH:cl

Attachments: Appendix A – Integrated Resource Management Task Force Report to CRD Board on March 9, 2016
Appendix B – Draft Terms of Reference, Integrated Resource Management Select Committee
Appendix C – Work Plan Overlay
Appendix D – Organizational Chart

Integrated Resource Management Options for the Capital Regional District

Report from the Integrated Resource Management Task Force – March 9, 2016

Executive Summary

After considerable investigation, the Integrated Resource Management (IRM) task force concludes that IRM approaches to managing regional waste streams are feasible today and could provide substantial financial and environmental benefits to the region as a whole. The task force further concludes that appropriate structures to avoid potential jurisdictional conflicts while fully investigating and evaluating IRM approaches need to be established. Finally, the task force supports establishment of a pilot project for biosolids, kitchen scraps and municipal solid wastes (MSW) as soon as possible.

The CRD Integrated Resource Management (IRM) Task Force was created to examine the question of whether an IRM approach to managing waste streams might provide substantial financial and environmental benefits to the region and its residents. In its terms of reference, the task force has been asked to define the scope and parameters of Integrated Resource Management objectives, to recommend options to the CRD Board and to recommend a process for broadly seeking submissions from the private sector and potentially implementing a recommended solution.

Initially, the task force has been concerned with proof of concept and has examined the question of whether IRM approaches are feasible today or remain a desired outcome for the future. To answer this question, the task force entertained presentations from four potential providers. Each provider was given a list of questions to be answered and the opportunity to provide additional information. Presentations lasted 50 – 70 minutes followed by 20 – 25 minutes for questions. The task force also received presentations from Dr. Jon O'Riordan, an IRM consultant and former British Columbia Deputy Minister of the Environment, and from Rudy Kilian of Carrolo Engineers, a consulting firm used by the Core Area Liquid Waste committee (See Appendix 1 for a detailed description of these presentations.)

Based on the investigation carried out, the IRM task force concludes it is very likely IRM approaches to waste stream management exist and are feasible today. The task force also concludes that IRM approaches could provide financial and environmental benefits so substantial that a compelling case for IRM likely exists. On the financial side, capital costs for a completed IRM project have been projected to be in the $250 - $400 million range. In addition, lifecycle costs are generally proposed to be revenue positive with at least one provider suggesting revenues would be sufficient to cover all capital costs. Without question, these cost estimates need further substantiation. Nevertheless, they are much lower than could be accomplished with current waste practices and waste projects being planned at the CRD. Similarly, estimates for GHG reduction are much greater than what could be expected from current practices and projects being planned. GHG reduction will become increasingly critical and is likely a very important consideration for federal and provincial funding partners. To summarize, the task force is of the opinion that IRM approaches could offer very considerable benefits to the region as a whole.

The task force also concludes that current and future regional waste management decisions should take place in an environment that **fully investigates and evaluates IRM approaches**. To do this, appropriate structures must be established. Currently at the CRD, a variety of initiatives for processing waste streams have been proposed. The Core Area Liquid Waste Committee, for example, is planning to treat liquid wastes and is considering using a Request for Expression of Interests (RFEI) to solicit innovative liquid treatment designs and compare them against a base case. Furthermore, the core area committee has agreed, in principle at least, to another RFEI intended to establish whether current biosolids processing estimates can be improved. In respect to this biosolids RFEI, the core committee's Technical Oversight Panel (TOP) has recommended gasification or similar technology as the best choice for processing and has recommended mixing biosolids with solid waste streams such as kitchen scraps and municipal solid wastes (MSW). The IRM task force has confirmed the desirability of mixing biosolids and other solid wastes through an interview with Mr. Rudy Kilian of Carollo Engineering. An "IRM initiative" involving mixed waste streams is very likely desirable but could run into problems of jurisdiction. Solid waste is a regional function and is the responsibility of the full board. In turn, the Environment Committee has been given responsibility for oversight of solid wastes and making recommendations to the board. It is unclear, therefore, who should be managing any RFEI involving biosolids **and** solid waste streams. Further complicating this situation is the Peninsula Wastewater Commission's interest in establishing a pilot to process peninsula biosolids, currently being landfilled at Hartland, with MSW.

The task force, through its chair, has worked with staff to create a structure that would fully investigate and evaluate IRM approaches while respecting initiatives put forward by CRD committees and commissions (Please see Appendix 2 for a schematic representation of the proposed structure). Within the proposed structure oversight for the CRD Board would be provided by a select committee comprised of the Board Chair and chairs of the Core Area Liquid Waste Committee, the Environment Committee and the Finance Committee. An expert Evaluation Team tasked with managing RFEI processes and evaluating responses would be central to the proposed structure. This Evaluation Committee would forward reports and conclusions to staff, who would make recommendations to the select committee. The select committee in turn would consider staff reports and make recommendations to the board.

The IRM task force also supports establishing a pilot program, as soon as possible, to use gasification, or other appropriate technology, for processing biosolids, kitchen scraps and MSW. The pilot could provide further proof of concept for an IRM approach and valuable baseline data for any future IRM solution to managing waste streams. As with other initiatives, an RFEI for the pilot would be managed by the Evaluation Team with the reporting stream going through staff to the select committee and ultimately the board. Appendix 3 contains task force suggestions re questions for respondents to such an RFEI. Finally, the task force recommends that during the process for establishing a pilot a non-voting liaison from the Peninsula Wastewater Commission should be added to the select committee.

Recommendations:

1. That, subject to future approval of costs involved, the Board authorize the establishment of an appropriate structure to attract, evaluate and potentially help procure IRM approaches to managing CRD waste streams including:

a. A select committee comprised of the Board Chair, the Chair of the Environment Committee, the Chair of the Core Area Liquid Waste Committee, the Chair of the Finance Committee and, during the process of establishing a pilot, a non-voting liaison from the Peninsula Wastewater Commission.

b. That the committee would provide political oversight on behalf of the CRD board. Specifically this would include recommending appointments to the Evaluation Team, providing oversight, along with staff, to the creation of RFEI documents and directing recommendations to the board.

c. An Evaluation Team comprised of a Project Lead and members with expertise in: procurement of Innovation, liquid waste (innovative design and implementation), solid waste to resource technologies, financial analysis of complex business cases, analysis of greenhouse gas (GHG) reduction claims and legal advice.

d. That he Evaluation Team would be mandated to provide advice on creation and implementation of high level requests for expressions of interest (RFEI). On the solid waste side the team would also evaluate RFEI submissions, provide a recommended short list and, through a process of competitive dialogue, work with those on the short list to shape a final proposed project. On the liquid side, the team would also evaluate RFEI submissions, provide a recommended short list and evaluate submissions on the short list against a base case provided by the Core Area Liquid Waste committee. The team would also manage an RFEI for a solid waste to resource pilot project, would recommend a short list of respondents to be evaluated in greater detail and would recommend a provider for the pilot program. All Evaluation Team reports would be directed to staff who would make recommendations to the select committee and through that committee to the board.

2. That the board authorize the creation of RFEI documents for: a) a pilot waste to resource program for biosolids, kitchen scraps and municipal solid waste (MSW), b) a full region wide waste to resource program for biosolids, kitchen scraps and MSW and c) submission of conceptual designs for liquid waste treatment designed to be evaluated against a base case established by the Core Area Liquid Waste Management committee.

Submitted by:

Director Vic Derman, Chair, IRM Task Force

Terms of Reference

INTEGRATED RESOURCE MANAGEMENT
SELECT COMMITTEE

PREAMBLE

The Capital Regional District (CRD) Integrated Resource Management Select Committee is a select committee established by the CRD Board and will oversee and make recommendations to the Board regarding integrated resource management planning.

The Committee's official name is to be:

Integrated Resource Management Select Committee

1.0 PURPOSE

The mandate of the Committee includes providing advice and making recommendations to the Board regarding the following:

- The Project Concept Call as outlined in the Core Area Liquid Waste Management Plan, Amendment No. 10, including,
  - Terms of Reference for the Evaluation Team, as shown in the organization chart attached as Appendix A
  - Approval of procurement documents including scope and parameters
  - Recommendations on timing, funding and Terms of Reference for a potential pilot waste to resource program for biosolids, kitchen scraps and/or municipal solid waste
  - Recommend options for Board endorsement on future governance and implementation for liquids treatment and solids treatment
  - Members to provide timely updates to their respective Standing Committee or Commission on progress

2.0 ESTABLISHMENT AND AUTHORITY

- The Chair and Vice Chair will be elected from among its membership;
- The committee will report its findings to the Board for consideration; and
- The committee will continue until it has made recommendations to the Board on implementation of outcomes from the Project Concept Call, not later than the September 14, 2016 Board meeting.

DRAFT

3.0 COMPOSITION

- The membership is comprised of the Finance Committee membership plus one additional Board member representing the Saanich Peninsula;
- The CRD Board Chair is an ex-officio member of the Committee; and,
- The Chair of the Core Area Wastewater Treatment Program Commission and the Saanich Peninsula Wastewater Commission will sit as non-voting members of the Committee.

4.0 PROCEDURES

- The CRD Board Procedures Bylaw will apply;
- The committee shall meet as required at the call of the Chair at least once monthly;
- The agenda will be finalized in consultation between CRD staff and the Committee Chair and any committee member may make a request to the Chair to place a matter on the agenda;
- With the approval of the IRM Select Committee Chair and the Board Chair, committee matters of an urgent or time sensitive nature may be forwarded directly to the Board for consideration; and
- A quorum is a majority of the committee membership and is required to conduct committee business.

5.0 RESOURCES AND SUPPORT

- The General Manager of Parks & Environmental Services will lead the coordination and allocation of resources to the Committee;
- Minutes and agendas are prepared and distributed by the Legislative and Information Services Department.

Approved by CRD Board on _____, 2016

APPENDIX C

Proposed Work Plan Overlay

OPTION DEVELOPMENT, PLANNING & IMPLEMENTATION PHASES

$83.4 M

3P CANADA FUNDING DEADLINE >

MAR 2015 to MAR 2016

- ✓ Phase 1 of public consultation complete
- ✓ Technical analysis complete
- ✓ Costing & financial analysis complete
- ✓ Phase 2 of public consultation complete
- ✓ Board approval

MAR 31 2016

CONCEPT CALL — **AUG 2016**

- Alignment with provincial requirements
- Confirmation of sites
- Evaluation criteria for ultimate procurement process

COMPLETION

DEC 2017

PLANNING PHASE COMPLETE

FEDERAL TRANSITIONAL AUTHORIZATION DEADLINE >

DEC 2020

REGULATORY ACCEPTANCE & FUNDING COMPLETION

Submission of plan amendment to Province → Provincial approval

~1 YEAR | **1-2 YEARS** | **≥1 YEAR** | **4 YEARS** | **SOLUTION OPERATIONAL** — **2023/ 2024**

Procurement process

Program construction

PHASE 1: SITING | **PHASE 2: OPTIONS**

CONSULTATION

- **EASTSIDE SELECT COMMITTEE**
- **WESTSIDE SELECT COMMITTEE**
- **HOST MUNICIPALITIES, FIRST NATIONS & COMBINED PARTICIPANTS**

AMENDING/APPROVAL OF LWMP & PLANNING ACTIVITIES

- Environmental Impact Study **1-2 YEARS**
- Funding Negotiation
- Outfall Modeling **1-2 YEARS**
- Site Acquisitions
- Permits & Other Approvals

Assumes concurrent process or construction

PROGRAM DEVELOPMENT

- Wastewater Treatment Plant(s)
- Conveyance Infrastructure
- Resource Recovery Infrastructure

OPTION DEVELOPMENT PHASE | PLANNING PHASE | IMPLEMENTATION PHASE

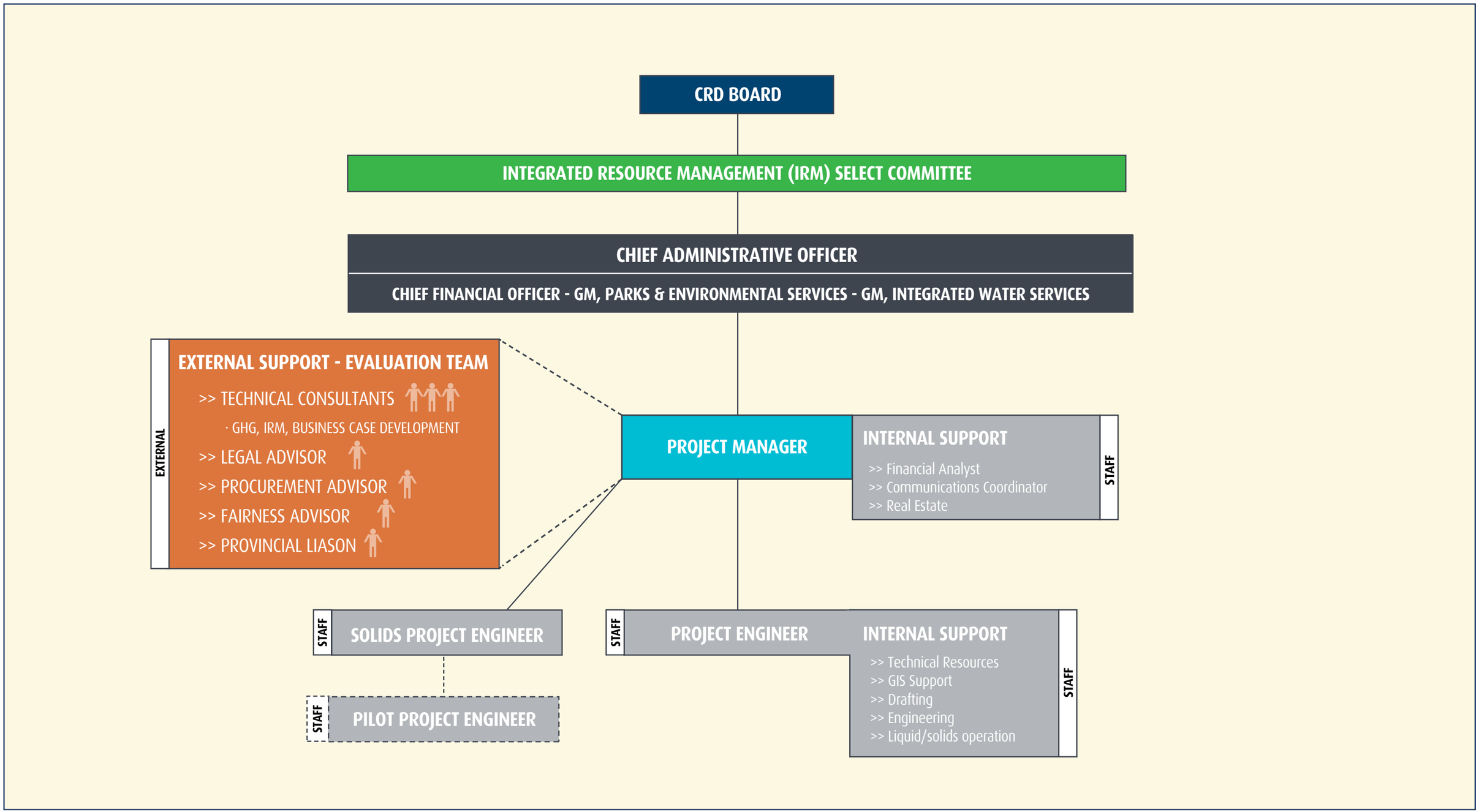
Updated March 2016

Planning Process

CORE AREA LIQUID WASTE MANAGEMENT PLAN

ROLES, INPUT & RELATIONSHIPS

APPENDIX D



Report From The CRD Integrated Resource Management Task Force

February 24, 2016

Purpose of the Task Force

The CRD Integrated Resource Management (IRM) Task Force was created to examine the question of whether an IRM approach to managing waste streams might provide substantial financial benefit and substantially improved environmental outcomes to the region and its residents. In its terms of reference, the task force has been asked to define the scope and parameters of Integrated Resource Management objectives, to recommend options to the CRD Board for endorsement and to recommend to the board a process for broadly seeking submissions from the private sector for implementing the recommended initiative.

Phase 1 – Proof of Concept

Initially, the task force has examined the question of whether IRM approaches exist and are feasible today or remain a desired outcome for the future. To answer this question the task force has entertained presentations from four potential providers. Each provider was given a list of questions to be answered and the opportunity to provide additional information. Presentations lasted 50 – 70 minutes followed by 20 – 25 minutes for questions from task force members.

*It should be noted that none of the information in this report represents any attempt by the task force to suggest a preferred provider. Instead, information provided aims to establish "proof of concept".

Providers, in order of appearance, included:

1. **Pivotal IRM**

   This potential provider offers a distributed approach to dealing with all of the region's waste streams. Wastewater treatment would utilize Membrane Bioreactor technology while Advanced Gasification would be used for biosolids, municipal solid waste (MSW) and kitchen scraps. Both technologies are well established and have operated successfully for at least 10 years. In the case of Advanced Gasification, commercial experience with biosolids in the mix is limited to six months' continuous operation. According to Pivotal, testing has indicated that with the right mix of sludge and wood, biosolids can be successfully and beneficially gasified. A distributed solution is the preferred approach, however, a 1 ½ acre site for processing and pelletizing solid wastes prior to gasification would be required.

   Beneficial use of resources would include heat, cooling and potential water re-use on the liquid side along with production of syngas(electricity), heat, biochar and water on the solid side.

   Pivotal has already developed a complete application for managing waste streams in the capital region. While much of this is proprietary and has not been disclosed to the Task Force, the company expects total project capital costs would be in the $250 - $400 million range. Optimal

procurement, infrastructure and design choices would move the final capital cost closer to the $250 million figure. The company has also indicated that with optimization, life cycle costs could be revenue positive given the multiplicity of revenue streams involved. Pivotal has expressed a willingness to be flexible in determining contractual arrangements with the CRD and has suggested that a profit sharing partnership is a possibility.

On the environmental side, wastewater treatment would be to a level of tertiary disinfected. This "very clean" effluent could initially be used to recharge aquifers and streams and would offer the ability to develop extensive water re-use around distributed plants over time. Greenhouse gas (GHG) mitigation is projected to be the equivalent of removing 24,000 cars from regional roads.

The principles in Pivotal IRM are local, however, the company has partnered with large and well established Canadian and US infrastructure and construction companies. According to Pivotal, these companies are able to guarantee and fund the project, in accordance with CRD's procurement and risk management preferences.

Pivotal has indicated a willingness and ability to insure performance and structure a project so that the CRD would be insulated from financial risk. Finally, given Pivotal was the first presenter, the task force has considered a "high level" evaluation of the viability of the wastewater treatment, the gasification technologies and the feasibility of projections for GHG mitigation. If this evaluation is carried out, results are expected to be available in the near future.

2. **Ark Power Dynamics**

Rather than presenting a complete solution to dealing with the region's waste streams, Ark Power Dynamics showcased a specific technology called "The Ark Reformer". This technology appears to be a unique, patented adaptation of plasma arc technology and is described by the company as follows:

"*an **internally generated** high-energy sustained reaction zone converting 'feed stocks' into their simplest molecules - hydrogen, carbon monoxide, and other compounds forming a synthetic gaseous mixture used to generate electricity or produce valuable fuel and chemical by-products."*

While the company has not presented a solution for treating waste water, Ark has indicated that the reformer is able to deal with all carbon based materials including biosolids, kitchen scraps and MSW. The company indicates the reformer offers advantages of a small footprint, the ability to treat waste that has up to 75% moisture content, thus eliminating the need for drying, and the ability to produce substantial amounts of Sulphur free crude oil, substantial amounts of syngas and residual "fertilizer" material. Furthermore, Ark indicates that the reformer creates no emissions and completely destroys pathogens and emerging chemicals of concern.

At present, Ark has no completed projects in operation. However, a pilot plant has operated successfully in Arkansas and has tested a variety of feed stocks. As such, the reformer is probably the least tested of the technologies presented to the task force. This does not mean it is without considerable potential. Ark would utilize one central, 100 ton per day processing plant

requiring a site of approximately 10 acres. A substantial part of that site would be taken up by a small "tank farm" necessary to store the synthetic crude produced while waiting transport to nearby refineries. Cost for the hundred ton per day facility is estimated to be approximately $50 million. The company indicated that Hartland Landfill would provide a suitable location. GHG mitigation would be considerable over the lifespan of any project given the substantial renewable resources that would be created.

Finally, Ark has indicated an ability to insure the CRD against risk and has indicated a willingness to enter into a profit sharing relationship.

3. **Hydra Renewable Resources**

Hydra would provide a complete solution encompassing all waste streams. Primarily, this would be through a distributed system with waste water being treated by Salsnes Filters and "CBUM" modules. Effluent produced would be "very clean". Solid wastes would be handled by "Bio-Green Pyrolytic Reactors" along with final stage distillation columns for renewable diesel fuel production. Again, the technologies chosen appear to be well established with at least 10 years of successful operation. It is unclear, however, whether sewage sludge has been utilized in the mix of solids being processed. While the approach suggested is distributed, Hydra would include a 4 acre central site for pre-processing solid wastes prior to utilizing the pyrolytic reactors.

Beneficial use of resources would include heat and water re-use on the liquid side along with production of renewable diesel fuel, syngas (electricity), heat and biochar on the solid side. Hydra also promotes the possibility of substantial food production in a "coolhouse greenhouse" and indicates their model for treating wastes produces no residuals requiring disposal.

Hydra suggests a financial model that would require no upfront capital investment by the CRD. Instead the company would seek a 30 year lease on existing CRD infrastructure. In return, Hydra would build and operate all new infrastructure, maintain existing CRD infrastructure and provide the CRD with a substantial annual lease payment. Sale of renewable resources would pay for the company's investment and operating costs as well as provide for profit margins. At the end of the lease, the company would return all infrastructure to the CRD with a remaining life expectancy of at least 10 years for plants the company built. Hydra describes this model as "BOOT" (build, own, operate and transfer) and is ready to guarantee no job or benefit loss in the transition to a lease system. Again, GHG mitigation would be significant over the lifespan of the project given the substantial renewable resources that would be created. At present, Hydra has no completed projects on the ground. However, a project for Kingston, Jamaica is ready to proceed while several other projects are at various stages of planning.

Hydra has partnered with established larger firms including amongst others: the Mace Group (project and construction management), Hyder Consulting (wastewater design),the Ramboll Group (mechanical, electrical and sustainability design) and DLA Design (architectural design). Finally, Hydra has indicated a willingness and ability to insure performance and structure a project in a manner that would remove financial risk from the CRD.

4. **Highbury Energy**

Rather than presenting a complete solution to dealing with the region's waste streams, Highbury Energy would provide a dual bed fluid dynamic gasification system to deal with biosolids and, potentially, other solid wastes. High value syngas would be produced from the

gasification process and could produce a variety of energy products for heating, cooling and electrical generation. Additional processing, could produce renewable liquid fuels such as diesel.

Highbury indicates that their gasification process provides a number of advantages in comparison to earlier generations of gasification including: conversion of low grade biomass, lowered capital costs through a patent-pending tar removal process, lower operating costs with a system that continuously runs on its own energy, production of high BTU syngas and production of syngas that is relatively clean.

Highbury Energy appears to be a company that has emerged in 2009 from the workings of a gasification research group at the University of British Columbia. The company is able to point to a body of research which includes gasification tests of a variety of materials including biosolids. These tests have taken place at a "lab scale" and involve smaller batches of material (kilograms per day) than would be expected with a demonstration level pilot. While demonstration level or larger installations do not appear to currently exist, the company points out that its process is scalable and expresses interest in establishing a demonstration level (tons per day) pilot.

Highbury has partnered with a number of established larger companies including the Eaton Group, MGX Minerals and Noram.

Summary of Benefits Suggested for a IRM Approach

The four presentations to the task force resulted in many situations where at least two of the potential providers suggested similar beneficial outcomes including:

Potential cost advantages

- Reduced, or nearly eliminated, need for new liquid waste conveyancing infrastructure. In the case of Rock Bay, this could be $250 million or more (distributed system in particular)
- Reduced, or nearly eliminated, property acquisition costs (distributed system)
- Opportunity to utilize a "just on time" approach to infrastructure needs (distributed system)
- Avoidance of future infrastructure costs through the ability of the selected technology to handle multiple waste streams. e.g. no separate facility for kitchen scraps
- Increased revenue through the creation of additional marketable resources (crude oil, biodiesel, syngas, biochar, heat and potentially water)
- Opportunity, through siting of distributed plants, to "set the stage" for increased future water re-use. Purple pipe system could be expanded on an "as needed" basis
- Opportunity to lower costs to taxpayers by transferring existing tipping fee revenues
- Ability to substantially extend the life of the Hartland Landfill
- Creation of value in the region through technology and/or job growth.
- Avoided costs to construct new outfalls
- Substantially reduced capital costs and virtually eliminated life cycle costs through transfer of existing revenue and creation of new revenue (Contractual agreements could transfer revenues to the CRD annually)

Potential environmental advantages

- Very substantially increased GHG mitigation

- Elimination of the need to handle residual" "treated" biosolids. In all cases, very little or no residual material is created
- Opportunity, if so chosen, to increase levels of recycling through "pre-sorting"
- Production of very clean tertiary disinfected level effluent suitable for supplementing steams and aquifers and/or for future water re-use
- Near elimination of emerging chemicals from both liquid wastes and biosolids
- Ability to meet and exceed all current legislative requirements for discharge and emission regulations

Potential process advantages

- For distributed approaches on the liquid side, an opportunity to substantially avoid re-zoning if publicly owned and zoned sites are utilized e.g. existing pump stations. Liquid treatment technology could be underground

It should be noted, however, that several presenters emphasized orally, or in their literature, that maximum benefit will be achieved not just by technology but by a process of overall system design developed **from the outcomes desired**. In other words, cost reduction and environmental gain must become the goals around which a proposed system is designed and built. This allows the marriage of technology, sites and opportunities for resource recovery to be optimized in a manner that an "add-on approach" is unlikely to obtain.

Presentation from Dr. Jon O'Riordan

The task force also received a presentation from Dr. Jon O'Riordan. Dr. O'Riordan is a former British Columbia Deputy Minister of the Environment. Currently, he is a consultant dealing with IRM approaches to waste streams. In his presentation, Dr. O'Riordan indicated that an IRM approach can provide lower net costs and increased environmental benefits in current circumstances. He strongly emphasized the need to frame decisions in the context of an emerging "world of climate change" and other ecological issues. He is of the belief that traditional approaches, not centered around the need to meet these challenges, can no longer be considered appropriate. Dr. Riordan went on to explain how many proposed IRM approaches could meet existing provincial regulation and accomplish permitting without any requirement for legislative change. Finally, he expressed doubt about the ability of "standard" procurement processes to encourage innovation and suggested the need to consider new procurement paradigms that would promote and accommodate innovative solutions

Conclusions

Based on the considerable investigation carried out to date, the IRM task force concludes it is very likely that IRM approaches to dealing with waste streams exist and are feasible today. Several of the presentations feature proven technologies. In addition, potential providers indicate they have partnered with substantial firms well recognized in the construction and wastewater industries. Presenters have indicated that these partnerships create a willingness and ability to fund a project, guarantee performance and insulate CRD residents from financial risk. The task force does not wish to question the

potential provider's credibility. Nevertheless, additional research will need to be carried out to insure that appropriate contractual arrangements do in fact exist.

The task force also concludes that IRM approaches could provide financial and environmental benefits so substantial that a compelling case for IRM likely exists. Capital costs for a completed project dealing with all waste streams have been projected to be in the $250 - $400 million range. In addition, lifecycle costs are generally proposed to be revenue positive with at least one provider suggesting revenues would be sufficient to cover all capital costs. Without question, these cost estimates need further substantiation. Nevertheless, they are much lower than could be accomplished with current waste practices and waste projects being planned at the CRD. Similarly, estimates for GHG reduction are much greater than what could be expected from current practices and projects being planned. GHG reduction is increasingly critical in today's world and is likely a very important consideration for federal and provincial funding partners. Given these possibilities, it is likely IRM approaches could offer considerable benefits for the Core Area Liquid Waste Committee and the region as a whole. The task force recommends that current and future regional waste management decisions must take place in an environment that **fully investigates and appropriately evaluates IRM approaches**.

The task force agrees with Dr. O'Riordan's contention that all significant infrastructure projects now, and in the future, must aim to optimally address the emerging world of climate change and other significant ecological issues. Solution sets for infrastructure projects must be **designed around** this outcome and other desired outcomes such as lowered net costs and value for money. The task force further agrees that current "standard" procurement processes are likely unsuitable for encouraging innovation and optimally reaching desired outcomes. Consequently, other more appropriate procurement paradigms need to be investigated and potentially engaged. It is clear that a robust and competitive environment is emerging for IRM approaches to waste stream management. With a lack of existing treatment infrastructure, the CRD is well placed to take advantage of this environment, but must establish mechanisms to broadly engage the widespread ingenuity emerging in the private sector.

Finally, the task force recognizes that the various technologies for treating solid wastes proposed in the four presentations generally do not have an extensive track record of including biosolids in the process mix. The task force recommends that a "demonstration level" pilot of at least one of the proposed solid waste technologies should be conducted in the region as soon as possible. The task force will provide an updated report to the CRD Board at its March, 2016 meeting. In this report, the task force will recommend a path to accomplishing such a pilot and describe next steps the task force intends to carry out including:

- further investigation of possible technologies and solution providers
- additional research into the viability of technologies presented
- investigation into potential obstacles presented by current provincial regulation
- analysis and recommendation as to how any regulatory obstacles might be overcome
- examination of procurement methods best suited to attracting comprehensive, innovative IRM applications
- Examination of processes necessary to appropriately evaluate applications and select from amongst them

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ERM 16-27

REPORT TO CORE AREA LIQUID WASTE MANAGEMENT COMMITTEE
MEETING OF WEDNESDAY, FEBRUARY 24, 2016

SUBJECT **Staff Comments – Integrated Resource Management Task Force Report**

ISSUE

To provide staff comments on the Integrated Resource Management Task Force Report (February 24, 2016).

BACKGROUND

The General Manager of Parks & Environmental Services, or designate, provides strategic support and acts as a liaison to the Task Force. The General Manager, or designate, has attended all of the Task Force meetings.

The conclusions outlined in the February 24 Task Force report are based on information provided by the Integrated Resource Management (IRM) technology providers and consultants that were invited by the Task Force to make presentations. The technology providers' presentations highlighted the advantages of IRM and their respective technologies. The information presented has not been independently reviewed by Capital Regional District (CRD) staff or engineering consultants. As indicated in the Task Force report, a pilot project (or even a technology feasibility study or literature review) could allow the CRD to better understand and manage any potential risks associated with proposed innovative IRM technologies. Alternatively, as highlighted by Dr. O'Riordan, a robust infrastructure procurement model, or expression of interest process, that validates technology providers' risk mitigation claims would help to address and acknowledge potential technology maturity and reliability concerns.

Dr. O'Riordan provided comments regarding BC gasification regulatory requirements and highlighted that there are emissions requirements (BC Ministry of Environment Waste Discharge permit) for gasification and a renewable fuel standard (Renewable and Low Carbon Fuel Requirements Regulation) for combustion of fuel from gasification for the production of electricity.

In addition to the above-mentioned requirements for a gasification project, there are a number of steps that need to be completed prior to a waste discharge permit or approval being issued by the Ministry of Environment, including a draft application and pre-application meeting with Ministry staff. During the pre-application meeting, Ministry staff will provide direction on the level of legal, technical and notification/consultation requirements, as well as air emissions and bottom/fly ash management. The Ministry processes completed applications on a "first in-first out" principle. As of January 27, 2016, the Authorizations-South region, which includes the CRD, had 214 waste discharge applications in the application queue.

A small-scale, temporary gasification pilot may be processed under a waste discharge approval for a demonstration period of up to 15 months, which is not renewable and would have fewer regulatory requirements than a permanent facility. A permanent gasification facility would require a waste discharge permit, amendments to both the Solid and Liquid Waste Management Plans, an operational certificate, more detailed technical assessments and extensive public consultation.

In addition, any gasification facility would have to meet all municipal land use and bylaw requirements. Facilities located on federal lands would be subject to separate regulations.

RECOMMENDATION

That the Core Area Liquid Waste Management Committee receive this report for information.

Submitted by:	Russ Smith, Senior Manager, Environmental Resource Management
Concurrence:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services

RS:dd

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ERM 15-51

REPORT TO ENVIRONMENTAL SERVICES COMMITTEE
MEETING OF WEDNESDAY, MAY 27, 2015

SUBJECT **Next Steps – Board Strategic Priority – Integrated Waste Management**

ISSUE

To seek direction on 2 major solid waste projects in alignment with the new Board Strategic Integrated Waste Management Priority.

BACKGROUND

On May 13, 2015, the Capital Regional District (CRD) Board approved the Board Strategic Priorities for 2016-2019. One of the Board's 12 strategic topics is Integrated Waste Management, which includes the following:

2.1 Acquire additional expertise on technologies and solutions to liquid and solid waste treatment
2.2 Investigate region-wide solutions to liquid and solid waste
2.3 Establish a systematic process of evaluation for all liquid waste and solid waste decisions
2.4 Investigated combined liquid and solid waste management plans
2.5 Ensure responsible management of waste water for the entire capital region

Environmental Resource Management (ERM) has two projects that are awaiting direction on next steps in alignment with the Board's priorities:

- **Regional Kitchen Scraps Processing RFP**
  In late 2014, the CRD received 15 Expressions of Interest for kitchen scraps processing. The next step is to invite short-listed proponents to participate in a Request for Proposals process to build a regional facility that meets the needs of our municipal solid waste partners. Earlier this year, the project was put on hold pending the outcome of the market sounding study directed by the Core Area Liquid Waste Management Committee on emerging technologies and best practices for waste water treatment. This information has now been received.

- **Integrated Solid Waste and Resource Management Plan** (ISWRMP)
  The CRD is in the midst of preparing a multi-stage process for the development of the provincially-mandated Solid Waste Management Plan. The ISWRMP is to provide a five-year solid waste roadmap for the CRD while creating an aspirational vision for a longer-term solid waste framework. The development of the draft plan was put on hold pending the outcome of the market sounding study and confirmation of the new strategic priorities.

Both projects will have significant impact on the long-term strategy to ensure financial sustainability of the Region's waste management system. Staff require direction on next steps to inform the development of the 2016-2019 ERM budget.

ALTERNATIVES

That the Environmental Services Committee recommend to the CRD Board that:

Alternative 1

That a workshop be held in late June to obtain Board direction on next steps and timing of the Board's Integrated Waste Management priority.

Alternative 2

That this report be received for information.

IMPLICATIONS

Alternative 1 will provide the opportunity for the Board to move forward with the new strategic Integrated Waste Management priority. It will provide staff with direction on next steps and timing and set the stage for developing the 2016-2019 ERM service plan and budget.

The proposed workshop would endeavour to provide a framework to allow the identified solid waste projects to move forward while ensuring that the Board's priorities are acknowledged and long-term opportunities are not compromised.

CONCLUSION

A solid waste workshop with the Board is proposed to provide direction on next steps and timing of 2 Environmental Resource Management projects in alignment with the Board's Integrated Waste Management priority.

RECOMMENDATION

That the Environmental Services Committee recommend to the Capital Regional District Board:

That a workshop be held in late June to obtain Board direction on next steps and timing of the Board's Integrated Waste Management priority.

Submitted by:	Russ Smith, Senior Manager, Environmental Resource Management
Concurrence:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services
Concurrence:	Robert Lapham, MCIP, RPP

RS:dd

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ERM 15-20

REPORT TO ENVIRONMENTAL SERVICES COMMITTEE
MEETING OF WEDNESDAY, FEBRUARY 25, 2015

SUBJECT **INTEGRATED SOLID WASTE AND RESOURCE MANAGEMENT PLAN – UPDATE**

ISSUE

To provide a progress update on the new Integrated Solid Waste and Resource Management Plan process.

BACKGROUND

The Capital Regional District (CRD) is developing a new Integrated Solid Waste and Resource Management Plan (ISWRMP). A solid waste management plan is a regulatory document mandated and approved by the Province of British Columbia. As per the Ministry of Environment's *Guide to the Preparation of Regional Solid Waste Management Plans*, development of the plan involves three stages:

Stage 1: Analysis of Existing Systems and Identification of Issues
Stage 2: Development and Evaluation of Options and Strategies
Stage 3: Plan Consultation and Adoption

The Environmental Services Committee (ESC) acts as the Steering Committee for the new plan. As part of the public review and consultation process, the Ministry requires the involvement of a Public and Technical Advisory Committee (PTAC) with representation from a diversity of sectors within the regional community and one elected official who acts as liaison to the Steering Committee. PTAC's Terms of Reference are provided in Appendix A.

Appendix B provides a high-level overview of the three stages and an overview of work to date by PTAC Stage 1 was completed in 2012 and confirmed that the CRD has a mature and complex solid waste management system and the need to consider alternative funding sources in the future. Results of a public survey showed that residents appeared to be informed and satisfied with services provided and indicated a demand for increased organics collection services and education. A final memorandum identified a list of 36 challenges.

In 2013 and 2014, PTAC reviewed a number of technical memorandums on solid waste management topics which are required to be addressed as per the Ministry Guide. The memorandums presented best management practices and outlined options and strategies used in other jurisdictions that could be considered in the CRD. Appendix C provides an overview of all memorandums, the challenges that they address, and a number of basic assumptions and high level potential strategies that were endorsed by PTAC. This information was reviewed by the Steering Committee and invited CRD Board members at a workshop on June 24, 2014.

Workshop participants did not reach consensus on the assumption that waste flow management should be considered as part of the new ISWRMP and requested more information. The Environmental Management Act grants local governments the authority to regulate the flow of

municipal waste and recyclable materials within their jurisdictions if it is approved in their solid waste management plans. However, in October, the Minister of Environment did not approve Metro Vancouver's proposed flow management bylaw. On December 15, 2014, Metro Vancouver's new Board Chair wrote to the Minister expressing disappointment with the decision and requesting clarification and more information. Staff will provide updates and further information on this subject in the context of financial management of the solid waste function.

Feedback from the workshop provided confirmation and endorsement of PTAC's work to date, prior to developing a working draft of the new plan. Staff are currently reviewing and compiling a list of strategies for review and shortlisting by PTAC. The strategies will be evaluated on economic, environmental, social and technical criteria within the context of their diversion potential and estimated costs. The key solid waste management decisions required at this time from the Steering Committee are to provide direction on:

- setting parameters for a new solid waste management target; and
- identifying funding mechanisms for developing a sustainable financial model to facilitate achieving the target

The two decisions are interconnected, as a solid waste management target that achieves higher diversion rates will reduce tipping revenues that fund all solid waste programs.

The Province has started using per capita waste disposal rates as the standard solid waste metric and is targeting 350 kg/capita by 2020. Based on the Ministry's new calculation method, the CRD's 2013 disposal rate was 367 kg/capita and is expected to be well below 350 kg/capita by the end of 2015, when the kitchen scraps ban has been fully implemented. A discussion of what targets are realistically achievable and the implications of different targets/timelines on the solid waste funding model may need to be delayed to allow for waste integration opportunities to be considered based on the recently approved direction for an integrated waste technology market sounding process.

RECOMMENDATION

That the Environmental Services Committee recommend to the Capital Regional District Board:

That the Integrated Solid Waste and Resource Management Plan Update staff report ERM 15-20 be received for information.

Russ Smith, Senior Manager
Environmental Resource Management

Larisa Hutcheson, P.Eng., General Manager
Parks & Environmental Services
Concurrence

Robert Lapham, MCIP, RPP
Chief Administrative Officer
Concurrence

AB:dd

Attachments: 3

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APPENDIX A

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CAPITAL REGIONAL DISTRICT

PUBLIC AND TECHNICAL ADVISORY COMMITTEE
INTEGRATED SOLID WASTE AND RESOURCE MANAGEMENT PLAN

TERMS OF REFERENCE

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1. BACKGROUND AND NEED

The British Columbia Ministry of Environment has requested that the Capital Regional District (CRD) prepare Revision 3 of the Solid Waste Management Plan. The Ministry's *Guide to the Preparation of Regional Solid Waste Management Plans* requires the establishment of a public and a technical advisory committee to advise the regional Board and/or its standing committee on the development of the plan with representation from a diversity of sectors within the regional community. The guidelines allow for the formation of single combined public and technical advisory committee.

2. ROLES AND RESPONSIBILITIES

The role of the Public and Technical Advisory Committee (PTAC) is to:

- act as advisory committee to the Steering Committee (Environmental Sustainability Committee) on the development of the Integrated Solid Waste and Resource Management Plan
- review guiding principles and provide feedback for the Plan
- review information provided by the CRD and its consultants and provide comments and suggestions to be considered for the new Plan
- provide input on design and implementation of public surveys and consultation processes
- assist in reviewing current programs and identifying issues and options (Stage 1 report)
- assist in developing and evaluating a variety of 5R options and strategies for the draft Plan (Stage 2 report)
- participate in public consultation, as required (for example, attendance at Open Houses)
- review public consultation results and provide input on the final Plan
- participate in smaller ad-hoc committees dealing with specific issues or tasks, as required; and
- ensure that proposed programs and policies are in the best interests of all residents of the CRD, balancing both community and industry needs and technical requirements.

The recommendations of PTAC are conveyed to the Environmental Sustainability Committee through staff.

APPENDIX B

INTEGRATED SOLID WASTE AND RESOURCE MANAGEMENT PLAN STAGES AND OVERVIEW OF WORK TO DATE

The Ministry of Environment's *Guide to the Preparation of Regional Solid Waste Management Plans* outlines the following three stages for the development of a new plan:

Stage 1: Analysis of Existing Systems and Identification of Issues
Stage 2: Development and Evaluation of Options and Strategies
Stage 3: Plan Consultation and Adoption



Stage 1
The Stage 1 report was presented to the Environmental Services Committee (ESC) at its October 24, 2012 meeting and included an overview of the existing solid waste management system, results of a public survey and a list of 36 issues to be discussed during Stage 2.

Stage 2
At its July 24, 2013 meeting, the ESC received an update on the first three memorandum topics discussed by PTAC:

- Memo 1: Reduce, Reuse and Extended Producer Responsibility
- Memo 2: The 3rd R: Recycling – Collection Services and End Uses
- Memo 3: Construction and Demolition Materials

At its March 26, 2014 meeting, the ESC received an update on memos four to six:

- Memo 4: Resource Recovery
- Memo 5: Residual Management
- Memo 6: Regulatory & Community Issues

At its April 23, 2014 meeting, the ESC received the final memo on Financial Management.

On June 24, 2014, a workshop with the Steering Committee and invited Board members reviewed the work to date and confirmed basic assumptions. A gap analysis was conducted in the fall identifying outstanding tasks.

Stage 3
The development and public consultation on the draft plan was expected to take place in 2015, but may need to be delayed to allow for waste integration opportunities to be considered based on the recently approved direction for an integrated waste technology market sounding process.

APPENDIX C

ISWRMP – TOPICS, CHALLENGES & ASSUMPTIONS/STRATEGIES

MEMORANDUM TOPIC	CHALLENGES/ISSUES (IDENTIFIED IN 2012)	ASSUMPTIONS/PROPOSED STRATEGIES
Reduce, Reuse and Extended Producer Responsibility • High consumption levels are the biggest barrier to reducing and reusing • EPR is meant to encourage greener material design – there is need for improvement	**Challenges 1 to 5** 1. Encouraging behaviours that move "up the hierarchy" 2. Sustainable product design 3. Lack of awareness/confusion about EPR programs 4. Uncertainty about impact of PPP EPR 5. Uncertainty about future new EPR programs	***Assumption*** • ***There is general support for education & EPR programs*** **Status** • Decision about CRD involvement in PPP EPR to be determined by 2015 • CRD has limited input into future EPR programs **Proposed Strategies** • Continue with existing reduce and reuse programs • Increase education efforts to change behaviours and inform about EPR • Advocate for more EPR programs with full cost recovery and a focus on re-design
The 3rd R: Recycling – Collection Services and End Uses • Garbage collection programs are established • Recycling is shifting to PPP EPR • Organics programs are developing	**Challenges 6 to 18** 6. Multiplicity of service providers creates confusion 7. Increase diversion, as many recyclables still end up in the garbage 8. Lack of residential kitchen scraps collection programs 9. Limited local capacity for processing kitchen scraps 10. Past planning challenges for kitchen scraps 11. How to comply with 2015 kitchen scraps ban 12. Need for long-term planning beyond 2015 13. Sourcing feedstock for processing kitchen scraps	***Assumption*** • ***The CRD will not get involved in garbage collection in the region*** • ***There is a general shift of recycling programs to EPR*** • ***A long-term kitchen scraps processing strategy will be in place by 2015*** **Status** • Status quo for garbage collection • No new EPR programs announced • PPP EPR is managing film plastic and glass • Gulf Islands depot funding TBD **Proposed Strategies** • Standardize/harmonize garbage collection • Advocate for full cost recovery for EPR programs

MEMORANDUM TOPIC	CHALLENGES/ISSUES (IDENTIFIED IN 2012)	ASSUMPTIONS/PROPOSED STRATEGIES
	14. Stable funding for Gulf Islands recycling depots 15. Lack of full cost recovery for EPR programs 16. Need for increased diversion of commercial waste 17. Film plastic contamination 18. Limited markets for post-consumer glass	• Advocate for PPP EPR to be extended to commercial sector?
Construction & Demolition (C&D) Materials • Private sector plays a major role	**Challenges 19 to 23** 19. Diversion of wood and asphalt shingles 20. Lack of data for private sector C&D recycling 21. Uncertainty about EPR for C&D materials 22. Uncertain outlook for wood waste market 23. Unknown existing quantities of wood waste managed by private sector	***Assumption*** • ***Private sector will continue to play major role in C&D diversion*** **Status** • Status quo for existing programs • Tervita landfill will reach capacity in six years **Proposed Strategies** • Continue support for existing programs • Investigate CRD and municipal policy options
Resource Recovery • CRD has to meet 70% diversion goal before considering waste to energy (WTE) • Integration with liquid waste programs was not included in scope of memo	**Challenges 24 to 25** 24. When and how to implement resource recovery 25. Integration with liquid waste plans and programs	***Assumption*** • ***WTE will be considered conceptually only in this ISWRMP*** • ***The new proposed diversion goal is 70% by 2020*** **Status** • 2013 diversion rate is 52% • 2013 landfill gas recovery is 50% **Proposed Strategies** • Maximize existing resource recovery • Continue to investigate new opportunities

MEMORANDUM TOPIC	CHALLENGES/ISSUES (IDENTIFIED IN 2012)	ASSUMPTIONS/PROPOSED STRATEGIES
Residual Management • Hartland's most important asset is airspace • New fill design concepts can expand the life to over 100 years	**Challenges 26 to 27** 26. Maximizing Hartland's life 27. Understanding and recognition of Hartland's potential as an asset	***Assumption*** • ***The goal is to never have another landfill in the region*** • ***There is support in principle to expand Hartland landfill as required*** **Status** • Hartland's current life expectancy is 36 years **Proposed Strategies** • Optimize diversion • Maximize air space • Investigate options to increase life of landfill (vertical and horizontal expansion)
Regulatory & Community Issues • There are several approaches to regulating waste facilities and haulers • Importance of long-range planning/OCPs • Successful illegal dumping campaigns involve the community	**Challenges 28 to 35** 28. Tackling illegal dumping 29. Incomplete commercial and C&D data 30. Lack of capacity to track waste managed by private sector 31. Lack of regional waste import and export data 32. Unknown effectiveness of waste reduction efforts in multi-family sector 33. Public resistance to the siting of waste management facilities 34. Community planning for waste management facilities 35. Overlapping jurisdictions and regulations for waste management facilities	***Assumption*** • ***Waste flow management will be considered as part of the ISWRMP*** **Status** • Lack of data from private sector due to lack of respective regulations • Phase 1 of illegal dumping campaign was successfully completed in 2013 • Multi-family recycling for PPP has shifted to MMBC; kitchen scraps will be collected by private haulers **Proposed Strategies** • Explore waste flow management • Work with municipalities and communities on zoning and planning for new facilities • Continue/enhance illegal dumping campaign

MEMORANDUM TOPIC	CHALLENGES/ISSUES (IDENTIFIED IN 2012)	ASSUMPTIONS/PROPOSED STRATEGIES
Financial Management • The current financial model of funding the Solid Waste function from tipping fees is unsustainable. • The memo identifies three funding mechanisms: decrease spending, increase tipping fees and tax requisition/utility fees	**Challenge 36** 36. Unsustainable financial model	***ASSUMPTION*** • ***New funding mechanisms for the solid waste function are required*** **Status** • The sustainability fund will be exhausted by 2017 **Proposed Strategies** • Review program cost efficiencies • Consider impact of increasing tipping fees, including need for waste flow management • Examine user pay/taxation for solid waste services • Investigate a blended financial model using several mechanisms



Esquimalt IRM

Summary Report

Prepared for:

Township of Esquimalt

21 August, 2020

Jeff Miller, Director of Engineering & Public Works
Township of Esquimalt
1229 Esquimalt Road
Esquimalt, BC,
V9A 3P1

21 August, 2020

Dear Mr. Miller

ESQUIMALT IRM - SUMMARY REPORT

We have pleasure in submitting a Summary of the IRM Technical Report provided to you on 29th July, 2020. This has been prepared to provide residents with a more concise understanding of IRM in Esquimalt, without having to absorb all of the complexities of the technical study. This and other material should assist with public engagement and we will be happy to answer any questions arising from this or the other materials.

Kindest regards,

Yours truly,





Graeme Bethell
President
Pivotal IRM Inc.

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1 Executive Summary

1.1 Purpose & Scope of Work

The Township of Esquimalt commissioned a study of the potential to assess how and whether waste management can be improved and resources recovered with Integrated Resource Management (IRM), using gasification. The scope considered: (a) liquid waste and liquid waste energy; (b) energy from solid wastes collected by the Township and private haulers; and (c) yard and garden waste.

The study was mainly spurred by climate change and greenhouse gas emissions reduction, but also by concerns about the rising cost of waste management, planned regional landfill closure and an interest in moving towards more sustainable and beneficial approaches to waste management. Central to the scope is the Township's declaration of a Climate Emergency and commitment to becoming GHG neutral by 2050and eliminating corporate GHG emissions by 2030. To meet provincial requirements a number of technologies were compared and a key requirement to assess the financial impact of options.

1.2 Summary Findings

The study found that IRM has the potential to achieve or exceed environmental targets with a net reduction in taxpayer costs or possible taxpayer dividend. The main findings included:

General

- Dividend of up to ≈$360/door, net average, potentially $226m net over 30 years;
- Reduced trucking with no odour or noise, and simpler waste separation for residents with less garbage bins.

Intangible

- European examples attract new business and enhance education, training, and eco-tourism, raising community profile and enhancing public pride;
- Broader economic stimulus & jobs with local re-investment and re-spending effect.

Environmental

- Exceed 2030 Corporate carbon reduction targets by ≈4½x and reduce community overall GHGs by ≈12%;
- Equivalent to removing ≈970 cars/year;
- ≈91% landfill diversion;
- Improved recycling;
- Generate clean energy to displace fossil fuels. Produce sterile fertilizer & sequester carbon;
- Simplest, most economic GHG reduction option available.

Challenges

- Statutory & regulatory compliance is likely and the community has the statutory empowerment to proceed, but this requires formal confirmation;
- Limited existing municipal capacity and experience raises risk, which can be managed but requires diligence to do so;
- While there are extensive systems using gasification (exceeding 1,000 years' combined operation and 90 plants) identified internationally, there are few examples in North America. Lack of identical example can be addressed by testing and guarantees.
- Systems can be guaranteed and externally funded to reduce taxpayer risk, but will lower financial outcomes;
- Finance is not confirmed, however it could be undertaken with limited capital and
- Community feedback is required under provincial process.

In summary the study concluded that an IRM approach using gasification is possible and has potential benefits, but as with any undertaking of this nature, will require commitment and management to address risks. Council and the community will thus wish to consider the cost/benefits but we believe the net advantages are sufficiently persuasive and the challenges are manageable, to merit proceeding further.

2 Background

2.1 What is IRM and Why Gasification

Integrated Resource Management (IRM) is an approach to managing water, energy and waste that aims to maximise their use and value as resources, in ways that reduce costs to homeowners, recover heat and other resources, reduce greenhouse gases (GHGs) and, other emissions and discharges. IRM mostly uses energy generation from waste residuals left over, after recycling.

IRM is a fully integrated life cycle assessment of ways that resources can be recovered from waste, to maximize the benefits to the environment and homeowners. This allows the community to compare financial and environmental impacts so that informed decisions can be made on the best direction for the community.

Choice of technology or technologies has a direct impact on yield and performance, viability and risk. Some technologies also cope with a wider range of materials. Choice of systems and integration is thus important.

Composting, anaerobic digestion and similar approaches to waste disposal typically address some or all of the organic portion of the waste stream and are not complete, standalone solutions. Incineration, pyrolysis and gasification can address organics but also address a wider range of other wastes. Incineration creates pollution (toxins and smoke, which contains particulates) and thus requires appreciable equipment to handle this. Incineration doesn't scale easily to smaller applications such as Esquimalt needs and are not popular as a community solution. Pyrolysis and gasification both avoid burning and producing toxins and smoke, but with a typically similar cost to gasification, pyrolysis is less efficient, i.e. the technology typically with the highest yield, broadest adaptability and scalability, is gasification (Figure 1).



Figure 1: Test gasifier, California

Internationally, gasification systems have over 1,000 years of combined operational experience, so are well proven, but not necessarily with examples handling wastes similarly

to Esquimalt's needs. However combinations of testing, manufacturer yield guarantees and other approaches are considered acceptable to address this risk.

In short, gasification is a process where waste is heated to produce a syngas, which can be used to produce heating, cooling, biochar and other products. The syngas is considered "green" and the energy “renewable” because over 85% of Esquimalt's waste is biogenic, i.e. it comes from natural and organic sources, not fossil sources.

2.2 Context

To understand whether IRM makes sense we have to consider: how waste is currently managed in the region and what the wastes consist of; what the regulations are; how the community might grow – and how much waste there might be in the future.

Historical Background

Historically, waste has been landfilled because land was cheap, available and out of sight. Recently however, landfill emissions have raised concern – toxins seep into groundwater; Greenhouse Gas (GHG) emissions are rising; and there will be up to 50 years' of maintenance responsibilities once Hartland landfill closes, at taxpayer expense.

Spurred by rising costs, contamination and emissions, with land becoming more expensive and less available, and rising waste volumes as populations grow, increasing emphasis is being placed on diversion. Both older and new technologies are being considered to solve the problems.

Regulations

Provincial regulations allow municipalities to decide how to manage their wastes and the region is responsible to incorporate these into a regional plan. If Esquimalt decides its own waste plan, this would then be included in the regional plan. An example similar to this is Dockside Green, which has its own sewage treatment plant and recycling, which the regional plan was amended to allow for.

IRM can proceed providing it meets some regulatory requirements:

a) Recycling has to meet or exceed recycling thresholds set by the Ministry of the Environment and Climate Change Strategies' (MoE) 5R's guideline. Regional and local diversion and recycling meet this requirement;

b) Disposal level must be at or below 350 kg/capita/yr and the planned system must achieve at least 60% energy recovery yield while meeting emissions requirements. These criteria can be met;

c) CRD will need to amend the regional Solid Waste Management Plan (SWMP) to include an IRM energy recovery facility; and,

d) Community support is required.

In summary, an appropriately planned IRM plant has the ability to meet BC's

regulatory structure and be permitted.

Liquid Waste

Liquid waste can be used to recover treated water and energy, however consideration of energy recovery from sewage has currently been deferred, largely because sewage flows are uncertain until the new treatment plant opens at McLoughlin Point. Recovery of water and energy from sludge has been deferred for the same reason, but should be feasible to phase in at a later date, once flows and availability are more certain.

Solid Waste

Currently wastes in the Capital Region are sent to a number of sites, not just to Hartland Landfill. These include sites in the Cowichan Valley, Nanaimo Regional District, Greater Vancouver and Washington State. Most of these centres are landfills but some recycle separated wastes such as food scraps, yard and garden wastes. Two recipients incinerate the wastes.

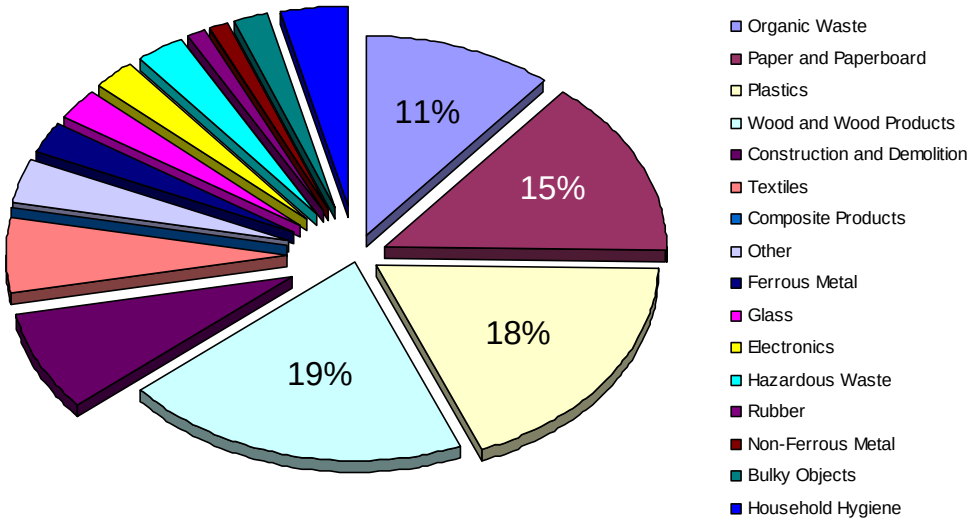


Figure 2: CRD 2016 Solid Wastes by Dry Weight

There has been an increasing effort to recycle and divert wastes from landfills. CRD's latest study (2016) shows that advances are being made, but almost half the organic wastes are still being landfilled, as are most other wastes, shown in Figure 2 (which excludes 'Blue Bin' recycling).

Because waste is often made of composite materials, it is difficult to separate the materials so they can be fully recycled. An example of this is coffee cups (which often mix paper with a plastic liner) or meat packaging (which mixes polystyrene and plastics with organics and paper).

The European Union provides contrast to understand both local progress and the potential for using waste, as the EU started with waste diversion and resource recovery since the early 1970s and is advanced. Figure 3 shows that the estimated current ≈43% diversion being achieved is low compared to most EU countries, but that up to 100% diversion has been achieved, largely by integrated (IRM) approaches using thermal conversion

technologies. An example of this is in Gothenburg Sweden, click here to see a short video explaining this.

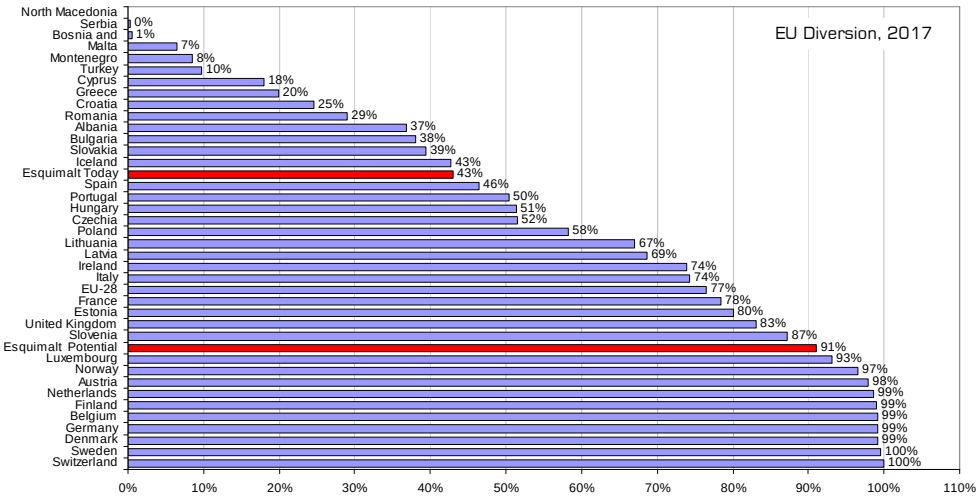


Figure 3: Diversion comparison, Esquimalt⇔EU

CRD has commenced public engagement for a new solid waste management plan so should Esquimalt decide to adopt IRM as its direction, it is timely for this to be included in the new regional plan.

Esquimalt's Waste Streams & Potential

The Township collects residential refuse (garbage) and kitchen (food) scraps largely from single family homes and small apartments, while private haulers collect the same from businesses and large apartment buildings. Yard and garden waste is dropped off at a recycling centre adjacent to the Public Works Yard on Canteen Road. This waste is currently transferred to Hartland landfill where some is sent for processing in the Lower Mainland and the remainder is landfilled (Figure 2).

Township of Esquimalt, 2019/2020					
		Tonnage		Moisture	Dry	
Yard & Garden		1,778	27%	40%	1,067	24%
Food waste		566	9%	60%	227	5%
	Subtotal	2,344	36%		1,293	29%
				45%		
MSW		1,054	16%	25%	790	18%
	Total	3,398	52%	39%	2,084	47%
Plus: private hauled wastes		3,100	48%	25%	2,325	53%
Total current estimated volume		6,498	100%		4,409	100%
Total current estimated volume, dry tonnes per day, public only					5.7dtpd	
Total current estimated volume, dry tonnes per day, combined					12.1dtpd	

Figure 4: Esquimalt Solid Waste Volumes

Figure 4 shows that in 2019/2020 the Township collected ≈3,400 tonnes of 'wet' waste, while private haulers collected ≈3,100 tonnes waste, i.e. a 50/50 split in collection. Wastes collected by the Township equate to ≈182kg/person, rising to ≈347 kg/person once private wastes are included, which meets provincial diversion guidelines to be able to consider energy recovery from waste.



Figure 5: Biochar

Energy recovered by the IRM plant would be supplied to the Township's municipal centre and the biochar produced (Figure 5), it is typically used as a sterile soil supplement because it retains fertilizers and water, while sequestering carbon. It can also be used as an air or water filter for buildings, swimming pools and fish tanks. This is a considerable benefit in reducing GHGs while supporting environmental restoration, and is an appreciable potential revenue contributor.

Community Growth

Figure 6 shows that Esquimalt has grown at ≈0.3% per annum in the long term whereas the region as a whole grew at an average of ≈1% per annum. However between 2005-2016, Esquimalt grew at ≈1.0%, which is representative of the region.

	Population					
Community	**1991**	**1996**	**2001**	**2006**	**2011**	**2016**
Central Saanich	13,684	14,611	15,348	15,745	15,936	16,814
Colwood	13,468	13,848	13,745	14,687	16,093	16,859
CRD	299,550	317,989	325,754	345,164	359,991	383,360
CRD Core (CALWMP)	239,138	250,487	256,227	271,654	283,977	303,542
Esquimalt	16,192	16,151	16,127	16,840	16,209	17,655
Highlands	1,094	1,423	1,674	1,903	2,120	2,225
Indian reserves	3,214	3,806	4,667	4,670	5,282	5,244
Langford	15,642	17,484	18,840	22,459	29,228	35,342
Metchosin	4,232	4,709	4,857	4,795	4,803	4,708
North Saanich	9,645	10,411	10,436	10,823	11,089	11,249
Oak Bay	17,815	17,865	17,798	17,908	18,015	18,094
Saanich	95,583	101,388	103,654	108,265	109,752	114,148
Sidney	10,082	10,701	10,929	11,315	11,178	11,672
Sooke			8,735	9,704	11,435	13,001
Victoria	71,228	73,504	74,125	78,057	80,017	85,792
View Royal	5,996	6,441	7,271	8,768	9,381	10,408

Source: CRD &Statistics Canada

Figure 6: CRD Demographics, 1991-2016

The Township anticipates that the community may reach buildout over the

next 10+ years, and reach a maximum of ≈25,000 population, which is considered practical for projecting waste volumes.

The combined waste volumes indicate that a 15 tonne per day plant would be needed at the start but will expand to ≈25 tonne per day at buildout. The plant's expansion can be phased and expanded in stages to meet population growth. Phasing reduces initial cost, however, some additional capacity will be needed to address maintenance downtime.

Climate Change

Esquimalt Council has declared a Climate Emergency, to elevate the importance of initiatives that will reduce carbon. The Township's Corporate annual balance is 1,005 tCO_2e and the emissions for the entire community are 37,644 tCO_2e, according to provincial inventories. As a main objective of IRM is to reduce GHGs, this is a key part of the assessment.

3 IRM Assessment

3.1 Options

Previous Technology Reviews

Resource recovery technologies were reviewed by CRD during Core Area Liquid Waste Management planning and by CRD's IRM Task Force. The focus of these studies was primarily on wastewater aligned technologies, and the main focus was not on integration of waste streams, even though CRD's IRM Task Force and Technical Oversight Panel noted that IRM could be beneficial. Advanced Gasification was put forward by West Shore Innovation Days, and CRD noted that IRM has the potential to impact every aspect of solid waste management in the region, but it has yet to progress.

Main Technology Options

Anaerobic digestion is an accepted technology selected by the region for sewage sludge treatment (Figure 7), although this could extend to organics processing (≈11% of the region's wastes, per Figure 2). Other options such as biofuels could handle more, but would need several systems to cover available wastes and the technology is not well advanced. It would also not be easy to locate plants in Esquimalt.



Figure 7: Planned Digester, Hartland Landfill



Figure 8: Advanced Gasifier USA

A technology supported during prior reviews is Advanced Gasification (an ex maple is shown in Figure 8), which can handle a broader range of wastes, including compound wastes. Digestion and gasification were thus compared using CRD's assessment for the proposed digester at Hartland Landfill, shown in Figure 9, adjusted to equate plant size. This shows Advanced Gasification is financially preferable, potentially yielding a dividend whereas digestion is expected to require continuing taxpayer support.

Aspect	Anaerobic digestion	Advanced Gasification
Feedstock suitability	≈11% of volume Organics only	≈75% of volume Most solid wastes
Recovered, saleable resources	Biogas for heating/RNG	Heating, cooling, biochar
Capital cost per tonne processed, life cycle	≈-$232 per tonne	≈-$91 per tonne
Operating cost per tonne processed, annual	-$3.0m/yr	-$1.6m/yr
Total net life cycle cost/revenue, undiscounted, current $$, after debt	≈-$2,154 per tonne	≈+$122 per tonne
Annual tCO2e reduction	Not assessed by CRD	≈8,500 tCO2e
Life cycle CO2e reduction	Not assessed by CRD	≈425,000 tCO2e

Figure 9: Technology Comparison

Waste Options

As noted previously, Esquimalt's wastes are collected by the Township and private companies, raising the question of whether to size a plant to process purely the Township's collected wastes, or all wastes. While it would be possible to process more wastes than purely Esquimalt's, we evaluated the impacts of these two main options : (a) Figure 10 summarizes the net annual tCO_2e GHG reduction and tCO_2e sequestration; and, (b) Figure 11 shows the dividend per home. These indicate both a financial and environmental benefit in handling all the wastes generated in Esquimalt, not just the Township-collected wastes.

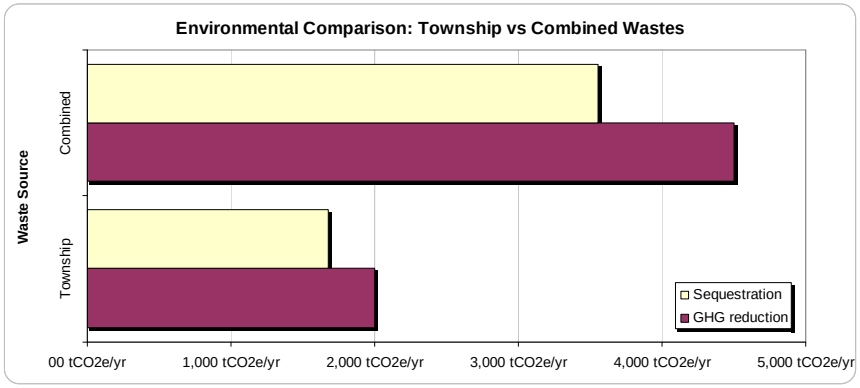


Figure 10: Environmental Waste Comparison

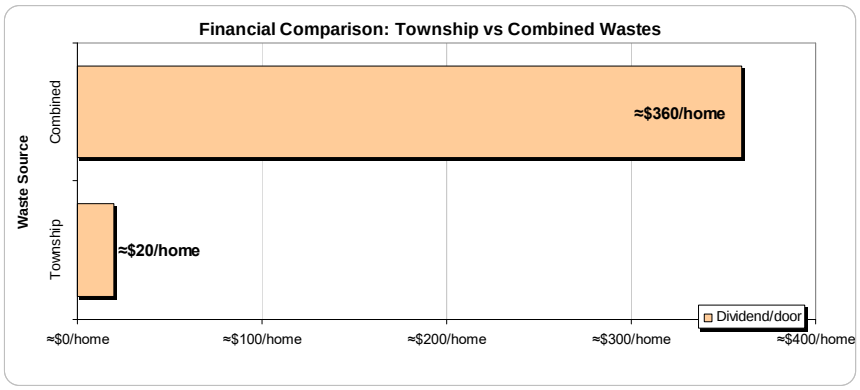


Figure 11: Financial Waste Comparison

Notably Figure 11 shows that as the community grows and the plant reaches capacity, the dividend could be up to ≈$360 per home, net. While this is likely to be used to pay for other services and avoid higher taxes, it is indicative of the likely benefit to taxpayers, net of the investment needed for building the plant.

Energy & Resource Recovery

Because a significant part of an IRM philosophy is maximising reuse of recovered energy and resources, plants need to be located close to energy consumers.



Figure 12: IRM Site and energy Users

Figure 12 shows an IRM plant could be located at the current Public Works site on Canteen Road, with a District Energy System connecting with Esquimalt's core. The loop would be buried along municipal streets with service connections to buildings who would be supplied with both heating and cooling. This was assessed for the Township in a 2013 study by Kerr Wood Leidal which identified ample consumers for energy. Should the project proceed, we recommend this be updated as part of an integrated Net Zero study for the core, to further reduce GHGs and lower energy costs in Esquimalt.

While other sites may exist and be feasible, the Public Works Site is well located to distribute energy recovered from waste and is owned by the Township. This site is preferred and has been assumed for modelling.

Site & Traffic

The Public Works Yard (Figure 13) is a recommended choice for the plant, located at the intersection of Esquimalt and Canteen Roads. This is well situated to minimize the cost of supplying recovered energy to Esquimalt's core, using a ≈1km energy loop, or to other potential major consumers.

Phasing and the ability to expand the plant has been considered and it likely that projected growth can be accommodated. The site is currently used for parking, which would be relocated within the site if alternative parking is unavailable.



Figure 13: Public Works Yard

We do not expect any noticeable or significant change in traffic caused by the plant. We estimate up to three trucks per day would supply waste. These are already circulating in the community so would not generate new traffic, but instead of going to Hartland, would go to the plant. There may be at most 3-5 additional employee cars visit the site during the day. The traffic impact is thus expected to be negligible and as this would reduce traffic going to Hartland, trucking costs would be expected to be lower, as would GHG emissions.

Conclusion

IRM technologies have recently been extensively researched by CRD and we have referenced assessments of over 90 MSW gasifiers operating in total, with the equivalent of over 1,000 years of use. MoE regulations needing to be satisfied and our review indicates the technology should comply with the Ministry's requirements. Advanced gasification addresses the largest portion of the waste streams and is less expensive and more efficient, as well as being more compatible to recovering energy in Esquimalt, which has site limitations restricting effective use of other alternatives. We conclude that although the Township directed an assessment based on gasification, that Advanced Gasification is the best option for Esquimalt's needs, assumed to be located at the Public Works Yard with a ≈1km District Energy System supplying the core to recapture and reuse green energy.

3.2 System & Approach

To ensure odours from waste are controlled, the plant will have a negative pressure feedstock processing and storage centre, where garbage is unloaded behind closed doors and air is filtered to eliminate odours. Large recyclable and inert materials will be removed and

recycled, then the waste will be processed in a chipper/shredder, blended, dried to ≈20% moisture ratio, cooled and stored, ready for gasification (Figure 14).

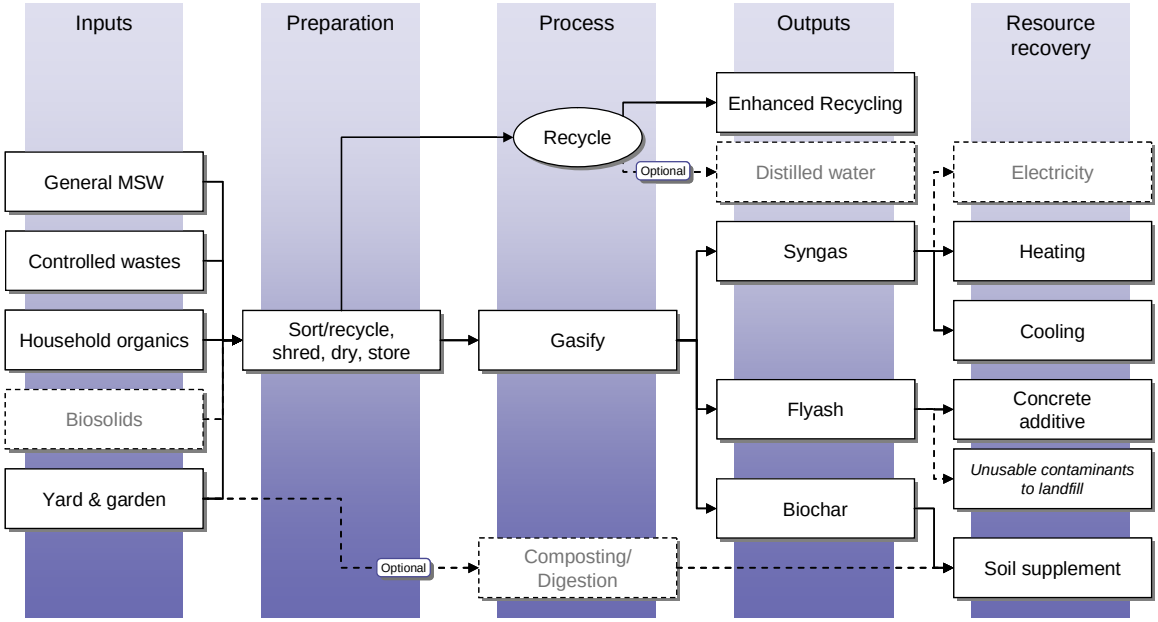


Figure 14: Gasification General Process

Gasifiers vary widely and in the IRM Technical Report provided to the Township we identified the Advanced RotoGasifier manufactured by TSI, Lynnwood, WA, as the preferred technology, due to its track record and robust feedstock handling. Working with a specific technology and manufacturer improves costing and performance information for the business case.

3.3 Analysis

Pivotal uses a proprietary computer model to assess IRM projects, developed with input from sector experts. The model combines both environmental and financial aspects to calculate the full net life cycle, using financial and environmental standards. The model is used to run scenarios, each of which has 105 cash flows, plus GHG projections over 150 years (to assess GHG life cycle).

Scenario	Growth	(a) Township	(b) Combined
1 Minimum	0.3%/yr	≈3,800 t	≈7,200 t
2 Moderate	1.0%/yr	≈4,700 t	≈9,000 t
3 High	1.7%/yr	≈5,900 t	≈11,300 t

Figure 15: Scenario Summary

Because population and waste growth is uncertain, we assessed scenarios with population growth of 0.3%, 1% and 1.7% per annum, comparing the results given either (a) just using the waste collected by the Township; or, (b) Combined Township and broader community wastes.

Figure 15 shows the main scenarios run, with the base models for each of these assuming a publicly-owned project.

The method of procurement and delivery is not yet determined, and because factors such as risk and investment can vary, we also ran initial private partnership estimates for each of the six scenarios shown in Figure 15, for a total of twelve scenarios. The private sector models have been provided separately but in summary, we anticipate probable private sector interest only in the combined waste scenario, subject to how the contracts are structured.

Because growth (in both population and waste) is not predictable, a "just-in-time" approach was devised using multiple smaller gasifier units so the plant can be expanded as and when needed. This avoids incurring capital cost for a population that might never happen, but also avoids today's taxpayers having to fund anything that is not absolutely necessary based on what we know today.

Figure 16 summarizes the main indicators for the "moderate" growth curve, for both the "Township only" waste collected, and the "Combined" wastes for the whole community. The combined waste scenario, highlighted in green, is recommended.

	Township	**Combined**
Scenario	2a	2b
Population growth %	1.0%	1.0%
Total capex	$17.3m	$21.3m
Annual O&M	-$1.5m	-$1.7m
Waste volume	4,670 t/yr	8,930 t/yr
Life cycle profit/loss	$47m	$226m
Simple payback	≈14yrs	≈6yrs
Taxpayer dividend/subsidy/yr, 1st 10 yr avg	≈$0/home	≈$360/home
Total mwt, life cycle	249,000 mWht	528,000 mWht
Total GJ, life cycle	897,900 GJ	1,901,700 GJ
Life cycle biochar, tonnes	17,100 t	36,300 t
Life cycle tCO2e redn/increase	101,185 tCO2e	223,139 tCO2e
Life cycle vehicles less/more	13,200 cars	29,100 cars
Life cycle sequestered carbon, tCO2e	50,330 tCO2e	106,594 tCO2e
Life cycle landfill diversion, tonnes	140,100 t	267,900 t

Figure 16: IRM Analysis Summary

- Although both 2a and 2b are viable, 2a will only become viable as it approaches projected capacity and will likely require taxpayer support up to that point (≈18 yrs), whereas 2b is anticipated to be viable from the start of operations. Note also that each model has external savings (e.g. meeting corporate emissions targets, landfill diversion benefits and other savings), not fully accounted for in Figure 16.

- Both Township and combined waste options have heat recovery and CO_2e benefits, with 2b being much superior over the 30 year projection period.

- We estimate Option 2b has the potential to reduce the entire community's GHG emissions by ≈12%, and reduce the 2030 target by ≈30%. The potential for carbon sequestration, at no extra cost, is important given alternatives and the Township's declaration of a Climate Emergency. Few options exist able to essentially extract carbon from the atmosphere by ≈3,600 tCO_2e annually, at no cost.

- The major resources recovered are heating, cooling, and biochar with primary revenues from biochar, tipping fees and energy sales. The most sensitive of these is biochar sales, however most of the revenues can be pre-contracted and the value confirmed prior to committing to the project, to limit risk.

- Landfill diversion is achieved under all options and are desirable given rising costs and limited capacity at Hartland Landfill. IRM is expected to divert ≈9,020 tonnes per year from the landfill – and if adopted across the region, would extend the existing landfill's life to 2186 (166 yrs).

- At buildout, a plant addressing the combined Township and other community wastes is estimated to potentially yield a "rebate" to taxpayers in the order of ≈$360/home. Few other waste management options exist with the potential to yield a rebate to taxpayers.

3.3.1 Risk

A basic risk assessment and scenario testing was undertaken to identify the main issues that could affect a decision on whether to proceed further.

All waste treatment systems have technology risk – the potential for the systems to fail or underperform. Usually these are handled by technology guarantees, and is true for the gasifier, the manufacturer is willing to guarantee the system and its design performance at the yield in the business case. Steps to address this are relatively simple and require laboratory and physical testing of actual sample wastes. A demonstration test with local wastes was successfully undertaken in 2017, shown in Figure 17, proving the system works with similar wastes to those found in Esquimalt.



Figure 17: Demonstration Test of Local Waste

Projection risk – the likelihood that population and waste grows to meet predictions – has been managed by adopting a "just-in-time" phased system design and pricing. While this adds cost in the long term, it reduces it initially and means that projection risk is reduced if not eliminated.

Any project of this scale involves contract and construction risks. These are normally handled through fixed price contracting, bonding, warranties, guarantees and other mechanisms. This risk will be monitored through construction and procurement can be structured to address and manage this risk.

Should the Township decide to pursue a combined waste strategy addressing all of the community's wastes, contracts will need to be put in place with haulers. We confirmed there is interest in this, thus reducing this risk and although it cannot be completely eliminated during the 30 year plant life, strategies exist to manage it in the long term. This helps mitigate volume and contract risk.

Revenues in the model have been relatively conservatively determined, for example we have excluded the possibility of selling electricity so BC Hydro revenue has been ignored. Aspects such as tipping fees and carbon credits have also not been aggressively determined. The model is more sensitive to biochar revenues so work was undertaken to confirm this aspect, and a rate of US$2,000/tonne applied whereas retail rates for biochar are currently sold for US$5,000/tonne. This is an item for early risk management, which can be achieved through sample testing and pre-contracting. A more detailed comment on this item has been provided but the system is not ultimately reliant on biochar revenues and can exceed breakeven without this.

In terms of operational risk, budgets have been assumed based on experience with other plants, and the systems themselves are not pressurized, so do not require certified boiler engineering professionals. Training and shift staffing have been assumed with standard allowances for maintenance, so we do not currently identify this risk as especially sensitive.

In conclusion, while there are risk concerns with this system, the same is true with other systems and the risks are considered manageable, with most capable of being mitigated in whole or part before final commitment to construct. Feedstock supplies, construction and technology performance, guarantees and revenue contracts can be managed before proceeding and we have not identified risks that cannot be managed or are sufficiently significant to reject proceeding at this stage.

3.4 Next Steps

We expect further consideration will be needed depending on the Township's review of the study's findings. Should Council decide to proceed further, we recommend establishing an advisory committee and taking a measured approach to mitigate risks and safeguard project and taxpayer value.

The next steps would be to concurrently confirm the IRM approach meets MoE requirements and has their support; partner with CRD to amend the Solid Waste Management Plan to include a waste to energy IRM project for Esquimalt; and confirm regulatory and development approval processes. Then undertake essential laboratory testing of the waste as well as run a physical test of the waste mixture to confirm suitability.

With these in hand, the next major decision would be to decide whether to proceed with a Detailed Development and Implementation Feasibility Assessment with a proposed Implementation Plan. The procurement model would be decided and the financials would be updated as new information is provided. The Township would then be in a position for one final decision on whether to proceed to development or not.

4 What IRM Means For Residents

This summary is mainly intended to inform residents and to aid with community engagement, so technical terms have been minimized, but a separate Technical Report has been prepared with greater detail and is available for those with an interest in the technical aspects. In that context, the following provides a simplified summary based on the recommended option – which addresses all of the wastes generated in the entire Township.

Perspective	Comment
Homeowners	Residents currently separate kitchen scraps and other wastes but this is expected to reduce to Blue Box items and a single combined garbage can. The facility has the potential to limit homeowner costs, or may provide a small tax rebate to residents. No additional garbage trucks are expected to be needed. The garbage trucks are already circulating within the community and we anticipate up to ≈3 trucks per day will visit the site. Because the facility is sealed, there will be no odours. the gasifier system has low level noise from the chamber rotation, it is not expected to be an issue and below allowable limits.
Financial	The facility is expected to cost ≈$15m initially, expanding to ≈$21m over time (±15%), with eventual operating and maintenance costs of ≈$1.7m annually. There may be up to $226 million net revenues, over the life of the project. This is equal to a homeowner dividend (or rebate) of ≈$360 per home per year, potentially with more beyond the first 30 years of operation. Grant and funding programs are likely to be available but have not been assumed. Homeowner costs can be reduced or eliminated using outsource contracting, however this is likely to reduce potential dividends and may affect resource recovery and GHG reduction. The maximum benefits are likely to be obtained by the community owning the project.

Perspective	Comment
Environmental	The plant is expected to divert up to ≈9,000 tonnes of waste annually from Hartland Landfill. If IRM is adopted across CRD, the current landfill capacity is estimated to be extendable to 2186 at no extra taxpayer cost. GHGs are estimated to be reduced by up to ≈4,500 tCO_2e annually, equivalent to ≈12% of the entire community's carbon footprint. This is ≈31% of the 2030 community GHG reduction target and would eliminate the corporate carbon footprint. The plant is anticipated to remove ≈107,000 tCO_2e from the atmosphere using biochar, which is usable as a sterile soil supplement and sequesters carbon.
Resource recovery	Recovered resources contribute to revenue generation and carbon reduction. The recommended option is anticipated to recover ≈17,600 MWh of heat annually, which displaces using natural gas and oil. This can also be used for cooling, thus supplementing or replacing air conditioning systems. The plant is anticipated to produce ≈1,210 tonnes of biochar, usable as a fossil-free sterile soil supplement, which equates to ≈3,550tCO_2e GHG reduction per annum. As BC Hydro is not currently purchasing clean energy, electrical energy generation has not been assumed. This can be added later if feasible, as the plant complies with clean energy guidelines. Water and other resources could also be recovered but this has not initially been assumed as this would reduce viability. It can be added later if feasible.
Technology	The design assumes multiple gasifier units operating 24/7/365, expandable to cope with increasing waste volumes over time, as the community grows. The recommended plant location is the Public Works Yard, located at the junction of Esquimalt and Canteen Roads, which is owned by the Township.
Governance	As proposed the facility will be owned and operated by the Township with options to outsource operations to a qualified operator. Alternatively the facility can be financed and operated under a concession or similar contract where Esquimalt shares in the revenue potential but risk is reduced. Unless taxpayers fund landfill expansion, Hartland Landfill is scheduled to close between 2045 and 2048. Expansion would

Perspective	Comment
	increase GHGs and require both taxpayer investment and long term taxpayer support, and would not contribute to landfill diversion or GHG reduction objectives. It would also conflict with provincial and federal objectives, programmes and regulations. The carbon dioxide reduction and sequestration potential is considered the most significant single opportunity for the Township to achieve its 2030 and 2050 carbon reduction goals.
Intangible benefits	There is potential for intangible benefits that stimulate economic development, as shown by examples in Europe. This attracts like-minded businesses, enhances education, training, eco-tourism and investment. Experience elsewhere is that residents increase active participation in quantifiable climate change action, generating community involvement and pride.

Appendix 1: Team & Limiting Conditions

Study Team & Acknowledgements

This report was prepared by Graeme Bethell, M.Sc., QEP, a pollution prevention, utility management and gasification specialist; Chris Corps, B.Sc., a Land Economist specialising in complex business cases, feasibility and viability assessments for sustainable land development and energy projects; with technical assistance and input from James Pratt, RPP, a public consultation specialist; Michael Wolinetz, a greenhouse gas quantitative and assessment specialist; and Albert Bicol, P. Eng., an international energy systems and sustainable energy master planning and development specialist. Information on gasification yield, performance, testing and pricing was kindly provided by Dr. Matt Summers, P.Eng, of West Biofuels Inc. in California and by staff at TSI Inc., of Washington State, including VP Andrew Johnson and Matt Hoffman P.Eng. Their contributions are gratefully acknowledged.

The authors acknowledge that the Township of Esquimalt exists on unceded Lekwungen lands, home of the peoples now known as the Esquimalt and Songhees Nations.

We are grateful to the Township of Esquimalt for providing information for the report and guidance on options, and waste haulers active in the region for assessing wastes in Esquimalt and information on different waste types. Lastly we are grateful for kind assistance of system manufacturers and providers for their help assessing how to optimize systems and in pricing options.

Assumptions & Limiting Conditions

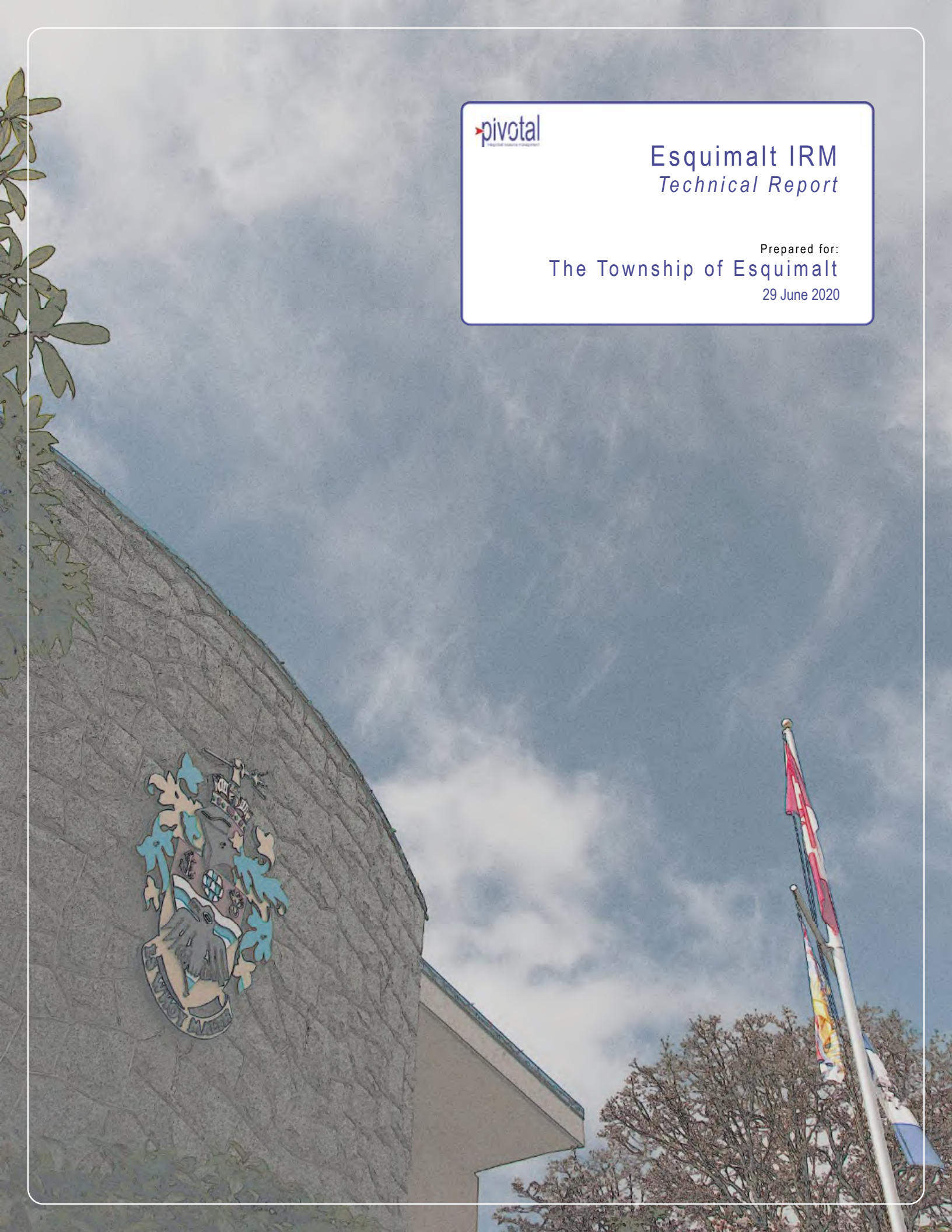
The information in this document was compiled for the purpose of providing a preliminary assessment of the potential for implementing IRM of waste streams generated in the Township of Esquimalt using gasification. The authors have prepared this document at the request of the Township, solely for this purpose.

Information in this report from which conclusions have been derived has been provided by the Township and third parties. While reasonable skill, care and diligence have been exercised to assess the information acquired during the preparation of this report, no guarantees or warranties are made concerning the accuracy or completeness of this information, although the information provided by others is represented to be accurate by the suppliers. This document, the information it contains, and the basis on which it relies and factors associated with implementation of resource recovery from gasification are subject to changes which are beyond the control of the authors.

IRM requires an inter-disciplinary approach. As a result, components of the document were prepared by professionals in one field who are not qualified in the other fields of study. While diligence has been applied to the assessment, the scope of this report did not allow for full inter-disciplinary cross-verification of all components.

This report includes screening-level estimates which should not be relied upon for design or other purposes without verification, for example through detailed feasibility studies and especially as recommended by the authors. The authors do not accept responsibility for the use of this report for any purpose other than that stated above and do not accept responsibility to any third party for the use, in whole or in part, of the contents of this document. This report is intended to provide a preliminary assessment to meet the purposes of this study and cannot be applied to other jurisdictions or applications without conversion, analysis and confirmation with the authors. Any use by any entity or client, consultants, sub-consultants or any third party, or any reliance on or decisions based on this document, are the responsibility of the user or third party.

Parties seeking to rely on this report should not do so without first satisfying themselves to the accuracy and extent of the contents, which have been prepared for the specific purposes of the client.



Esquimalt IRM

Technical Report

Prepared for:

The Township of Esquimalt

29 June 2020

Mr. Jeff Miller
Director, Engineering and Public Works
The Township of Esquimalt
1229 Esquimalt Road
Esquimalt, BC V9A 3P1

29 June 2020

Dear Mr. Miller

ESQUIMALT IRM - TECHNICAL REPORT

We are pleased to submit the IRM Technical Report for your review and consideration, which we understand will be presented to Council on 6th July, 2020. We trust this assists and as there is much to digest in this study, will be pleased to answer questions or expand on aspects as required.

Yours truly,





Graeme Bethell
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1 Executive Summary

During the planning process for CRD's McLaughlin Point sewage treatment plant planning, it became clear that Esquimalt's community supports Integrated Resource Management, which arose from a provincial study and initiative published in 2008. After CRD decided not to pursue IRM, Council commissioned the current study to assess whether and how it might implement IRM for Esquimalt's wastes, given community support.

Summary Metrics - Recommended Option	*Scenario 2b*
General	
Estimated total capital cost (upper range costing)	≈$21.3m
Estimated annual O&M cost	≈$1.7m
Tonnes/yr landfill diversion	≈9,000 t/yr
Public sector model	
Internal Rate of Return (before debt)	22%
Total net taxpayer profit (30yr life cycle)	≈$226m
Taxpayer dividend per yr, avg 1st 10 yrs	≈$360/home
Private sector model	
Leveraged IRR (30% equity, net of debt)	48%
Total net profit after debt, leveraged (30yr life cycle)	≈$235m
Environmental & resource recovery	
GHG tCO2e/yr reduction	4,500 tCO2e/yr
CO_2e reduction, life cycle vehicles equivalent	29,100 cars
Total biochar tonnes/yr	1,210 t/yr
Sequestered carbon (30yr life cycle)	≈107,000 tCO2e
Face yield, mw thermal	≈2.00 mw
Total recovered mw thermal (30 yr life cycle)	≈528,000 mWht

Figure 1: Key Metrics - Recommended Option

Our main conclusion is that IRM can be implemented in Esquimalt and that this can reduce taxpayer costs, lower Green House Gases and sequester carbon, recover resources and maximize landfill diversion, which if more broadly adopted regionally, could extend Hartland Landfill's existing capacity to 2186. IRM has the potential to generate a profit, net of both capital and operating costs, and become a new source of revenues for the Township. There would be small additional employment and more money would remain and be re-spent in the community.

The Township collects ≈52% of the identified waste streams and while a plant could be implemented solely addressing this waste, it may only achieve breakeven. However private haulers are willing to contribute their wastes, which improves economies of scale, raises viability and which we recommend pursuing. A plant can be phased, starting at ≈$15m, rising to ≈$21m as the community grows. Optionally the cost could be reduced or even eliminated, depending on: (a) procurement approach; and, (b) grants.

We recommend the Township's Canteen Road Public Works site as a plant location and that the Township can meet the Ministry of the Environment and Climate Change Strategy (MoE) 5Rs pollution prevention strategy. The analysis has assumed use of this site and would need updating if a different site is chosen. Reviews by CRD (and this study) concluded Advanced Gasification is a suitable technology, as required by the Ministry's regulations to proceed.

IRM was originally conceived to viably maximize carbon reduction and resource recovery. Esquimalt has set a target of being corporately carbon neutral with 38% reduction by 2030 and carbon neutral by 2050. At full operation the net projected GHG reductions would be ≈4½ times the Township's corporate GHG profile or ≈12% of the entire community's GHG profile, i.e. ≈4,500 tCO_2e annually (≈223,000 tCO_2e over its lifetime), while potentially

yielding a dividend to taxpayers of ≈$360 per home, which equates to a net life cycle profit/dividend of ≈$227m. The recommended option can also sequester ≈107,000tCO_2e over the project's life cycle, which means IRM could be carbon negative – i.e. beyond carbon neutral – while reducing taxpayer cost, net of debt and all other costs. This is a considerable benefit and achievement, but we caution will only be achieved with diligence.

We assessed options using the wastes collected by the Township, or by adding privately collected wastes. This would address the community's overall wastes and produce a more complete plan, but the extra volume would also improve efficiency, maximizing landfill diversion, financials, GHG reduction and resource recovery. An optimized IRM plan can potentially achieve the highest landfill diversion rate we are currently aware of in BC.

We concluded that not pursuing IRM will increase Esquimalt taxpayers' costs, because the regional use of anaerobic digestion requires continual taxpayer funding, while only dealing with ≈11% of Esquimalt's wastes. By contrast IRM can address 100% of the wastes currently collected by the Township and the revenues from IRM can avoid taxpayer support. Not pursuing IRM with Advanced Gasification will also miss the opportunity to maximize resource recovery, cannot optimize GHG reduction, and may either sub-optimize or miss the opportunity to sequester carbon.

Should Council decide to proceed further, we recommend a number of steps before making a major financial commitment. Key to these is testing, which is needed to prove that the system will work with the actual proposed wastes and to secure a manufacturer's guarantee. Comment on next steps is expanded in the report.

Experience with Advanced Gasification in Europe is that it stimulates economic development, attracting like-minded businesses and boosting eco-education, training and eco-tourism. In a European example it provided the community with a tangible connection to climate action and in Esquimalt for instance, might be by using a sterile biochar that removes carbon from the atmosphere. These and related aspects will be explored during public consultation.

In closing it is important to note that engagement was undertaken to confirm key aspects such as the potential to contract with haulers, manufacturer pricing and procurement options with alternate service delivery. Implementation is thus considered feasible and if undertaken appropriately, is expected to be both financially and environmentally beneficial for the Township and Esquimalt taxpayers.

2 Assumptions & Limiting Conditions

The information in this document was compiled for the purpose of providing a preliminary assessment of the potential for implementing IRM of waste streams generated in the Township of Esquimalt using gasification. The authors have prepared this document at the request of the Township, solely for this purpose.

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Parties seeking to rely on this report should not do so without first satisfying themselves to the accuracy and extent of the contents, which have been prepared for the specific purposes of the client.

3 Background

3.1 Introduction

The purpose of this study is to evaluate and assess the potential for an Integrated Resource Management (IRM) approach to manage waste streams generated by the Township of Esquimalt, which comprise: (a) liquid waste and liquid waste energy; (b) solid wastes collected by the Township – comprising MSW, food scraps, yard and garden wastes; and, (c) solid wastes collected by private haulers – which are similar to Township-collected wastes but are collected from businesses and higher-density development. The Township wishes to assess the potential implementation of an IRM system to see whether it can create additional benefits for the community from these waste streams.

In summary the Report comprises:

- A background on IRM, including a brief explanation of what it is, as well as existing work and reviews, and other contributory information;
- A general review of pertinent technology, Esquimalt's demographics, current waste volumes and an analysis of whether IRM makes sense for Esquimalt, alternate technological approaches and aspects contributing to IRM;
- An IRM assessment, including a description of project scenarios, analysis of possible locations, costs, revenues, intangible aspects, risk, procurement and other pertinent aspects;
- The report findings, covering IRM results based on financial, environmental and recovered resources, scenario selection and phasing, conclusions and recommendations.

A number of supporting appendices are included, containing further information referenced in the report.

Note that we have attempted to use laymen's terms to allow a broader range of readers to understand this document but inevitably some aspects are technical.

3.2 What is IRM

Integrated Resource Management or "IRM" is an approach to managing water, energy and waste that aims to maximise their use and value as resources, in ways that reduce costs to taxpayers (or even create profit) and reduce greenhouse gas emissions (GHGs) and pollution. IRM was created in 2008 as a result of a BC provincial study on how to maximize resource

recovery from waste, for the Ministry of Community Service and the BC Cabinet Committee on Climate Change.

IRM is defined as a fully integrated life cycle assessment and comparison of options by which resources can be recovered from waste, to maximize the benefits to the environment and the taxpayer. The life cycle options analysis allows the community to then determine the best options, thus bringing together the full financial and environmental impacts of options so that informed social decisions can be made (i.e. "Triple Bottom Line"). IRM thus makes the financial and environmental consequences transparent, so meaningful and informed public engagement can plan the best direction. Figure 2 summarizes Pivotal's IRM process.

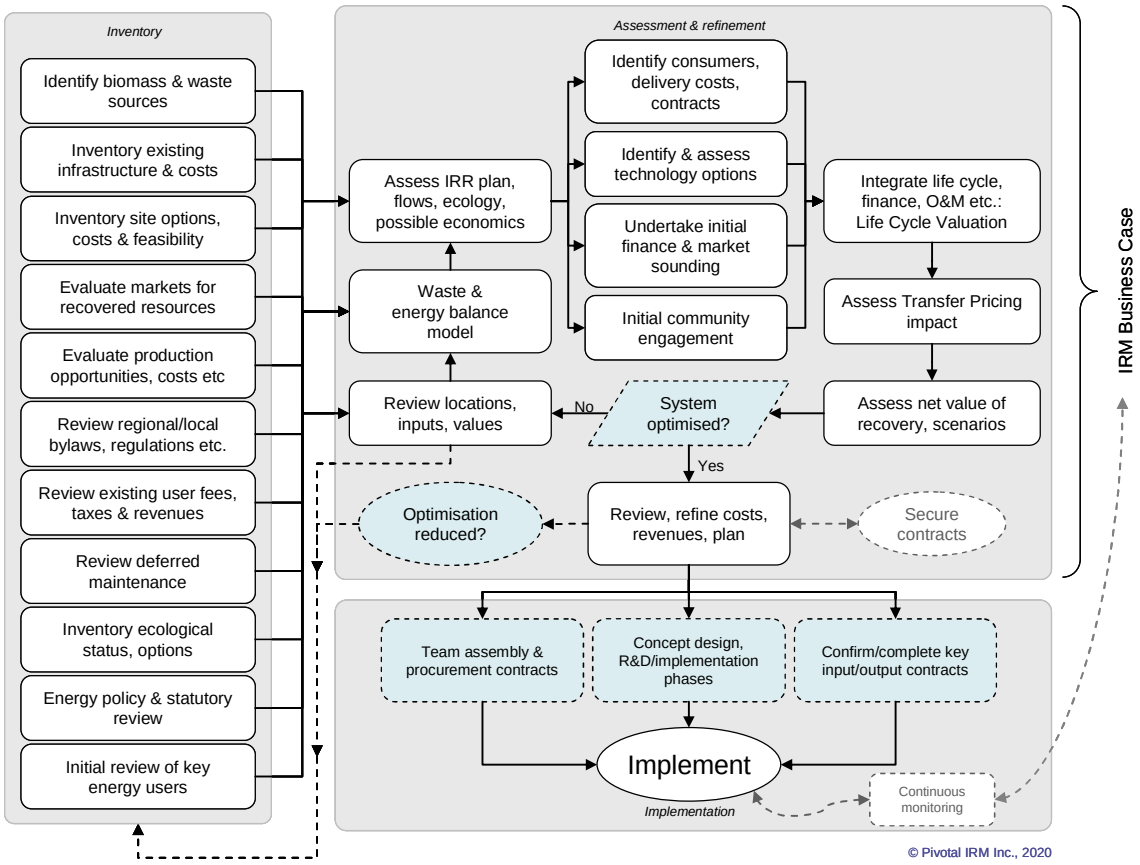


Figure 2: IRM Process Overview

IRM principles are primarily driven by the United Nation's Brundtland Commission on sustainable development,[1] whose main conclusion was that:

> *"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."*

Pivotal's IRM model has been independently audited and uses international standards to assess life cycle both environmentally and financially, so the full impact to future taxpayers

[1] For a summary see Wikipedia.

and the environment is clear. Our analysis and this report are aligned as closely as possible to internationally accepted valuation standards, to facilitate financing and transparency.

3.3 Prior IRM Studies

3.3.1 Resource Recovery Study

In April 2013 Kerr Wood Leidal (KWL) completed a study of potential resource recovery opportunities with a focus largely on wastewater. Resource recovery options included:

- Heat Recovery from raw sewage and effluent;
- Biogas from anaerobic digestion used to generate heat and/or electrical power, or upgraded to biomethane to replace natural gas;
- Reclaimed water from treated effluent;
- Biosolids from digestion combusted as fuel or applied to the land as fertilizer;
- Nutrient recovery from phosphorus (struvite).



Figure 3: KWL Resource Recovery Study, 2013

KWL concluded that the most readily available resources would be: heat from raw sewage or treated effluent; biogas combustion or upgrading to sell the biogas to the natural gas grid; and dried biosolids combusted in solid-fuel boilers. As it originated from a wastewater perspective, the study excluded consideration of solid waste and related IRM options.

The study recommended further assessment of a District Energy System (DES) to replace conventional heating and cooling, and assessment of a purple pipe system to distribute reclaimed water, including for use in irrigation systems. These have current application. It recommended assessing a Compressed Natural Gas (CNG) fuelling station fuelled by biomethane from the anticipated anaerobic digester.

KWL's report is now out of date for three main reasons: (1) the community rejected anaerobic digestion in Esquimalt so the associated resources and generation potential are located at Hartland, so their benefit is unavailable in Esquimalt; (2) other aspects such as land application of biosolids have been rejected – although CRD recently allowed temporary application; and, (3) KWL assumed sewage flows ≈50% higher than have since proven to be available, according to CRD's latest data on sewage flows, which means the study's main key assumption has proven to be an over-estimate. The study is thus largely not applicable without being re-commissioned, although aspects such as the DES continue to have relevance and are considered in this study. The energy advisors to our team, who specialize in Net Zero projects, recommend that KWL's DES and related linkages to the IRM plant need to be reviewed at an early stage, should this project proceed further.

3.3.2 Ministry of the Environment Study

We were also asked to comment on a report prepared for MoE by Stantec in 2011 which reviewed 'waste to energy alternatives,' mainly focused on incineration. The study appears to have mostly relied on a 2008 US DOE report and for example, did not consider any Advanced Gasifier systems from Europe or similar systems in Japan, which were in operation and included plants that had received international awards or were EU centres of excellence. While the report noted that gasification was a rapidly advancing technology, the study was limited in scope and omitted consideration of technologies recommended to CRD by their experts, so has limited application for Esquimalt's purposes.

3.3.3 IRM Task Force Study

Following provincial encouragement to consider IRM for CRD's liquid waste treatment project, CRD formed an IRM Task Force to assess how IRM might be implemented. The Task Force engaged technology providers and independent experts who recommended gasification, but CRD ultimately did not pursue this, which they explained was because provincial funding was linked to the production of Class A biosolids, which are produced by anaerobic digesters, not gasifiers.

Provincial legislation gives municipalities the primary responsibility and pre-eminence to decide how they want to deal with waste. Regional Districts have the responsibility for authoring a waste management plan for the region, which then has to reflect what communities want. Esquimalt is thus able to adopt an IRM approach if it chooses, which will in due course be reflected in the regional solid waste management plan. We contacted MoE for confirmation of this and they directed us to the documentation confirming it.[2]

The primary objective of the IRM Task Force was to determine whether IRM could provide financial and environmental benefits. The Task Force's overall conclusions were that IRM was feasible and would provide financial and environmental benefits.[3] The Task Force concluded that a structure was desirable to avoid jurisdictional conflicts – such as the municipal authority on waste but regional responsibility to plan – and supported a pilot project to treat biosolids, kitchen scraps and MSW. The concept was that a technology demonstration would address questions and risk, however the Task Force was disbanded before this could progress.

The Task Force and Technical Oversight Panel had nevertheless sought proposals from possible IRM providers, including gasification suppliers. It concluded that IRM could integrate solid and liquid wastes managed by CRD while also maximising resource recovery including generation of energy and even generate a possible revenue stream.

Further research was undertaken by HDR Consultants in August 2017 (RFEOI 16-1894) where proponents indicated that gasification could deal with MSW, kitchen scraps, biosolids and mixed wastes as single streams or in mixed recipes. Finally CRD confirmed that IRM has "*the*

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[2] See BC MOE waste management web site.

[3] See Report From The CRD Integrated Resource Management Task Force.

potential to impact every aspect of solid waste management in the region."[4] CRD ultimately decided not to pursue IRM. Other work has been undertaken on IRM within CRD's liquid waste management project, with additional comments provided starting on page 15.

3.4 Climate Change

The Township has completed Climate Action Revenue Incentive Program (CARIP) Public Reports for 2017, 2018 and we are advised 2019 is in preparation. These summarize plans and action to be taken to reduce corporate and community energy and greenhouse gas (GHG) emissions and report on progress towards achieving carbon neutrality. We also reviewed Esquimalt's community emissions total, available from provincial data.

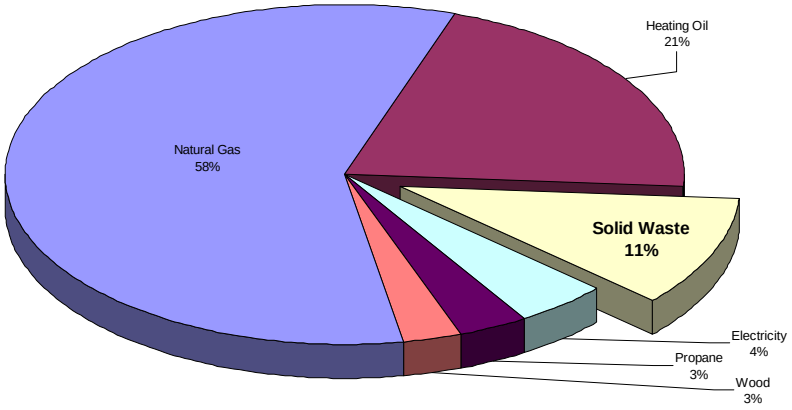


Figure 4: Esquimalt GHG Sources

As the Township's carbon reporting is available separately, we summarize that:

- Esquimalt's overall total GHGs published in the province's Community Energy & Emissions Inventory ("CEEI") 2012[5] as 37,644 tCO_2e. This is the total emissions from all documented activities in Esquimalt;

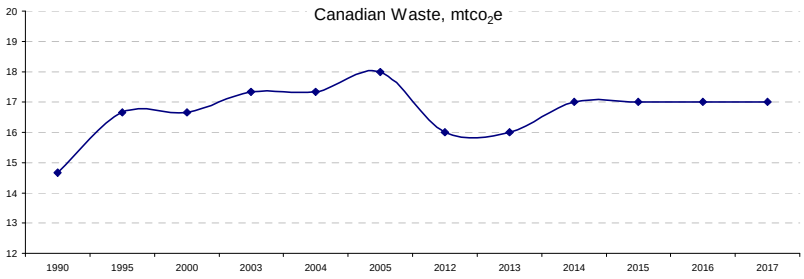


Figure 5: Canadian GHGs From waste, 1990-2017

- Esquimalt has established goal of reducing community GHG emissions by 38% by 2030 and to become carbon neutral by 2050;
- CEEI data shows 2017 Esquimalt waste as being 6,223 tonnes or 2,459 tCO_2e;
- Esquimalt has a municipal corporate annual balance of 1,005.25 tonnes per annum CO2e that it needs to eliminate to become carbon neutral.

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[4] CRD ERM 17-30 at page 2.

[5] We note that although an accepted calculation of tCO_2e, we consider it incomplete as some components are omitted. Esquimalt's actual total GHGs are expected to be higher than the provincial totals. See CEEI web site and data.

In summary for IRM to eliminate the Township's corporate operations' GHG profile, reductions have to exceed 1,005 tCO_2e. To eliminate the total emissions for the entire community, GHG reductions have to exceed 37,644 tCO_2e.[6] In that context it is worth noting the commitments by the World Green Building Council and United Nations that all buildings need to be Net Zero Energy or carbon neutral by 2050, and that IRM contributes to these resolutions.[7]

While Figure 4 shows that Esquimalt's waste contributes ≈11% of the overall community GHG total, IRM has the potential to replace heating – which is often provided by natural gas and heating oil. Thus, using energy recovered from waste to displace fossil fuels has the potential to reduce the community's carbon profile to a greater degree than shown by Figure 4. All scenarios prepared by us indicate the potential to eliminate the Township's corporate GHG profile while the percentage GHG reduction for the whole community varies depending on plant size.

Consideration also has to be given to increasing heat impacts from climate change. CRD's projections[8] indicate rising temperatures year-round with reduced rainfall in summer months. Rising temperatures will tend to shift demand away from heating towards increased cooling – both of which can be provided from gasification of waste and are included in our models. CRD also projects greater storm events during winter, spring and fall, which is expected to worsen sewage influent and infiltration. During the June-September months from which the Average Dry Weather Flow ("ADWF") are calculated[9] volumes are projected to fall by ≈20%, but temperature dilution from I&I may reduce energy recovery potential.

Efforts to reduce emissions from waste have resulted in increased waste separation and sorting so organics – a major GHG contributor – can be managed differently to reduce their GHG impact. Unfortunately Figure 5 shows that emissions from waste have been fairly stable recently, despite waste separation and landfill diversion efforts. Local trends are similar, since CRD's data shows that organics diversion has been risen to ≈39% between 2009 and 2016 (Figure 21), at appreciable cost (in some instances exceeding $400/tonne as compared with landfilling at $110/tonne, unsorted). Although this will have improved since CRD's last study, this means ≈61% is still being landfilled. Multiple communities have experienced difficulties with converting food waste into compost[10] and a Vancouver biomass expert notes that demand and price for compost is low. This has resulted in companies becoming marginal or failing[11] – as shown for example in Richmond, Duncan, Saanich and at Duke Point. The main challenges are summarized as: (a) community pressure – both for and against; (b) odour – the largest challenge; (c) separated organics being contaminated, e.g. with plastics; and, (d) lack of profitable markets for the resulting compost.[12] This is discussed further as part of section 4.1 *Technology Review,* on page 15.

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6 Source: BC Provincial CEEI reports.

7 See United Nations' Sustainable Development goals and the World Green Building Council's Net Zero site.

8 Climate Projections for the Capital Region, CRD, 2017

9 Per Stantec memo to CRD, 2017: "*...average dry weather flow (ADWF)... is the sum of the base sanitary flow plus the flows attributed to groundwater infiltration during the... period from June 1st to August 31st.*"

10 See for example online articles #1, #2, #3, #4, #5, #6, #7.

11 A Richmond facility attracted the most complaints and largest fines in BC history, was facing fines of up to $1m/day and had a cleanup cost was estimated at ≈$24m.

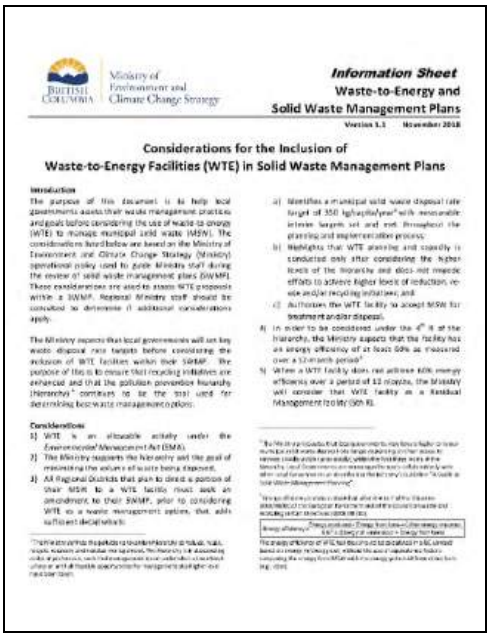
12 As examples of this: The operator of a (now closed) Saanich plant reported as much as 50% of the organics had to be rejected due to contamination. A composting operation at Duke Point, Nanaimo had to be refinanced and was resold twice and contracts were restructured. A Duncan site processing Saanich waste is under pressure from odour complaints. Smaller farm compost operations in Saanich also report contamination problems.

3.5 Regulatory

The key main regulatory processes that IRM will be required to meet are: (a) the Ministry of the Environment and Climate Change Strategies' (MoE) pollution prevention 5R's guideline, aimed to maximizing recycling, reuse etc.; (b) MoE's facilities and emissions regulations; (c) compliance with regional waste management plans; and, (d) Esquimalt's community support and approvals.

3.5.1 5R's Guidelines

MoE's guidelines for the management of wastes is based on a pollution prevention hierarchy to Reduce, Reuse, Recycle, Recover and Residuals Management. This prioritizes levels by which municipalities should approach waste management, i.e. options for any material should be considered at each level, before moving down the hierarchy. The purpose is to ensure waste management practices maximize recycling before considering a waste to energy recovery solution. The policy is also to encourage use of the hierarchy as a tool to determine best waste management practices.


Ministry of Environment and Climate Change Strategy

Information Sheet
Waste-to-Energy and Solid Waste Management Plans

Considerations for the Inclusion of Waste-to-Energy Facilities (WTE) in Solid Waste Management Plans

Figure 6: MoE W2E Guidelines[13]

Much of the waste in BC is collected by private haulers who either deposit it at a regional landfill or at a regulated facility typically other than a landfill, such as a Blue Box recycling centre which are available across BC. Under current waste management plans resource recovery has primarily been focused on composting programs for kitchen scraps and other organics with a few municipalities and regional districts using anaerobic digestion to recover biogas to heat the digesters and/or for electrical production.

There are no examples where thermal (gasification) treatment is being used to produce synthesis gas (syngas) for the recovery of electricity or heating/cooling. This is unfortunate because energy production is higher than Anaerobic Digestion but toxic chemicals and pathogens are destroyed, GHG emission reductions are significantly higher, the resulting biochar is more valuable than compost as a soil amendment or filtration medium and the process also generates revenue streams from the sale of energy, GHG credits and biochar.

The CRD has enacted Bylaws for managing biosolids using anaerobic digestion to produce biogas, which will be used to maintain optimum temperature of the digesters. We understand the current proposal is to barge residual biosolids to the Lower Mainland for burning with coal in a cement kiln as the final disposal measure, however it would be possible for this to be diverted to Esquimalt's gasifier if this was acceptable to the community. We understand final

[13] See MECC web site.

contracts have not yet been signed and barging is an appreciable cost for CRD and accepting these in Esquimalt could reduce costs. CRD's plan is not final at the time of writing and may be worthy of discussion, but only if accepting these wastes is acceptable to the community.

3.5.2 Facilities and Emissions Regulations

In order to consider energy recovery, MoE expects that local governments will follow the 5R's guidelines, which outline the primary elements for approval of a proposed waste to energy recovery facility (Figure 6):

- Municipal and Regional waste disposal rates must be at or below MoE's guideline rate of 350 kg/capita/yr before considering the inclusion of an IRM energy recovery from waste;
- Partner with their Regional District to amend their regional Solid Waste Management Plan (SWMP) to include the IRM energy recovery facility;
- The proposed IRM facility's energy recovery efficiency must be a least 60% for the selected technology;
- The proposed IRM facility's emissions must meet the Operational Certificate requirements of a waste to energy mass burn incinerator;
- There must be adequate public consultation of the proposed IRM energy recovery project before approval can be provided.

In summary the disposal rate and energy yield meets 5R's guidelines. IRM gasification is also expected to meet MoE's emission standards. Therefore, we conclude the Township and its proposed use of Advanced Gasification is able to meet and exceed Ministry guidelines.

3.5.3 Solid Waste Management Plan

The current CRD Solid Waste Management Plan (SWMP) has commenced the process to be updated and they expect a draft of the new SWMP will be presented to the CRD Environment Committee and the Board in the fall, which provides adequate time for the Township to submit their intention to have an IRM facility, to be included in the new SWMP. In preparation, the Township should confirm community support for an IRM approach.

The primary issues MoE requires assessed include:

- Best Available Technology - Several reviews of alternative energy recovery technology options have been undertaken by CRD and the IRM Task Force that demonstrate the Township has approached this project in a manner to ensure that the IRM facility will use best available technology. The independent review by CRD confirmed Advanced Gasification as a technology but per request, we have included a technology review and comparison starting on page 15;
- Financial Viability - Extensive TBL financial modelling has been undertaken to ensure that the selected IRM approach maximizes resource recovery and is the most cost effective option available;

- Air Emissions Compliance - From the manufacturer's records and from previous waste testing the selected IRM option shows compliance with all environmental air emission regulations for municipal waste incinerators. Calculation of actual air emissions from Esquimalt's waste is planned to be undertaken at the next stage of the project and there are no indications this will not comply;
- Site Specific Issues – MoE requires site-specific issues to be considered, which are explained in greater detail later. Note that several gasifiers have been approved in BC[14] and all meet site specific requirements set out in their permit authorizations. There are no issues currently known that suggest an IRM facility in Esquimalt would not be compliant and permitted;
- Public engagement – Engagement through the West Shore Innovation Days, the IRM Task Force public engagement, and the engagement to follow as part of this study contribute to meeting MoE's requirements for public engagement. Prior engagement has demonstrated support, hence this study;
- Biochar Value - Biochar production from the IRM facility will be tested prior to final selection to confirm its use as a soil amendment and its potential to be used as air or water filter medium where the market is much more valuable.

In summary, the Township's proposed IRM direction appears consistent with and able to meet or exceed current provincial government requirements, as the technology has been reviewed and what is being proposed is the best available. This study confirms IRM using gasification can provide optimum resource recovery and is the most cost-effective approach. The Township's per capita waste levels appears to comply with the 5R's guidelines enabling it to proceed to energy recovery. Combined, this confirms that Esquimalt has met the initial Provincial requirements to proceed with the detailed planning and assessment of an optimized IRM facility in Esquimalt to be part of the Regional SWMP.

3.5.4 Municipal Development Permits

Esquimalt's Development Permitting (DP) process arises from the development application procedures and fees outlined in Bylaw 2791 which sets out the process for the development of an IRM facility and addresses:

Timing – A development permit application must be submitted to the Director of Development to commence the permitting process. This application would include a selected site; description of the complete IRM facility with inputs/outputs; GHG profile; MoE approval process; public consultation outcomes and conceptual designs. We have allowed ample time for this to take place by providing a two year planning and preparation allowance in modelling.

Site zoning – zoning requirements are outlined in Appendix A of Bylaw 2791 and in this case the IRM facility will require Industrial Zoning. If the zoning has to be changed to allow gasifier operations, it will trigger a requirement for a site profile to be undertaken under the Contaminated Sites Regulations, which may increase costs slightly and extend the timeline for overall permitting requirements.

[14] For example in Victoria, at UBC in Vancouver and UNBC's northern campus in Prince George.

Application for Development – A detailed project description will have to include all features of the pre-development phase including concept design, site geology, lot size, zoning and MoE's Environmental Impact Assessment (EIA). The EIA would include a description of the technology chain from feedstock receiving and processing to the gasification system and thermal oxidation/heat exchanger with air emissions treatment. It will also include the impacts from onsite construction, commissioning followed by long term operations.

Public consultation – A public consultation process must be conducted with residents within 100 m of the proposed site as per Appendix B of Bylaw 2791. The consultation process must be carried out in accordance with the terms of the DP process adequately advising residents of the public consultation meetings via mail and flyers, provide details of where, when and at what location consultations are to occur as well as outline the opportunities to provide input.

Development application fees – The development permit fees are outlined in Appendix B of Bylaw 2791 and are likely to be in the order of $25,000.

3.6 Grants

All levels of government manage grant and funding programs to encourage research development and demonstration of clean energy technologies in Canada. Canada's investment in clean energy is an important part of building a clean economy and therefore, grants are available.

There are multiple grant sources and programmes change frequently, so while some may end, typically others replace them. Suitability, availability and application will need to be reviewed should the project proceed further. A list of identified current grants is included in *Appendix 4:Grants* on page 83. Other grants become available periodically without notice, for example at the time of writing, there is discussion that COVID-19 economic stimulus grants may be made available for green infrastructure, which an IRM plant should qualify for.

While grants are generally designed to be beneficial, they usually involve meeting goals and objectives from the grant programme's objectives that may not entirely align with a specific project's capabilities or even the community's purpose. They also usually require cost sharing and often involve third parties, for example with federal/provincial grants. Application and approval thus usually adds risk, cost and sometimes considerable delay. Some grants have criteria that are an aimed at other technologies or processes and may thus be an imperfect fit for gasification, while other grants can be smaller than the cost of applying for them. There is also usually extra reporting so the grantor can document that their objectives are being achieved and the money expended correctly. In short while grants are often attractive, they are not always as helpful as they might seem.

The main difficulties with grants are that they can raise costs, cause delays, increase uncertainty and risk. We have for current purposes assessed system viability without relying on grants, but included a general comment about the impact that grants may have on viability. We generally recommend clients do not rely on grants and even avoiding them if possible.

4 Analysis

This section reviews pertinent IRM technologies, proceeding to narrow this down to and compare anaerobic digestion with gasification and from this, identifies the best available technology option. We then analyse population statistics and growth projections in order to estimate future volumes of both liquid and solid waste streams, to assess possible resource recovery opportunities. While the scope of work for this study focused on gasification due to prior work by the community, during meetings with staff it became clear that the study needed to confirm and comply with MoE requirements, so technology options were reviewed and documented accordingly. The section concludes with a review of what is needed to understand feedstock characteristics from initial laboratory and physical testing, to the process train and possible output products.

4.1 Technology Review

4.1.1 Possible Options

In order to consider energy recovery from waste, the Province requires a review of suitable technologies and that the process to consider them has met it's 5R's process. As appreciable work has been undertaken by CRD on technologies, we have thus undertaken a brief review of how Esquimalt came to support IRM with a preference for gasification, including technology assessment, community exposure and feedback, with summary comments on technologies.

CRD assessed liquid and solid waste treatment technologies for the Core Area Wastewater Treatment Plant at McLaughlin Point, from 2006 to 2016. Since 2006 CRD has held at least six proposal calls including Requests for Information, Requests for Expressions of Interest and one Request for Technical Innovation, i.e. technologies have been exhaustively reviewed previously but none have proceeded. CRD's studies mainly focused on recovering resources from biosolids but proposals were able to service both liquid and solid waste streams.[15] During this time and because Esquimalt was the focus for plant location, the community provided comment on options, which led to local community support for IRM and gasification, consistent with provincial encouragement to adopt Integrated Resource Recovery – similar to IRM but omitting financial assessment. CRD's studies thus provide background on technologies, albeit with main focus on residuals management, and are summarized below.

CH2M Hill, Associated Engineering and Kerr Wood Leidel provided advice to CRD between 2006 and 2009, where a range of technology options were considered. With regard to biosolid residuals, these included low technology options such as willow coppice land

[15] CAWTP Assessment of Biosolids Treatment Appendix L, page 16, Table 3.1, CRD 2016.

applications. Significant community resistance to land application was based on the potential for contamination,[16] and in 2011 CRD Board banned biosolids land application. Proposals calls and options for alternate technologies were constrained as a result and although the province stated that other options would be considered, and despite community resistance that included protests and marches to the Legislature, CRD retained focus on digestion without having resolved biosolids residuals.

From 2009 through 2015 Stantec considered 21 options and in 2016 MoE approved CRD's plan for thermophilic anaerobic digestion and drying the biosolids. Under this, the West Shore communities developed Westside Solutions' Innovation Days chaired by Esquimalt and Colwood Mayors, which held a proposal call and received a range of presentations on technologies, which covered wastewater treatment and biosolids management, i.e. solid residual organic wastes, for which the two main technologies advanced were incineration and Advanced Gasification. CRD did not ultimately follow on the recommendations, but Innovation Days included public participation over multiple days and resulted in community support for IRM and gasification.[17] These contributed to the Township's current direction.

In terms of solid waste studies locally, in 2011 CRD, the Regional District of Nanaimo and Cowichan Valley Regional District commissioned a study[18] assessing options for a large W2E system serving all three regions. It is unclear why a centralized system was stipulated given decentralized systems are feasible, as documented by CRD elsewhere. The stipulation for a centralized plant added both capital and ongoing costs, and increased GHGs. This would only have been needed for incineration-based options, which the study favoured. Other factors in the study also constrained the conclusions, e.g. generation of methanol. Cost was thus increased by these scope limitations and direction (e.g. forcing three regions' waste to be transported centrally, even to Gold River). The study's scope and assessment limitations resulted in unfavourable conclusions and the direction was not pursued.

Composting is an option for organics processing, and is consistent with "cradle-to-cradle" approaches providing the resulting compost is usable, but this has been challenging as previously noted.[11] For composting to be useful, the product must have utility or it fails to support cradle-to-cradle or reduce carbon emissions – the primary objectives. In that regard a local hauler reports that there is no demand for compost and that they have four years' unsold supply on hand. A community watchdog reports that Saanich peninsula farms will not take organics due to community concern about contamination and toxins, i.e. there is limited or no demand for the composted products even if they are free (Class A Biosolids are potentially problematic for similar reasons). These comments apply to food production lands however, as two farms using compost for non-food production report challenges and additional costs separating contaminants within the compost or using the compost viably. The impact on lands using compost if they are returned to food production is unknown.

Whether well founded or not, we conclude there are challenges using compost in this region. Given the foregoing and as composting has a nutrient approach similar to anaerobic digestion, but without the potential to yield other products, composting has not been considered further but anaerobic digestion is a suitable option for consideration.

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[16] CRD's experts noted that land application might have 22 years' life before contamination would be problematic (Brown & Caldwell 2009, ss3.2.1.2).

[17] Other than Innovation Days, public support was also indicated during McLoughlin Point rezoning, in several publications and with presentations from groups including Esquimalt Residents' Association, RITE Plan and STAG.

[18] See Tri-Regional Study, AECOM, 2011.

A number of other technologies are in the development stage and may become technologies suitable for consideration in waste management, such as Biofuels generation. For example demonstration-scale projects in Alberta and Nova Scotia are progressing, but have not proven themselves stable enough to date, or have the financial substance to guarantee both performance and yield, such they can prove and then underwrite, performance with Esquimalt's waste streams.

4.1.2 Selected Technologies

The nature, volume and composition of Esquimalt's waste, combined with the rejection of incineration and problems with composting, leave few acceptable technology options.

Analysing CRD's 2016 composition study we find that organic wastes are ≈11% of total dry wastes received at Hartland but ≈21% of the wet volume (Figure 20). Because of the high moisture content, engineers often focus on technologies able to handle wet waste and do not always consider how the water can be inexpensively recycled and maximise the energy, which is in the dry portion of the waste. Doing so would halve the volume being managed, but also significantly reduce capital and operating costs, by concentrating on the solid fraction of the waste – the part that contains the energy and resources. The water itself is obviously also a recoverable resource if properly treated.

	Digester			Gasifier		
CRD waste category	Y/N/R	Wet	Dry	Y/N/R	Wet	Dry
Organic Waste	Y	28,485 t	9,970 t	Y	28,485 t	9,970 t
Paper and Paperboard	R			Y	20,790 t	13,514 t
Plastics	N			Y	19,305 t	17,375 t
Wood and Wood Products	N			Y	22,950 t	18,360 t
Construction and Demolition	R			R		
Textiles	N			Y	7,965 t	5,576 t
Composite Products	N			Y		
Other	N			N		
Ferrous Metal	R			R		
Glass	R			R		
Electronics	R			R		
Hazardous Waste	N			N		
Rubber	N			Y	1,080 t	1,080 t
Non-Ferrous Metal	R			R		
Bulky Objects	N			N		
Household Hygiene	N			Y	9,315 t	3,726 t
Total suitable		**28,485 t**	**9,970 t**		**109,890 t**	**69,599 t**
Yes, handles it		21%	11%		81%	75%
No, doesn't handle it		51%	58%		6%	8%
Recycle		28%	32%		13%	17%

Figure 7: Technology Comparison by Waste Category[19]

The focus on solid waste "as is" rather than drying it, often results in waste separation and selecting anaerobic digestion, which although rejected by the community for the Viewfield Road location, is still a valid technology and generally an improvement over composting. We should note however that because of the focus on 'wet' solutions such as digestion, analyses almost always: (a) does not assess or manage the water content of solid wastes separately; and, (b) omits consideration of other options such as gasification, which could halve plant size. Most studies do not mention or assess over 90 gasification plants operating in Europe and Asia processing MSW, scraps and biosolids with an equivalent total of more than 1,000 years' operation. One manufacturer for example, has 28 systems with as much as 57 gasifiers, operating since 1980. Omitting consideration of these plants and how to manage moisture differently contributes to technology choices that increase cost and reduce recovered resources, analysed in the next sections.

The primary two options considered for Esquimalt's current purposes are thus anaerobic digestion and Advanced Gasification. Their ability to handle wastes is compared in Figure 7,

[19] Source: CRD 2016 Solid Waste Stream Composition Study, analysis by Pivotal.

which uses CRD's 2016 waste composition assessments, which will likely be similar to Esquimalt's waste composition.

Note that while Figure 7 shows gasification can handle a wide variety of wastes, this does not preclude them being handled by recycling, as this gradually improves. Some provinces have found that the economics of recycling are proving unviable with little demand for products, so Figure 7 shows that gasification provides the option to address waste streams if recycling is unworkable, or if new recycling methods become available, those wastes can be extracted and recycled as and when this becomes possible and desirable. Notably, gasification is less reliant on waste separation or dry wastes, which is critically important for anaerobic digestion or incineration for example. This may be attractive for some residents.

We comment on the technologies as follows:

- **Anaerobic digestion** uses bacteria to digest organic compounds in sewage to primarily produce biogas, usable to generate heating, cooling and power. Approximately 11% of CRD waste is suitable for anaerobic digestion (Figure 7), which have been extensively reviewed by CRD as part of the new liquid waste system. The biogas is typically burned to heat the digesters and operations building, and to provide hot water, but can be cleaned up to be saleable as a Renewable Natural Gas ("RNG") at as much as ten times the cost of natural gas. However this biogas will be used to maintain a suitable operating temperature in the digester, so the only potential GHG offset is likely to be from avoidance of landfill off-gassing. CRD's 2016 business case for the Hartland digester indicated no plan to sell methane yield Renewable Natural Gas and did not provide an assessment of the carbon footprint of the project.[20]



Figure 8: Planned Anaerobic Digester, Hartland Landfill



Figure 9: Digester, Annacis Island

  Biosolids are produced as a residual from digestion, which has historically been used for soil augmentation. However there is rising concern locally that this may contribute to soil toxicity, due to increasing volumes of chemical and pharmaceutical materials in waste, which digestion does not destroy. Pharmaceuticals can also disrupt the biological processes in the

[20] CRD more recently indicated they may sell digester methane by redirecting landfill gas to heat the digester (which was previously used to generate and sell green electricity). Landfill capture was also expanded recently, funded by CRD taxpayers, but no viability assessment was available. As both the digester and landfill capture are taxpayer-funded costs, the viability of RNG production is unclear but is accepted to be a cost not a profit.

digester, resulting in sub-optimal performance. Residuals from digestion are typically ≈50% of the initial feedstock and may not be permissible for local land application, so need to be landfilled or incinerated, resulting in potential residual GHGs and costs. Currently CRD is planning to transporting these residuals to burn them as part of cement manufacturing in the Lower Mainland. Digestion is thus not in itself a complete solution for the wastes it process and requires additional technologies to be added.

The net energy yield from the biogas and residuals disposal has been calculated[21] to be 239GJ net per day (2.1 MW/tonne). Air emissions from biogas combustion are permitted in BC. Note that because digestion only addresses ≈11% of the waste stream, digestion and recycling combined leave ≈63.5% of the waste stream unaddressed, once residuals are taken into account.

Digesters typically require extensive land area (Figure 8) as they comprise multiple units typically containing up to ≈30 days' supply of gas. They are located in less populated areas due to risk of odour and explosion, which can be managed but adds risk.[22] Locating a plant in Esquimalt is complex due to site limitations and was firmly rejected by the community when CRD proposed this for the Viewfield Road site.



Figure 10: RotoGasifier, Louisiana

- **Gasification** is a chemical and physical process where the feedstock is heated in a controlled chamber with minimal oxygen to produce a synthesis gas ("syngas"), usable to generate heating, cooling and power. Feedstocks need to be carbonic in nature to produce energy making them suitable for a range of wastes. As opposed to incineration (which burns waste, requiring extensive air emissions control systems), gasification is a quasi-manufacturing process that minimizes the need for emissions control systems and is operated to avoid generating toxins.[23]



Figure 11: Dockside Green Energy Plant

Approximately 75% of CRD waste flow is suitable for gasification. Residuals are primarily biochar and fly ash, which are usable and saleable. Gasification and recycling combined,

[21] See CRD biosolids web pages.

[22] See for example: odour articles #1 #2 #3; explosion articles #1 #2 #3.

[23] By contrast half the cost of incineration plants are typically their emissions control systems to manage particulates and toxins.

should be able to treat the entire municipal waste load, when combined with Blue Box recycling and Extended Producer Responsibility programs for paints and other household hazardous materials.

In terms of energy recovery, gasifiers generate syngas (synthesis gas – a mixture of gasses) used for heating, cooling and other purposes. Output has been measured at ≈ 3.23kw/tonne, with syngas emissions similar to natural gas boilers whose emissions are permitted in BC.

Gasifiers do not require large areas (e.g. Figure 10, where a unit roughly double in size to Esquimalt's needs occupies a site similar to Esquimalt's Public Works Yard). Gasifiers generate little noise, odour and emissions, which means they can be located in urban areas with little impact to adjacent uses. A gasifier is located in Dockside Green adjacent to residential development (Figure 11).

4.1.3 COMPARISON

In 2017 The Chair of CRD's IRM Task Force asked us to compare the life cycle cost of anaerobic digestion with gasification for biosolids management, using CRD budget projections provided to the Task Force. We have updated this with gasifier revenues, operating and maintenance costs described in sections 5.3 and 5.4 starting on page 43. Feedstock delivery is excluded and the summary is after debt in current dollars, i.e. excluding inflation.[24] The results are tabled in Figure 12 and show that whether on a cost basis ("Annual payments") or net cost basis ("Cost/revenue per tonne"), gasification is financially superior. Note that these costing were not developed by Pivotal but use actual bid costs and CRD's business case for the digester, with budget calculations from CRD's engineers for the gasifier, which are high, i.e. more accurate costing would further improve the gasifier's financial advantage.

	2016 Digester	2016 Gasifier
Capital plant	-$127.0m	-$50.0m
Pmts 25yrs @ 4%	-$7.8m/yr	-$3.1m/yr
O&M	-$3.0m/yr	-$1.6m/yr
Annual payments, yr 1	-$10.8m/yr	-$4.7m/yr
Revenues, yr 1		+$5.7m/yr
Net costs/revenues/yr, yr 1	-$10.8m/yr	+$1.0m/yr
Cost/revenue per tonne/yr	-$1,291/tonne	+$122/tonne

Figure 12: Technology Financial Comparison

A technology comparison summary is provided in Figure 13 with comments as follows.

- Gasification is a cheaper solution both in initial and ongoing costs, life cycle costs and costs per processed tonne. Gasifiers can potentially be profitable whereas digesters require ongoing taxpayer-funded financial support;
- Gasification is a more complete solution. Whereas digestion leaves 63% of the waste stream needing to be addressed gasification should be able to convert it all;
- Gasification has a higher energy recovery yield at ≈3.23MW/tonne of waste compared to digestion at ≈2.1MW/tonne;

[24] Discounted cash flows have not been used as these distort the financial results for projects of this type.

- Gasifiers are scalable and can be phased. Digesters are more difficult to phase or scale and more reliant on projections being accurate;
- Digesters are usually located in remote areas due to odour and explosion potential, and Esquimalt has limited location options of this type. The community rejected digestion in 2013 for biosolids processing, with public meetings mainly citing odour, traffic and explosion concerns for the proposed location in an industrial neighbourhood with adjacent residential. By comparison gasification is simpler to locate as it requires smaller sites, thus improving location options; avoids odour production (as it is not a biological process with long storage durations); and experts in Europe and the USA confirm no gasifier has exploded in recorded history. For both digestion and gasification traffic would not change as the trucks are already circulating the community;
- In terms of risk, digesters' main risks are odour, explosion, finance and technology. Gasification has less operational risks but increased technology risks, with lower finance risk as the systems are cheaper to both develop and run. Both systems' risks are manageable and both the technologies and the yields can be guaranteed by substantial, qualified companies, thus addressing risks (subject to procurement approach);
- Digestion requires greater taxpayer support than gasification.

Aspect	Anaerobic digestion	Advanced Gasification
01 Site size	Large, usually multiple acres	Small - ≈1 acre for small plant
02 Location	Remote desirable	Can be urban
03 Typical location	Rural or away from population	Industrial or light industrial
04 Risks (see text)	Odour, explosion, sensitive to inputs, underperformance, life cycle cost, taxpayer support, soils amendment contaminents	Underperformance, taxpayer support, life cycle profit, technology history
05 Viability	Requires continual taxpayer support	Can be viable, taxpayer support minimal/contingent, if underperforming
06 Feedstock suitability	≈11% of volume Organics only	≈75% of volume Most solid wastes
07 Wastes not addressed by technology	≈63%	≈8%
08 Proven with proposed feedstocks	Expected to be possible with organics; unsuitable for wider waste streams	Satisfactory initial tests with MSW, organics, biosolids; more tests desirable
09 Phasing & expansion	Difficult/no	Yes, 6-10 months fabrication lead
10 Performance guarantee	Potentially but adds cost	Potentially but adds cost
11 Residuals	Half of feedstock	None
12 Recovered, saleable resources	Biogas for heating/RNG	Heating, cooling, biochar
13 Energy yield per tonne	2.1 mw/tonne or 7.6 GJ/tonne	3.2 mw/tonne or 11.6 GJ/tonne
14 Soils amendment yield/tonne	None - being incinerated	250-300 kgs per tonne, sterile
15 Capital cost per tonne processed, life cycle	≈-$232 per tonne	≈-$91 per tonne
16 Operating cost per tonne processed,	-$3.0m/yr	-$1.6m/yr
17 Total net life cycle cost/revenue, undiscounted, current $$, after debt	≈-$1,291 per tonne	≈+$122 per tonne
18 Est. extra costs/revenues	Unknown cost to handle unaddressed waste; at minimum landfill tipping fees	Landfill tipping fees for any improperly sorted residuals
19 Annual tCO2e reduction	Not assessed by CRD	≈8,500 tCO2e
20 Life cycle CO2e reduction	Not assessed by CRD	≈425,000 tCO2e

Figure 13: Technology Comparison

In summary while digestion is a better known solution, on almost all indices Advanced Gasification is better suited to address Esquimalt's needs.

MoE requires technologies be reviewed as part of waste planning and decisions concerning implementing energy recovery, which has been undertaken by several engineering companies for CRD over the past decade. CRD has held at least six expressions of interest, requests for information and proposal calls on this matter. The IRM calls resulted in the IRM Task Force recommending the best option as Advanced Gasification. Figure 13 and the IRM Task Force's review both point toward Advanced Gasification as a suitable technology.

4.1.4 Gasification System

In selecting technologies for municipal systems, a common approach is to exclude from consideration any technology unless there are multiple existing operating examples identical to that proposed – essentially a "proxy approach." In Esquimalt's case however few or no examples are likely to be processing the exact wastes and volumes at the required size, scalability and flexibility, or with the current or future mix of feedstocks, feedstock fluctuation and phasing in Esquimalt. The "proxy approach" is a leap of faith that an example in one location means it will work elsewhere, and not a guarantee that it will work in Esquimalt.

Instead of a proxy approach, we focus on risk management and proving a system will work. This uses a sequenced protocol where: (1) Esquimalt's actual wastes are tested in an existing system to prove the system will work with Esquimalt's actual proposed wastes; and, (2) based on physical and laboratory tests, the manufacturer then guarantees the system will achieve the yields, which are then used in the business case. Because this tests actual wastes and physically proves operation before taxpayer commitment, and links payment to performance, it is a faster and cheaper way to confirm that systems will work, and is more directed while reducing taxpayer risk before proceeding. More information is included in section 4.4 *Feedstock Process* on page 35, and we note that not all systems manufacturers are willing to consider this risk management approach.

A wide variety of gasification systems exist but several factors are key in determining the optimum gasification solution:

- Increasing investment is being made to maximize yield from gasifiers such as plasma arc systems. While these claim high energy yields they are generally less proven with high consumables, low up-time and can be susceptible to feedstock fluctuations;
- Some gasification systems are ultimately less viable due to high consumables and related operating and maintenance costs;
- Some systems do not scale well for the sizes needed for Esquimalt;
- Some systems have low up-time operation, e.g. some plasma arc systems;
- Systems such as fluidized bed designs while high yielding and stable, are better suited to RNG production and not well proven with variable waste feedstocks of the type proposed in Esquimalt, so again are less suitable for the current purposes;
- Unmodified updraft/downdraft gasification systems while generally proven, are better suited to predictable feedstocks with little variation, as they can otherwise suffer from aspects such as bridging, ash volatilisation and other factors that trigger reduced efficiency with periodic possible system shutdown, reducing viability and reliability.

Working in conjunction with experts operating existing plants and academics at three universities in Europe and the US, we reviewed over 90 gasification systems to assess we identify as best suited to Esquimalt's needs, summarized in Figure 14.

#	Technology	Units	MSW	Capex/tonne	Opex/tonne	RNG	Biochar	Scalable	Feedstock flexibility	mwT/tonne	Uptime	Economic
1	RotoGasifier	<10	Yes	Low	Low	Low	Yes	Yes	V. high	V. good	80-90%	Good
2	Circle Draft	<10	Yes	Low	Low	Low	Yes	Limited	Moderate	Good	50-75%	Moderate
3	Plasma	10-50	Yes	V. high	High	High	No	No	V. high	Excellent	25-50%	Poor
4	Fluidized Bed	50+	Probable	High	High	High	No	Limited	Limited	Excellent	75-90%	Marginal
5	Up/downdraft	50+	Probable	Moderate	Moderate	Low	Yes	Yes	Moderate	Good	50-75%	Moderate
6	Pyrolysis	50+	Yes	Moderate	Moderate	Low	Yes	Yes	High	V. good	75-90%	Poor

Figure 14: Gasifier Technology Summary

Note that a basic explanation of the main different types of gasification is provided in the *Glossary* on page 73, with Figure 14 explained as follows:

- The number of operating units is summarized by technology and includes variants. This is an estimate because typically more systems are operating than are documented.

- As the Township is expressly interested in MSW capability, we have summarized each technology's ability to handle this. Typically all systems have tested or run with MSW, so "probable" refers to the long term operating potential.

- Capex/tonne provides an indication of the total capital cost in relation to the number of tonnes processed. This is relevant because technologies such as plasma arc gasification have high capital cost but many systems have as low as 25-50% uptime, which raises the cost per tonne.

- Opex/tonne, similarly to capex/tonne, provides an index of the overall operating costs for each tonne processed. Pyrolysis systems for example have a low opex, but as they often struggle with MSW, the operating costs rise in relationship to the tonnes processed.

- RNG is a comment on whether the systems can produce Renewable Natural Gas, i.e. methane (chemical symbol CH_4). Syngas from fluidized bed systems for example have a good carbon-to-hydrogen ratio, so the potential RNG yield is high, whereas pyrolysis systems and RotoGasifiers usually have poor carbon-to-hydrogen ratios, so the methane (RNG or CH_4) yield is low. Note that just because plants can produce RNG does not mean that it is viable to do so, which depends on feed-in-tariff and other factors.

- The ability to produce biochar is inherent in most systems but the yield varies widely, mostly being dependent on the feedstock. Some systems produce no biochar (dual internally circulating fluidized bed for example) as the biochar is recirculated internally to fuel operations, which improves the energy yield but at the expense of biochar production. Because biochar is a valuable product, internal reuse can thus lower the overall viability, net of increased energy yield.

- Scalability is a key consideration for Esquimalt due to community growth and phasing requirements. Some systems' lack of ability to be phased or plants to be increased (or if need be, reduced) in size makes them unsuitable candidates given Esquimalt's comparatively small waste volumes. Plasma arc and Dual fluidized bed systems likely fall under this category.

- Feedstock flexibility is important and will stress a system's robustness. Because Esquimalt's wastes can change and are not well defined, the flexibility to handle future changes in feedstock are extremely important. Fluidized bed and up/downdraft systems tend to be impacted by such variations. This would not necessarily rule them out, but means that spare units would be needed to handle issues when individual units fail when the feedstock changes. Where systems have both low scalability and difficulty with feedstock variations, they should be considered secondary options.

- The megawatt energy yield per tonne is a comparative indicator of the thermal output, which can be used for heating, cooling or electricity generation. This needs to be considered in tandem with the revenues from energy yield and other factors, e.g. while plasma arc systems are the highest yield, their lower uptime and higher capex and opex mean that the higher yield per tonne processed is more than offset by other factors. Note that energy costs in BC are in general fairly low, so the revenues from a high mw/tonne are at best an incomplete indicator of viability.

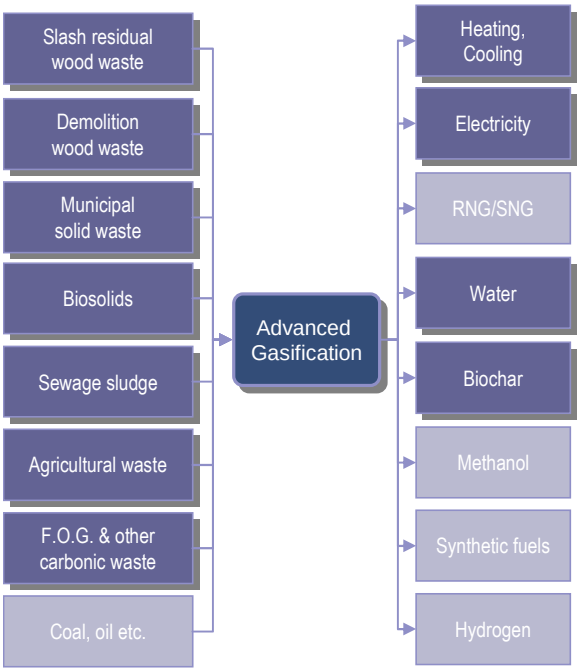


Figure 15: Feedstock & Resource Recovery Options

- Uptime is a critical factor. All systems will have maintenance downtime, but downtime due to difficulties processing MSW mean that, in combination with high consumables (i.e. high opex), some systems' economics are poor. Uptime can be solved however if the systems are highly scalable with low capex, by adding a comparatively inexpensive spare unit to offset unexpected downtime. Thus, plasma arc systems low uptime is difficult to offset as they are not highly scalable; which is offset by their relatively high flexibility and robustness in being able to handle MSW.

- The "Economic" column is a summary assessment of the linked factors of energy and biochar yield, the value of these products, capex, opex, uptime, robustness and scalability over a system's life cycle. Note that this is our assessment given the specific factors affecting the Township of Esquimalt and would likely differ elsewhere, if factors such as feedstock, growth, variability, flexibility, funding, markets etc. change. In reading this column for example: while pyrolysis systems have potential to be candidates for Esquimalt, they are less robust in handling MSW, leading to questionable uptime reliability, so their overall economic ranking is likely to be poor.

We have detail for each of these technologies but it is not the main function of this report to provide this detail. Also, it exceeds the scope and budget of this study to evaluate examples of each of the better options. We will be pleased to provide further detail on gasifiers reviewed if needed.

From our review, the RotoGasifier is the most suitable option for Esquimalt. The RotoGasifier's low number of plants is not a dissuading factor given that (a) it has been tested and proven to work with local wastes (Figure 27); and, (b) has had a long development cycle with proven plants and can be guaranteed. Up/downdraft and Circle Draft systems while potentially less expensive, have greater constraints with uptime and flexibility, so their overall economics and suitability for Esquimalt are lower. While there are a number of high-yielding plasma arc systems worldwide processing MSW, these are not scalable to Esquimalt's size and usually have high downtime, making them less viable despite a superior potential energy yield per tonne. The RotoGasifier's developmental track record since the 1990's, superior feedstock flexibility and robustness, scalability and overall net viability are notable and while its energy yield may not be the best, it is superior to almost all other systems and technologies, which helps maximize GHG reduction and carbon sequestration, which are key community commitments.

The RotoGasifier is an Advanced Gasification system, so our conclusion is similar to Advanced Gasification being recommended by CRD's IRM Task Force. Because of the variation in system outputs and given the conclusions summarised in Figure 14, we worked with TSI, the RotoGasifier system manufacturer, on budgets etc. As a final safeguard, we have then outlined a best practice implementation approach used by the World Bank and others to provide taxpayer assurance that the RotoGasifier is the best option.

The Advanced RotoGasification system developed from rotary dryers and pyrolysis units, modified to provide gasification while rotating the feedstock. This improves resilience with varying feedstocks and can be scaled to meet the sizes required for Esquimalt, handling wastes and generating products shown in Figure 15. There are a considerable number of plants in existence so the system has an extended development and performance history. While no plants are currently operating with Esquimalt's exact proposed waste mix, plants are operating with similar feedstocks and both laboratory and physical demonstration tests with local MSW and sewage sludge waste (shown in Figure 27) have shown suitability, supplemented with the manufacturer being potentially able to guarantee performance. More information on the system is included in *Appendix 2:Advanced Gasification* on page 76.

A key aspect of the RotoGasifier is that multiple revenue streams are possible from the system's outputs. Not all gasifiers have this multiple revenue streams or adaptability to vary them, with some plants having few revenue streams and little flexibility. Some are purely operated as cost centres. Figure 15 shows the possible feedstock inputs and resulting resource recovery options, with less-preferred options greyed out. While some technologies pursue notionally higher value outputs such as biofuels, this is less proven and less robust. Additional reasons to select the RotoGasifier is therefore that the yields are compatible with the wastes available and basic energy and other outputs, which support viability, making the RotoGasifier simpler to implement while managing risk.

4.2 Demographics

When community services requiring significant capital investment are planned, they have to consider how demand for services will change in the future, so the plant and services can be sized to meet future needs. We thus reviewed demographics and waste volumes under varying scenarios.

Firstly, a concern with major infrastructure is that sizing can be highly reliant on projections that don't happen. We thus analysed statistics from CRD, BC Stats and Stats Canada and while the year-on-year percentage population growth is somewhat erratic, illustrated in Figure 16, long term growth has been reasonably stable (if low) since 2000.

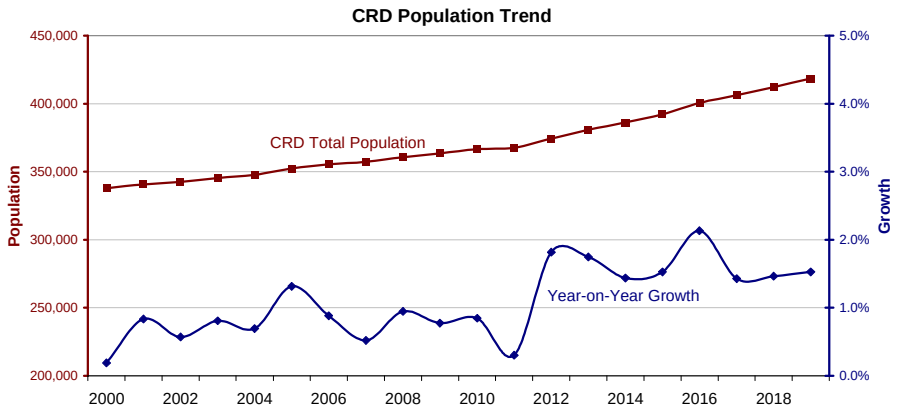


Figure 16: Overall CRD Population Trend

There are appreciable regional population growth disparities, shown in Figure 17 and Figure 18, with come communities exhibiting low growth while others have grown rapidly. This appears to be partly a function of having land suitable for development, and differing degrees to which communities embrace expansion. While Figure 17 shows the overall total growth by community within CRD, the issue becomes clearer when the annual percentage growth is viewed over time, shown in Figure 18.

	Population					
Community	1991	1996	2001	2006	2011	2016
Central Saanich	13,684	14,611	15,348	15,745	15,936	16,814
Colwood	13,468	13,848	13,745	14,687	16,093	16,859
CRD	299,550	317,989	325,754	345,164	359,991	383,360
CRD Core (CALWMP)	239,138	250,487	256,227	271,654	283,977	303,542
Esquimalt	16,192	16,151	16,127	16,840	16,209	17,655
Highlands	1,094	1,423	1,674	1,903	2,120	2,225
Indian reserves	3,214	3,806	4,667	4,670	5,282	5,244
Langford	15,642	17,484	18,840	22,459	29,228	35,342
Metchosin	4,232	4,709	4,857	4,795	4,803	4,708
North Saanich	9,645	10,411	10,436	10,823	11,089	11,249
Oak Bay	17,815	17,865	17,798	17,908	18,015	18,094
Saanich	95,583	101,388	103,654	108,265	109,752	114,148
Sidney	10,082	10,701	10,929	11,315	11,178	11,672
Sooke			8,735	9,704	11,435	13,001
Victoria	71,228	73,504	74,125	78,057	80,017	85,792
View Royal	5,996	6,441	7,271	8,768	9,381	10,408

Source: CRD &Statistics Canada

Figure 17: CRD Demographics, 1991-2016

Esquimalt's population[25] rose from 16,192 in 1991 to 17,655 in 2016, the latest year with available formal census data. Figure 18 shows this is an increase of 1,463 or 0.3% per annum over 25 years, i.e. the long term average growth rate. In the last five years however, Esquimalt's growth has risen to 1.7% per annum. This happened during a sustained peak in the economy, coinciding with increased activity in Esquimalt naval construction.

The 10 year growth rate (0.5% per annum between 2006 and 2016) is likely to be more representative as it spans most of a full economic cycle, however it includes a time when

[25] Source: CRD and Stats Canada.

Esquimalt was less conducive to growth and omits expansion of maritime activity. As such, we feel 0.5% likely understates the stable moderate growth rate, which is more likely to be in the ±1% range, i.e. similar to the regional average.

	Fm: 1991 To: 2016	*25 yrs to 2016*		Fm: 2006 To: 2016	*10 yrs to 2016*		Fm: 2011 To: 2016	*5 yrs to 2016*	
Community	**Increase**		**%pa**	**Increase**		**%pa**	**Increase**		**%pa**
Central Saanich	+3,130	+23%	+0.8%	+1,069	+7%	+0.7%	+878	+6%	+1.1%
Colwood	+3,391	+25%	+0.9%	+2,172	+15%	+1.4%	+766	+5%	+0.9%
CRD	+83,810	+28%	+1.0%	+38,196	+11%	+1.1%	+23,369	+6%	+1.3%
CRD Core (CALWMP)	+64,404	+27%	+1.0%	+31,888	+12%	+1.1%	+19,565	+7%	+1.3%
Esquimalt	+1,463	+9%	+0.3%	+815	+5%	+0.5%	+1,446	+9%	+1.7%
Highlands	+1,131	+103%	+2.9%	+322	+17%	+1.6%	+105	+5%	+1.0%
Indian reserves	+2,030	+63%	+2.0%	+574	+12%	+1.2%	-38	-1%	-0.1%
Langford	+19,700	+126%	+3.3%	+12,883	+57%	+4.6%	+6,114	+21%	+3.9%
Metchosin	+476	+11%	+0.4%	-87	-2%	-0.2%	-95	-2%	-0.4%
North Saanich	+1,604	+17%	+0.6%	+426	+4%	+0.4%	+160	+1%	+0.3%
Oak Bay	+279	+2%	+0.1%	+186	+1%	+0.1%	+79	+0%	+0.1%
Saanich	+18,565	+19%	+0.7%	+5,883	+5%	+0.5%	+4,396	+4%	+0.8%
Sidney	+1,590	+16%	+0.6%	+357	+3%	+0.3%	+494	+4%	+0.9%
Sooke				+3,297	+34%	+3.0%	+1,566	+14%	+2.6%
Victoria	+14,564	+20%	+0.7%	+7,735	+10%	+0.9%	+5,775	+7%	+1.4%
View Royal	+4,412	+74%	+2.2%	+1,640	+19%	+1.7%	+1,027	+11%	+2.1%

Source: CRD &Statistics Canada. Analysis: Pivotal

Figure 18: CRD Community Growth Trends, 1991-2016

In summary Esquimalt's population growth has been somewhat erratic historically, but has recently consolidated at rates at or above the regional average, ranging from a minimum of ≈0.3% per annum to a high of ≈1.7% per annum. We conclude that in the longe term, a moderate sustainable rate is likely to be closer to ≈1% per annum.

Following discussion with Township staff we note their expectation that Esquimalt's population is likely to level off at a maximum ≈25,000 some time over the next twenty years. This is based on current planning, service capacities, growth and development assumptions, but is in great part a reflection of the community not now having appreciable spare developable density. We discuss this later as part of our analysis and projections.

Population projections in the region are notoriously difficult due to fluctuating local and international economics and especially, local political constraints or enablement of growth. Because growth has historically fluctuated, planning any plant size based on growth projections is inherently risky but avoidable by using alternate strategies.

We thus conclude that any IRM solution needs to be flexible and adaptable to demographics, i.e. able to adjust to population growth and resulting waste services as and when it occurs. Any plan should not be dependent on achieving a specific growth projection that might well never be achieved, or changes overnight due to unpredictable regulatory or policy changes that render prior projections inapplicable, stranding assets, viability and environmental results.

4.3 Waste Analysis

Two types of waste were flagged for resource recovery consideration: liquid and solid wastes. Within these, two main factors need to be considered: the volume and nature of the waste (usually termed "composition"); and how this will change over time. At the same time,

consideration must also be given as to whether it's (a) possible and (b) worthwhile, to recover the resources.

4.3.1 LIQUID WASTE

We recommended deferring consideration of liquid waste resource recovery, which we were asked to explain.

There are three main types of resources that can potentially be recovered from sewage: (a) energy from solids; (b) heat; and (c) water.

In implementing its liquid waste plan, CRD will process the region's liquid wastes at a new plant at McLoughlin Point in Esquimalt. From there, extracted solids will be pumped in a slurry to an anaerobic digester located at Hartland Landfill in Saanich, ≈18km from McLoughlin. This means that extracting energy from sewage solids will be unavailable in Esquimalt, unless it is later reconsidered. For current purposes this recovery option has thus been discounted.

Turning to the potential to extract heat energy from sewage, KWL's 2013 study (section 3.3.1 on page 7) assumed rising sewage flows but data kindly supplied by CRD (Figure 19) shows, conversely, that flows have been falling, with opportunity to fall further as communities repair existing pipes. Reducing flows means the heat energy available for recovery is uncertain. Sewage flows appear to have stabilized at 70-72 ML/Day from a peak of 100ML/Day in 2006, a fall of ≈28%, whereas the model used for sewage flow projections[26] anticipated that sewage flows would increase by ≈12% over this period. Flow increases were assumed in KWL's resource recovery study for Esquimalt, which means the study's underlying assumptions have not been experienced in practice, making the study's conclusions risky to rely on without updating. While the McLaughlin plant capacity is sized at ≈50% above recent flows, which allows for aspects such as storm events, the divergence of projections from actual flows makes it uncertain whether resource recovery from sewage is worthwhile and whether the projection models can be relied on for energy planning of this type.

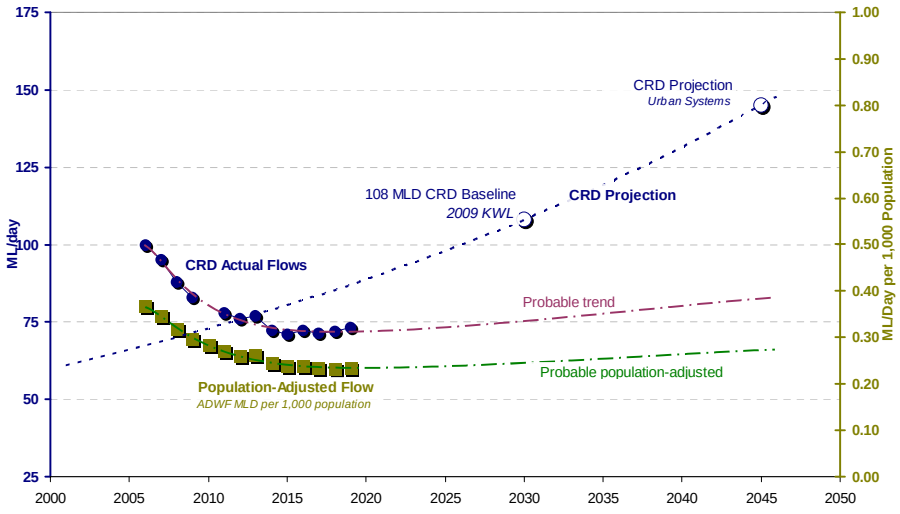


Figure 19: CRD Core Liquid Waste Volumes

[26] KWL originally developed the sewage flow projection model for CRD in 2000.

KWL's 2013 study concluded energy recovery from liquid waste flows was marginal. Given reduced flows shown in Figure 19, we expect viability would be lower and extraction of energy from sewage would probably be unviable. Given the difficulty experienced in predicting flow volumes, we recommended waiting until there is greater certainty, after McLoughlin opens and actual flows/temperatures are measurable, rather than relying on estimates based on projection models, with associated risks. We also recommended not considered water recovery from sewage because as discussed later, substantial volumes of water can be recovered from solid waste if desired, but the economics of doing so are currently unviable. The deferral of this aspect was thus agreed with staff, but can be revisited as desirable.

4.3.2 Solid Waste Composition

Municipal Solid Waste is typically a mixture of different material types that require technologies able to handle them. Esquimalt does not have an assessment of waste composition, but a summary of CRD's 2016 composition assessment for Hartland Landfill is summarized in Figure 20 with detail provided for both 2010 and 2016 composition studies shown in Figure 21.

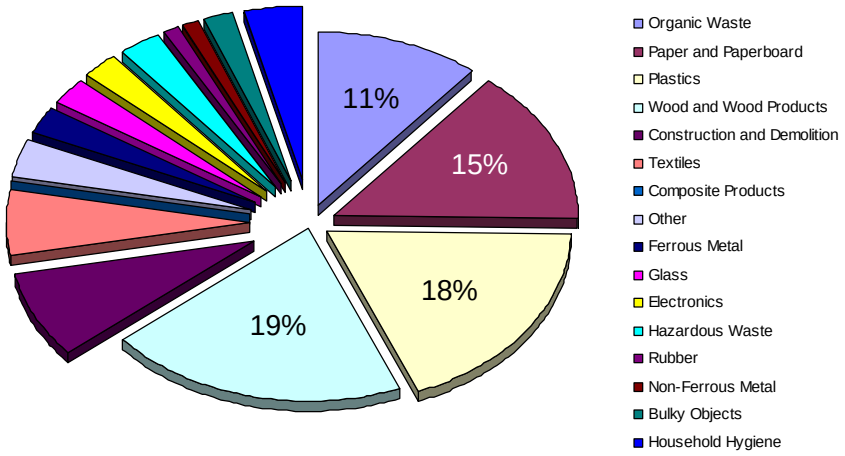


Figure 20: CRD 2016 Solid Wastes by Dry Weight

CRD periodically commission solid waste composition studies (most recently in 2009-2010 and 2016)[27] and we understand an update is being considered. Until Esquimalt's wastes are tested, CRD's analyses are the closest assistance available in assessing Esquimalt's waste composition.

- Organic waste has been a focus for diversion by CRD as this is a major source of GHGs. We calculate that organic waste received at the landfill fell between 2009/2010 and 2016 by ≈ 18,121 tonnes or ≈9.4% per annum, which is a ≈39% overall diversion rate over ≈6 years, i.e. assuming the review is correct, ≈61% of the organic volume was still reaching the landfill in 2016.

- Between 2009/10 and 2016 CRD's population rose from ≈360,000 to 383,000 and through increased organics diversion and other strategies, meant the waste per capita received at the landfill fell from 426kg/person on average to 352kg/person.

- CRD's composition studies track waste received at Hartland landfill but other wastes are known to exist, for example some are already being trucked and incinerated at a mid-

[27] See CRD Solid Waste document hub, 2010 and 2016 studies.

Island pulp mill and some communities (e.g. Saanich) have signed contracts to handle their organics independently of CRD.

- CRD's current approach with solid wastes varies, for example:

  a. Plastics and Styrofoam, amongst other recyclables, are now also being considered for alternate approaches as recycling has been called into question as China, the Philippines and Malaysia now reject Canadian materials;

  b. Biosolids will be trucked/barged and incinerated in Lower Mainland cement plants, although digestion has not been ruled out;

  c. Kitchen scraps and yard and garden wastes are being considered for in vessel composting or anaerobic digestion at Hartland but are currently being sent to the Lower Mainland.

Capital Regional District, Hartland Landfill Composition Studies											
	Study: 2009-2010				Study: 2016						Analysis
Category	**Tonnes**	**Wet %**	**Dry %**	**kg/person**	**Tonnes**	**Wet %**	**Dry %**	**kg/person**	**↑/↓**	**%pa**	**Diversion**
Organic Waste	46,606 t	30%	16%	129	28,485 t	21%	11%	74	-18,121t	-9.4%	39%
Paper and Paperboard	25,362 t	17%	16%	70	20,790 t	15%	15%	54	-4,572t	-3.9%	18%
Plastics	20,059 t	13%	18%	56	19,305 t	14%	19%	50	-754t	-0.8%	4%
Wood and Wood Products	15,225 t	10%	12%	42	22,950 t	17%	20%	60	7,725t	+8.6%	-51%
Construction and Demolition	9,385 t	6%	8%	26	9,045 t	7%	8%	24	-340t	-0.7%	4%
Textiles	8,441 t	6%	6%	23	7,965 t	6%	6%	21	-476t	-1.2%	6%
Composite Products	7,931 t	5%	6%	22					-7,931t	N/A	
Other	7,468 t	5%	7%	21	3,645 t	3%	4%	10	-3,823t	-13.4%	51%
Ferrous Metal	3,638 t	2%	4%	10	2,430 t	2%	3%	6	-1,208t	-7.8%	33%
Glass	2,974 t	2%	3%	8	2,295 t	2%	2%	6	-679t	-5.1%	23%
Electronics	2,928 t	2%	3%	8	2,430 t	2%	3%	6	-498t	-3.7%	17%
Hazardous Waste	1,179 t	1%	1%	3	2,430 t	2%	3%	6	1,251t	+15.6%	-106%
Rubber	1,083 t	1%	1%	3	1,080 t	1%	1%	3	-3t	-0.1%	0%
Non-Ferrous Metal	982 t	1%	1%	3	945 t	1%	1%	2	-37t	-0.8%	4%
Bulky Objects					1,755 t	1%	2%	5	1,755t	N/A	
Household Hygiene					9,315 t	7%	4%	24	9,315t	N/A	
Total	**153,261 t**	100%	100%	426 kg	**135,000 t**	100%	100%	352 kg			

Population	359,991	383,360		+1.3%pa
Kg per capita per annum	426 kg	352 kg	*Approx avg.*	-3.1%pa

Figure 21: Hartland Waste Composition Analysis[28]

It is also important to note that while some wastes included in the 2009-2010 composition study have been diverted, their volume didn't disappear, but are no longer being handled at Hartland Landfill.[29] This means that current diversion rates could rebound, which an IRM approach may help to address.

The waste industry usually assesses solid waste using "wet" weights and with their high GHG potential and percentage of the wet volume at landfills, organic wastes have been a focus. However moisture is the largest single component in municipal solid waste – but is rarely counted. Since *dry* material is a potential energy resource, Figure 21 applies our assessment of average moisture content (based on tests in CRD and elsewhere), showing that organics are ≈21% of the wet volume but only ≈11% of the dry volume. This fundamentally affects

[28] Figure 21's calculations are consistent with CRD's 2018/1019 Hartland Landfill Gas Monitoring Report, page 8, that "*A conservative estimate of 20,000 tonnes has been [diverted] ... through 2018.*"

[29] For example, organic wastes did not drop from 46,606 to 28,485 tonnes per annum, the wastes were redirected to other locations such as composting operations on the Saanich Peninsula, the Cowichan Valley and Lower Mainland.

decisions and approaches, since moisture can be easily removed by waste heat from gasification while maximizing energy recovery. It shifts the primary focus from organics to having a more complete plan that maximizes reuse, recycling, resource recovery and landfill diversion, i.e. consistent with MoE's 5Rs policy.

4.3.3 Solid Waste Volume

Figure 22 shows that in 2019/2020 the Township collected 3,398 tonnes waste, largely from single-family residences, and provides the 2020 budget costs which include wages, new bin purchases, bin advertising stickers and vehicle depreciation (the "Tipping Fees" column, also shown as a $/tonne). For contrast we included CRD's Hartland tipping fees, to cover landfill costs. Note that the Township's costs are higher because they also cover haulage, systems and staffing. We are aware of costs in other communities, some of which exceed $400/tonne including haulage, i.e. the Townships costs appear to be within the range experienced elsewhere. The estimated moisture content of the wastes is shown with the resulting estimated dry annual tonnage. The latter is the most pertinent, as explained later.

Township of Esquimalt, 2019/2020						
	Tipping fee	Tonnage	$/tonne	Moisture	Dry	Hartland
Yard & Garden	$202,182	1,778 27%	$113.71	40%	1,067	$59.00
Food waste	$157,147	566 9%	$277.50	60%	227	$120.00
Subtotal	$359,329	2,344 36%			1,293	
			$153.28	45%		
MSW	$292,480	1,054 16%	$277.50	25%	790	$110.00
Total	$651,809	3,398 52%	$191.81	39%	2,084	
Plus: private hauled wastes		3,100 48%		25%	2,325	
Total current estimated volume		6,498 100%			4,409	
		Total current estimated volume, dry tonnes per day, public only			5.7dtpd	
		Total current estimated volume, dry tonnes per day, combined			12.1dtpd	
			Unsorted MSW moisture content		37%	

Figure 22: Esquimalt Waste Summary

The Township collects wastes from only a portion of the community, mostly comprising single family homes and small apartments, whereas private haulers mostly collect waste from larger multifamily buildings and businesses. We thus canvassed private haulers known to be active in the community who state that in 2019 they collected ≈3,100 tonnes of MSW in Esquimalt, which is added into Figure 22's totals. The haulers believe this contains only a small amount of non-Esquimalt wastes. The total of ≈6,498 tonnes is close to the provincial estimate for

Esquimalt of 6,223 tonnes in 2017 and is thus considered credible, so private haulage comprises ≈48% of the waste volume with the Township collecting ≈52% of the volume.

Notably, the combined volume of public and private wastes calculates as ≈347 kg/person. The provincial guideline is for communities to reduce waste through the first 3R's, down to 350kg/person/year, so the total known waste in Esquimalt is below this provincial threshold guideline. Under MoE guidelines Esquimalt can thus consider energy recovery from waste.

The Township's data on waste volumes fluctuate during the year as shown in Figure 24 for 2018, the most recent year for which a full range of data is available, with an appreciable variance between food and MSW, compared to yard and garden wastes. This is likely due to seasonal factors, which highlights the complexity of addressing waste volumes and sizing

plant appropriately. Other years vary from these flows and while not all data is available for each waste stream by month from 2011-2019, we were able to interpolate and estimate volumes where the data appears anomalous or was not collected.

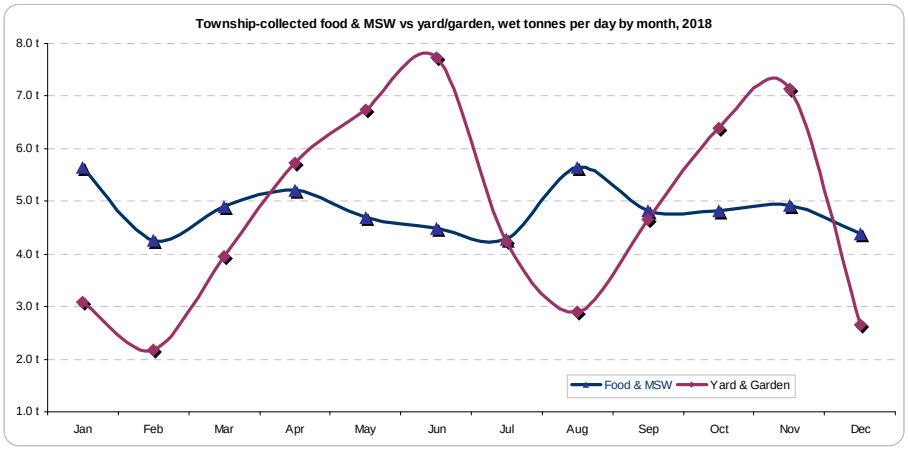


Figure 24: Esquimalt monthly waste flow comparison

Figure 23 shows the total known Esquimalt wastes as (a) a range of volumes in wet tonnes per day, by month, between 2011 and 2019 (i.e. the way the wastes are received); and (b) the median volumes. This confirms an appreciable range of volumes over the year and thus, the need for any plant to be able to handle fluctuating waste volumes. Figure 25 shows the same data but adjusted to cover the underlying dry tonnage, which is key to determining energy yield and plant size.

Figure 23 is useful to scope receiving volumes and related aspects such as receiving bins, dryer capacity and tipping fees, whereas Figure 25 is more useful to estimate gasifier processing capacity, dried feedstock storage bin size, conveyor hoppers etc. Figure 25 suggests that *current* waste volumes are likely to be mostly addressed by three 5-tonne gasifiers, supplemented by either a balancing strategy to cover excess flows, or preferably a fourth unit to address extra volumes and plant rotation for emergency, downtime and maintenance purposes. As growth occurs or if sporadic volumes become more frequent, a fifth unit could be added; or the unit capacities adjusted if this proves to optimize operations (e.g. by purchasing 7-tonne units, not 5-tonne).

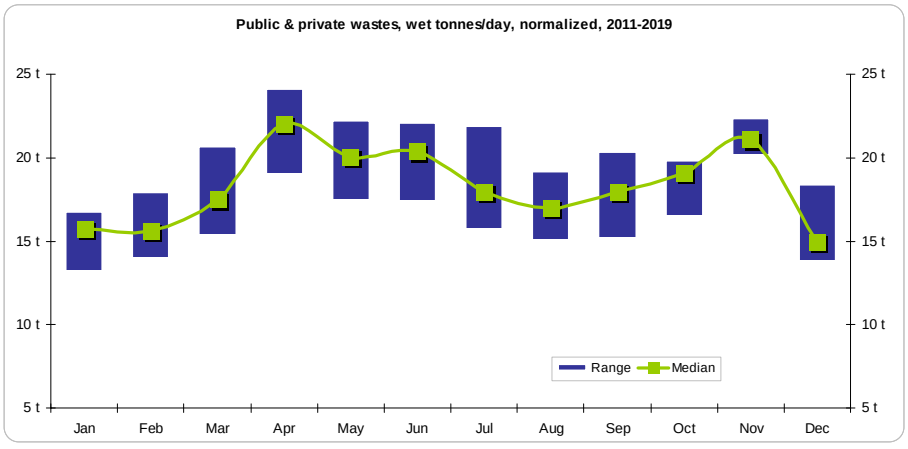


Figure 23: All Wastes, Wet Tonnes/Day

Figure 23 and Figure 25 assess the current total waste volume in Esquimalt but a smaller plant would be possible addressing purely the Township's own wastes. Other options have not been explored in detail pending a decision to pursue an IRM plan further, but scenarios were developed comparing the Township's waste alone, compared to the entire waste stream. Should the decision be made to proceed further, additional review of underlying waste

volumes will benefit, to improve accuracy and costing, and help address peak volumes while minimizing and phasing plant.

Addressing Esquimalt's private wastes would require the cooperation of haulers, so we contacted selected haulers[30] who expressed interest and support for supplying material to an IRM plant, once the concept was explained. The main concern was cost impact, which we anticipate would be minimal or an overall reduction and benefit to haulers, sincwe it would reduce trucking and related costs.

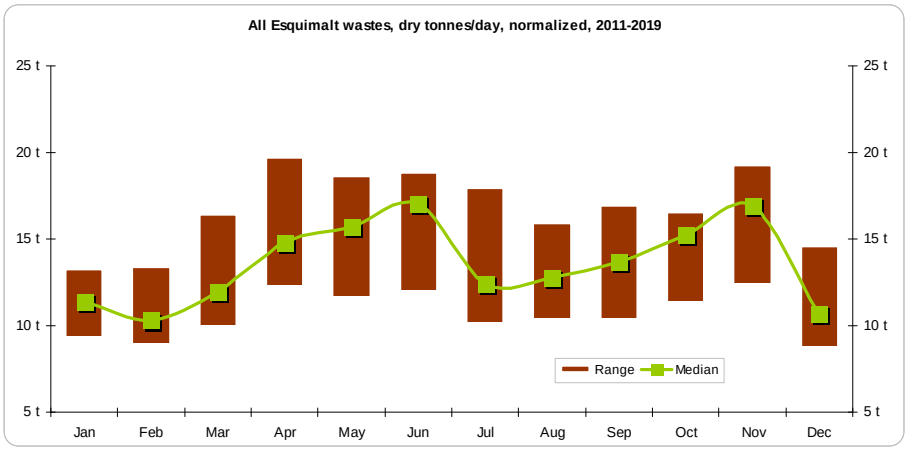


Figure 25: All Wastes, Dry Tonnes/Day

While haulers' interest is subject to further discussion once Council determines direction, their waste volume has been considered for scenario planning purposes and would be formally confirmed should Esquimalt proceed. We conclude that an IRM plant would benefit both haulers and taxpayers through reduced trucking, GHGs and cost-effectiveness, as well as improving resource recovery. Haulers are generally supportive and live in the communities they serve, so we do not feel that securing their waste will be a barrier.

4.3.4 Solid Waste Volume Projection

In planning major systems, a key consideration is how demand will grow over time. For current purposes we have adopted a 30 year projection "life cycle", although the equipment itself will have a 50 year design life with appropriate operating and maintenance costs (which has been included in life cycle projections). Since this is an extended duration and financing would likely be over a shorter duration, we chose to assess the first 30 years of the life cycle for projection purposes. The main question is how the volume of waste might grow over this term, which is primarily affected by:

- Increasing efforts to minimize waste and improve diversion, offset by increasing population. Other external factors such as senior government regulation and packaging changes will also change the nature of the waste, not just the volume;
- Waste volumes per person have fluctuated over time with CRD data likely embedding a higher portion of urban densification. CRD reports indicate 2018 Hartland waste volume

[30] Personal conversation between G Bethell and haulers, March and April, 2020.

at ≈388kg/person[31] up from 2016's 352kg/person but down from 426 kg/person in 2009 (Figure 21);

- Figure 18 shows that population growth has varied appreciably in Esquimalt, with higher rates of growth more recently. This wide range illustrates that projecting potential growth factors creates challenges (and impacts allowances needed for plant size).

We understand that the community is currently expected to reach a buildout at some point over the next ten to fifteen years, with an initial estimate of ≈25,000. While this will tend to limit potential growth in waste volume, aspects such as densification and/or increased home occupancy ratios might also cause maximum buildout projections to be exceeded. Conversely, recessionary factors or slow-down in naval base operations would extend the duration to achieve buildout or reduce growth. We thus ran scenarios independently of the buildout threshold, so the impact on plant sizing can be assessed.

Figure 18 shows a range of growth scenarios based on recent trends (0.3% to 1.7% per annum), estimated to 2053.[32] As it cannot be assumed that the waste per capita will remain fixed, several scenarios have been considered: (a) The Township's current collection volume excluding other sources; (b) the Township's waste plus collaborating known private sources; (c) CRD's 2009-2010 waste per capita and (c) CRD's 2016 waste per capita. A range of possible flows has to be taken into account in projecting plant size, shown in Figure 26.

Waste volume projections						30+3 yr projection
			Wet tonnes per annum		Dry tonnes per day	
			182kg/head	347kg/head		
Scenario	Growth	Popn	a) Township	b) Combined	a) Township	b) Combined
Current	0.0%/yr	18,716	3,398 t	6,498 t	5.7 t	12.1 t
1: Minimum	0.3%/yr	20,600	3,700 t	7,200 t	6.3 t	13.3 t
2: Moderate	1.0%/yr	25,700	4,700 t	8,800 t	7.8 t	16.6 t
3: High	1.7%/yr	32,100	5,800 t	11,100 t	9.8 t	20.7 t

Figure 26: Wet/Dry Volume Estimates[33]

Figure 26 estimates waste volumes with varying population growth scenarios[34] based on either (a) the Township's current waste collections; or (b) combined Township and privately hauled Esquimalt wastes. It indicates a minimum plant size using Esquimalt's *current* municipally-collected waste (estimated at ≈52% of the waste volume) at ≈3,400 wet tonnes per annum. Once private wastes are included and a minimum growth scenario calculated, scenarios range from a low of ≈7,200 tonnes/year to a high of ≈11,100 tonnes, albeit the more likely scenario is ≈8,800 tonnes per annum at the end of 30 years. Inclusion of private wastes while voluntary can be handled by contract and is a more complete solution, addressing the community's wastes, i.e. the most consistent in waste planning, climate change GHG reduction and landfill diversion.

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[31] 159,942 tonnes waste per Hartland 2018 landfill gas report (page 7); 412,220 population per CRD statistics.

[32] Allows for two year's preparation, one year's construction, 30 year life cycle.

[33] Projections are rounded. Detailed calculations were used by waste stream and may vary from the rounded totals.

[34] Figure 26 uses straight line compound growth projections, which in practice is unlikely to occur, but assists in developing a range of scenarios to understand the impact of varting growth rates.

An important aspect of Figure 26 is that growth happens slowly, so the initial plant size is likely to be manageable for some years before the plant's capacity has to be expanded. This affects budgeting and phasing as well as initial costs and risk, considered below.

Given the variability of waste volumes shown in Figure 24 through Figure 25, Figure 26 still represents an appreciable range, which increases risk because of uncertainties about population growth and waste reduction. However this risk can be almost entirely addressed using a risk-managed "just in time" approach:

- Gasifiers are scalable and units can be added relatively quickly (within 6-8 months, plus commissioning). This means that if, as and when the volume of waste grows, and/or as waste characteristics change, suitably configured gasifiers can be added and the plant adjusted or expanded.

- This "just in time" approach: (a) allows for technology adaptation and improvement; (b) avoids the need to pay a higher cost today, which would increase cost to current residents for a future need that is uncertain; (c) limits initial taxpayer investment and risk; (d) reduces resulting debt and operating costs until the need to spend more is proven; and, (e) allows system design to match waste characteristics available in the future, not the ones guessed today to potentially occur in the future.



Figure 27: Demonstration Test of Local Waste

In short a just-in-time approach allows for the plant to be sized as initially needed, then expanded as/when the need is proven and avoids building a plant for a volume that may not materialize. We have thus considered a phased just-in-time approach with allowance for future expansion and adaptability, discussed in section 5.

4.4 Feedstock Process

It is important to understand the gasification process as it impacts location, site use etc.

Waste streams available within the Township include: MSW; food scraps and source separated organics; yard and garden waste; and wood waste, including Construction & Demolition [C&D] materials. Recyclable materials, including metals, glass, plastics, paper/card board and related materials are separated into the Blue Box program and reused/recycled accordingly. Electronic wastes are also separately recycled along with white goods and appliances. Figure 15 illustrates gasifier potential feedstock and resource recovery options, but note that while some aspects are possible, they are not recommended. Advanced Gasification is able to handle a range of carbonic materials and Figure 15 shows the range of acceptable wastes and principal resource recovery options in bold. Figure 28 shows the general process for handling these waste feedstocks.

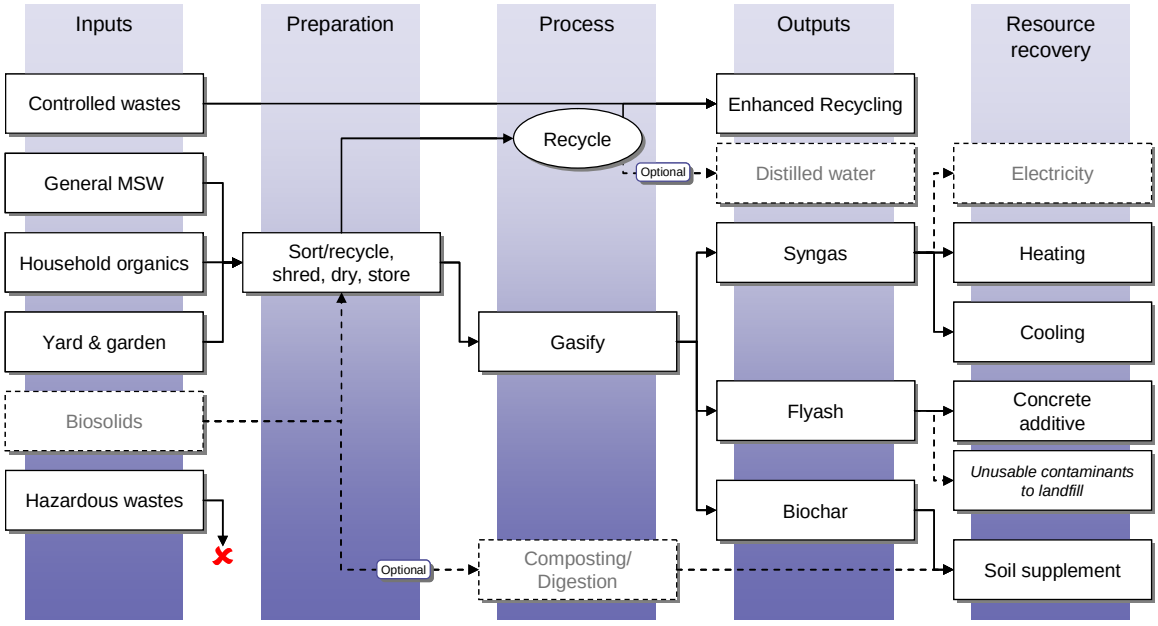


Figure 28: Gasification General Process

Laboratory testing has been previously undertaken of selected waste samples from Langford and Sooke, which is believed to be close to but not the same mixture as Esquimalt. An initial physical demonstration test has also been undertaken and independently observed as being satisfactory (Figure 27), i.e. the gasifier successfully processed the local MSW and biosolids. We recommend undertaking formal structured laboratory and physical tests however, as the fastest and least expensive way to confirm Esquimalt's proposed wastes will work. Formal tests are a minimum pre-requisite for a potential manufacturer's system guarantee and would be needed to confirm aspects such as biochar quality and potential – which would help resolve risk relating to one of the larger revenue sources.

It is helpful to explain how a guarantee would likely work. Firstly the manufacturer would contract with Esquimalt to deliver an agreed system design and energy yield, on which the business case is predicated. This would be determined by testing actual samples of the proposed wastes, both in a laboratory and in an existing gasifier. Funds would be bonded and held in trust and only released when the expected performance is achieved. In this way, Esquimalt taxpayers would be buffered from the risk of non-performance or under-performance. Certain advance funds – testing, design etc. would have to be expended but these are small relative to the cost of the system, covered by the guarantee. While the manufacturer would charge for this guarantee, the cost would likely be comparatively acceptable. Because testing includes samples of the actual proposed feedstocks, this sequenced approach provides physical recorded proof that the system works, before proceeding. This will quickly and very visually help address taxpayer and risk concerns.

The test shown in Figure 27 used locally-obtained MSW. It shows the gasifier can handle waste and modelling shows it can be viable and feasible. We note that on reviewing data provided for this study, we have not found issues that would cause a system not to operate successfully. Testing is thus a desirable and recommended next step. Base tests are likely to cost ≈$20-30,000, which secures proof of operation with actual waste, within weeks, at a fraction of the cost of a full system. Note that the cost and tests have to be confirmed depending on components required to reduce risk.

Recent international media coverage[35] of recyclables in the Philippines and Malaysia revealed that recycling was not happening as expected. For example as a result of this and given concerns over ocean plastics, CRD revisited the potential for plastics and Styrofoam to be handled locally. The RotoGasifier can handle these products, including compound materials where separation and recycling is not possible (either technically, practically or economically). The remaining household garbage consists primarily of dirty paper/cardboard, hard and film plastic, food and other organic material, leather, fabrics, shoes and other textiles, and related discarded materials. This general municipal refuse may contain small residual amounts of metal, glass and other inert materials which should ideally be removed for added recycling before the material is shredded, dried and placed into storage for processing through the gasifier.

Inert wastes that are missed during sorting and recycling will not affect the gasifier, as the materials will be expelled with the biochar. It is however better to sort and extract these items where feasible, to improve energy yield and increase recycling. Notably, this approach and the technology itself are resilient to improperly sorted wastes.

The Advanced Gasifier's rotating design helps eliminate the potential for ash fusion, which was a contributory reason to select the RotoGasifier as the best available technology. Ash fusion can lead to downtime while maintenance is undertaken. No other issues were found in the samples that would impact maximizing uptime through ongoing management and operating procedures will monitor feedstock in the event unexpected materials are included in the waste or other issues arise.[36]

Waste Type	Moisture content	Mineral ash content	Fusion Issues	Contaminants
MSW	25% - 35%	20% - 30%	No	Possible
Food scraps	60% - 80%	20% - 30%	No	No
Yard/Garden	50%	5% - 30%	No	No
Wood (C&D)	5% - 20%	5% - 7%	No	No

Figure 29: Composition Summary

Figure 29 summarizes the typical main composition of MSW, which can include chlorine and sulphur, which can form acid and sulphur dioxide (and ammonia if biosolids are gasified). This is managed with off-the-shelf standard in-line cleaning equipment, the need for which will be confirmed once testing and analysis has been completed. Besides the use of scrubbers, selective catalytic reduction systems and standard air emissions control equipment will be installed to remove particulates using an electrostatic precipitator (ESP) or coated bag filter system. Both have proven satisfactory on plants in Victoria and Europe for example.

Food scraps typically also contain napkins and other paper, cloth towels, plastic bags etc., and have a high water content and will likely require shredding and drying prior to gasification. Alternatively, there may be situations where they may only need to be mixed to be at or near the desired level of moisture content, or dried using heat from the oxidation heater. These adjustments are part of normal operating procedures.

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[35] See for example an overview video, a ≈20 minute CBC documentary video exposing this issue, or videos #1 or #2, showing repatriation of recyclables for incineration in Burnaby. Atlantic province clients report similar issues.

[36] In the event wastes exceed standards, yield would be reduced and not result in system failure.

Yard and garden waste primarily consists of pruned branches under 3 inch, shrubs, weeds, leaves and grass clippings (woody branches, weeds and shrubs will need to be chipped/shredded for gasification). Optionally this could be expanded to accept all woody material including tree trunks and large branches, which are suitable for the gasifier. The shredder/chipper can handle C&D waste wood which would be selectively sorted and processed in the IRM facility, i.e. the design can be adapted to allow for increased range and volume of wastes with little effort or cost, thus aiding increased diversion.

A key aspect of Yard & Garden waste is the highly cyclical nature of the wastes and volumes received in Spring and Fall, shown in Figure 24. Initial data did not show this but later data revealed fundamental differences in flow rates, causing the entire plant size, unit sizes, pricing and phasing to be recalculated. This item needs more review should IRM progress, but adequate assumptions have been possible for the current analysis to proceed.

A concern in terms of energy yield is moisture content. Typical moisture content of green wood is 40% - 45%, C&D wood 5% - 15% and the mineral ash content 5% - 7% and possible syngas contaminants from this are typically low. Pivotal staff managed the Dockside Green gasifier where particulate emissions were consistently below MoE permit requirements and we would expect a plant in Esquimalt to be similar. The plant will use energy recirculation and compatible dryers (used in drying sewage sludge and food scraps), specifically designed for energy recirculation and passing dryer air to the oxidation systems where volatile organics are mixed with syngas to improve energy yield and address odour.

In summary although more detailed assessment will be needed should IRM proceed further, we have not identified anything in the possible feedstock that is likely to cause significant issues for an Advanced Gasifier, or jeopardise achieving compliance with applicable regulations, or failing to meet the goals and expectations of the community financially or environmentally. Testing of the actual proposed wastes will be needed to confirm this but existing tests (Figure 27) have demonstrated successful operation.

5 IRM Assessment

This section outlines the IRM Options; assesses potential plant locations; proximity to possible consumers of recovered resources; the capital and operating costs including the viability of options; procurement models; and a possible implementation schedule. These factors were entered into a life cycle business case model that calculates the life cycle for 30 years [plus preparation and construction] for financial aspects and 150 years for GHGs. Inflation is also considered since this can have an appreciable impact. The general process used as a guide to assess IRM for Esquimalt is illustrated in Figure 2 on page 6.

Pivotal's IRM model is a "highest and best use and value" cash flow investment model, consistent with financial standards but adapted to use the same standards and approaches to address environmental and resource aspects.[37] The models allow for interactive assessment of options so financial, resource recovery and environmental impacts and cost/benefit can be compared and the best options chosen to maximize value over their life cycle. The assessment of resource recovery is thus dynamic and adjusted to address varying waste volumes, thus allowing the impact on Esquimalt residents to be assessed as assumptions are adjusted. Scenarios were then run to assess phasing and cost, and reduce risk. The following describes the inputs, assumptions, process and conclusions.

5.1 Main Scenarios

Based on the evaluation of population demographics and waste stream volumes and after discussion with staff, we assessed the following scenarios:

Scenario	Growth	a) Township	b) Combined
Current		3,398 t	6,498 t
1: Minimum	0.3%/yr	3,700 t	7,200 t
2: Moderate	1.0%/yr	4,700 t	8,800 t
3: High	1.7%/yr	5,800 t	11,100 t

Figure 30: Scenario Summary

Figure 30 summarizes a range of growth scenarios (1-3) in combination with either Township-only wastes (a) or combined Township and privately-hauled wastes (b). Further detail is provided on flow variations and scenarios in 6 *Findings*, starting on page 59. Given these potential flows, plant size was estimated, initial needs and expansion potential taken into account, with the following consideration of sites, phasing potential and budgets.

[37] The IRM model and approach is proprietary to Pivotal but has been independently reviewed and approved by multiple climate change, financial and accounting experts, including academics.

5.2 Location Options



Figure 31: Possible Locations & DES

Over the past few years, the primary site owned by the Township and suggested for consideration is the existing Public Works Yard at the northeast intersection of Canteen and Esquimalt Roads. An alternate site was also suggested in the lands adjacent to Archie Browning Sports Centre. These are considered as follows:

1. **Public Works Yard** – this small site on Canteen Road is already well used, but there should be sufficient space to accommodate a plant, with expansion potential and without requiring existing activities to be relocated, if planned carefully. Staff expressed concern about phasing on this site so an initial discussion of options is provided in section 5.2.1 *Phasing on page 41*. Subject to decisions over plant size, we are satisfied a plant can be suitably phased using the western portion of this site, with minimal impact to the main (upper) part of the site.

   The site is already zoned for similar use, but would need to be approved for a variation in zoning to permit energy generation. The location has reasonable proximity to users able to take advantage of the plant's recovered energy (for example Figure 31 illustrates a District Energy System alignment to serve the municipal centre). Given the gradual densification of the corridor between Canteen Road and the town centre, this is a suitable location with a loop commencing at the Public Works Yard, extending initially to the municipal centre and Archie Browning, then expanding as demand permits.

   The Township owns and controls the site and it already has a somewhat similar industrial use, so it is considered a potentially suitable option. The Public Works Yard activities do not need the energy an IRM plant would produce, so the energy will have to be delivered to nearby consumers using an energy loop.

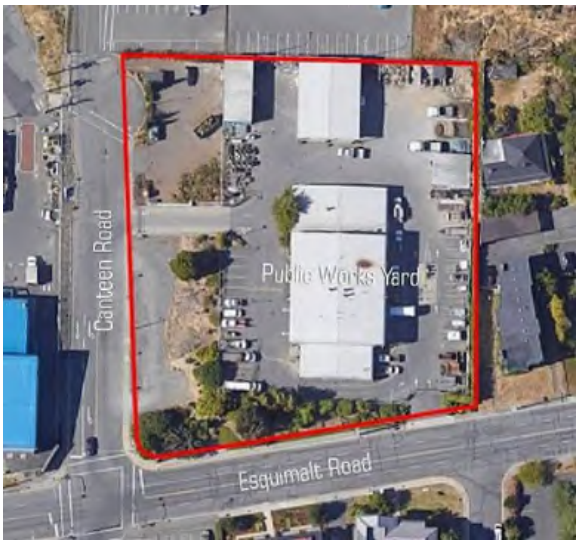


Figure 32: Public Works Yard[38]

2. **Archie Browning Sports Centre** – this is a potential energy consumer due to the

[38] Courtesy Google Maps.

Centre's high energy needs. It has potential land if much of the plant can be located underground, thus avoiding any reduction in the land use. The location could also serve the nearby municipal building, Esquimalt Recreation and Village Centres. The location marked "A" on Figure 33 is one alternative, as this could be completely shrouded from adjacent buildings, but some other locations and orientations are possible on this site too.

Some challenges exist however. Archie Browning Sports Centre is nearing the end of its life cycle and it is assumed will be redeveloped at some point, which due to phasing may see it relocated on the site. Since this has not commenced it cannot yet be determined how the gasifier could work with the Sport Centre or integration as part of the Recreation Centre. Access thus cannot yet be determined but would logically be from either Esquimalt, Fraser or Lyall Streets, however locating the plant and access, would likely be delayed until the broader planning is completed. This would make an IRM plant on this site dependent on planning for this centre, thus delaying implementation. Locating an IRM plant at this site would also likely be part-underground and/or with parking above, both raising costs and increasing servicing complexities and costs.

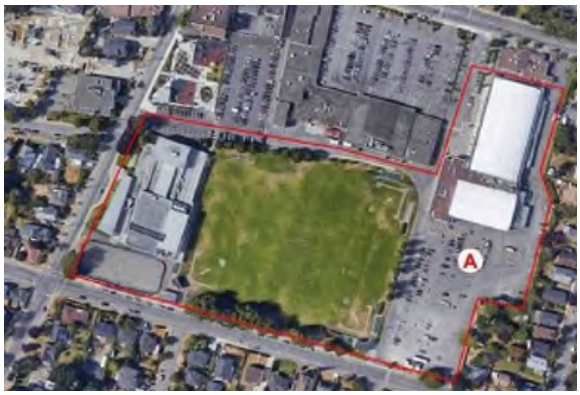


Figure 33: Archie Browning Site

5.2.1 Phasing, Access & Traffic

As the Public Works Yard might initially appear to be too small a site, it helps to show an existing plant located in White Castle, Georgia (Figure 48 on page 77), which has more than double the capacity estimated to be needed for Esquimalt, but on a similar footprint to that at the Public Works site, which should thus be suitable provided if it can be integrated with the Yard operations to accommodate truck unloading and turning manoeuvres.

Figure 34 illustrates some options using the Public Works Yard Canteen Road frontage to develop the IRM plant. Having the site on two levels creates both a difficulty and a possible advantage: the ramp needed to service the upper part of the site can be relocated or if required, retained. While design will be needed to confirm necessary detail, one option is to receive feedstocks from the upper level, which might mean allowing 2-3 trucks per day into this area. Alternatively it may be possible to receive trucks from Canteen Road, but this would likely increase costs. As illustrated in Figure 34, the "B" part of the site for example might contain the gasifier(s) and related energy systems, with the gasifiers on sleds, thus being removable directly onto Canteen Road for off-site maintenance or replacement.

As an alternative, Figure 35 shows moving buildings 1-3 to site 4, to create a single area for an IRM plant at the rear of the site which while not as large, is usable. Relocation of existing buildings would add cost – but may be desirable if this also improves the Public Works Yard's utility. In both options the systems would likely be at sub-grade level to mitigate appearance and access, allowing for decking overhead and two levels of operation. Existing staff parking can be located on parking structures built over the IRM plant – which would increase cost but may be expedient.

In summary there are several options for how the Canteen Road site might be utilised, subject to more detailed review and discussion. We note that the site has a significant rock outcrop, which will increase site preparation costs, but will be offset by reducing foundation costs to carry the main plant. An estimated allowance for this has been included in budgets.

Figure 25 is helpful in showing that current Township waste volumes could be addressed by two five tonne per day units, with a third for high waste volumes and as a backup or maintenance unit. Within a few years and as/when waste volumes grow, other units would be added. Figure 34 illustrates the approximate size estimated for multiple gasifiers on site "B" with associated service access. The 'sled' or container size that would likely be used similar to the gasifier shown in Figure 38 (or the central unit in Figure 47). This provides some sense of the comparatively small size of the units, their suitability and that it would be reasonably simple to add further units as and when needed.





Figure 34: Public Works Yard Layout 1

In the long term future should waste volumes become excessive, site modifications prove impossible or excessively expensive, the Public Works site may become unsuitable. In that event it may be necessary to open a second site, or intensify use of the Public Works site, or relocate. Using gasifiers on removable sleds supports this flexibility and importantly, is consistent with a just-in-time service adaptation strategy, which lowers risk and initial cost.

In short, options exist to accommodate growth if and as required without the need to plan, build or budget for this from inception, in contrast to solutions such as anaerobic digestion, which requires major investment and reliance on projections that may never happen.

Traffic is a concern for all projects in Esquimalt and warrants consideration. In that regard and assuming the plant takes both Township and private wastes, the volume at the start of the project is estimated at ≈18 tonnes per day, which is currently collected by trucks already operating in the community (estimated at ≈2-3 truck visits to the IRM facility per day). This is anticipated to rise to



Figure 35: Public Works Yard Layout 2

a maximum of ≈25 tonnes which will likely be supplied by the same ≈2-3 trucks per day at peak (they will have slightly bigger loads). *It is important to note that we do not currently expect this to increase truck traffic in Esquimalt*. These trucks are already collecting waste in the community but instead of going to Hartland Landfill, will make a much shorter trip to Canteen Road, thus reducing overall disturbance and GHGs by unloading at Canteen Road. At any given point near the site we anticipate that at maximum, residents might see trucks going to the plant for perhaps three 30 second intervals in total each way (arriving and departing), but spread over the entire day. Additional employee traffic is anticipated to be a maximum of perhaps 3-5 additional cars or bicycles over the span of the entire day, as existing Township employees would likely transfer to the IRM plant. While the final traffic impact will need review once plant capacity, private waste suppliers and staffing are confirmed, we currently expect no significant noticeable impact to surrounding buildings.

5.2.2 Site Conclusions

In conclusion, Archie Browning and Esquimalt Recreation Centre can be serviced from the Public Works site and while this would require a District Energy Loop, the Canteen Road site is simpler to service, more appropriately zoned and allows for phasing in other DES users, as and when opportunity permits. It is also simpler to expand and phase appropriately. We thus conclude Archie Browning is a secondary option but the preferred site and assumed herein for modelling purposes, is the Public Works Site. Other options exist if their consideration proves necessary however, and were discussed with staff, but these are not as controllable, are less accessible, have higher costs to make workable (and with greater difficulty) but importantly, would increase cost to deploy recovered resources. This does not necessarily rule them out as being viable or usable, but they are not as good as the above two options.

The Public Works Yard site on Canteen Road is owned and controlled by the community and is in a location with compatible uses, but it is also likely to be the most acceptable from a traffic and servicing perspective. Although there is residential property adjacent to the east, these are unlikely to see, hear or smell the plant as they will be buffered by the existing buildings (and the gasifier would not create odour, noise or emissions).

The Canteen Road site suitability will require confirmation following preliminary plant layout and design stage and as planning progresses through detailed assessment, public engagement, regulatory approvals, financing and Council's decision. As the site is owned by the Township, we have excluded land cost. Should either of these sites not be acceptable, we conclude that other sites are likely to be possible, but would need additional work to confirm. Non-owned sites will increase plant costs.

5.3 Costs

Capital costs

Capital costs have been assessed for plant development with budgets obtained from suppliers for major plant and equipment components. This includes costs for items such as shipping, staffing, supplies, insurance etc. Basic allowances were included for enclosures, which should be reviewed once the plant size and location have been determined, but we anticipate savings may be possible through co-location at the Public Works Site. These will be offset to some extent by additional site preparation costs (rock

removal and stabilisation, parking accommodation etc.).

Most of the main plant can be fabricated locally to address possible issues with exchange and import duty, which are currently somewhat in flux. We have previously met with qualified BC fabricators for the gasifier – whose bids have been competitive for other plant fabrication – to confirm quality and timeliness of delivery, as this is the largest single component. Other fabricators exist experienced making TSI's plants in Alberta and Quebec. Budgets were developed for this project based on the main plant scenarios.

Because feedstock laboratory and physical testing has not yet been undertaken, some uncertainty exists about the equipment needed to prepare the feedstock, storage, emissions control, chemicals management etc. Standard assumptions have been included in the capital and operating budgets. We do not currently expect any extraordinary costs but the budget should be reviewed once plant size is confirmed, testing has been completed and the system design confirmed, as this would alter overall system pricing.

Soft costs and fees

The initial capital cost mainly relates to preparation, impact assessments, permits, design and implementation planning, regulatory and other aspects. Regulatory agencies were approached to confirm process which for the most part relates to emissions monitoring. Costs and timing for these aspects were included in the model, for municipal processes, licensing and associated fees.

Contingency & inflation

Contingencies were set at 20% for the planning and preparation period as this is where extra time and cost typically occurs. Following discussion with major suppliers, a 15% contingency has been used for construction and associated soft costs. We assumed the highest additional margin indicated to us (cost plus 15% on all capital costs) rather than quoting costs as "cost ±15%" which is a common practice. This is conservative and means that (in Scenario 2b for example) the budget total is under $19m ±15%, but $21.3m has been used to test viability.

BC's long term inflation rate was used for inflation-adjusted models and run in parallel to current cost models so the impact of inflation could be assessed. Inflation can have an appreciable impact on life cycle value. Values quoted are thus the amounts that would be expected to be received, adjusted for inflation.

Finance

The interest rate applicable to debt depends greatly on the procurement approach. The lowest rate can be obtained by the Township owning and operating the plant, but this can add risk if not carefully managed. The highest cost of debt is likely to be for a private provider absorbing the risk with minimal taxpayer-backed guarantees. We assessed the cost of finance under varying scenarios and included this in the model. The implications are considered in the *Risk & Procurement* section.

We model IRM using both cash flow and DCF models to allow comparison. As the debt finance rate is a reflection of the risk of a project, and the cash flows include it, risk is included in the finance rate. DCF calculations

exclude debt, so the discount rate reflects risk in DCFs. An alternative cost of money approach was used in selecting the discount rate, assuming that the community has taken reasonable steps to reduce risk whether the project is community-owned or implemented with alternate procurement.

Operating & maintenance costs

Experience with staffing for gasifiers in Victoria, the USA and Europe were used to develop basic staffing models. Private haulers have been canvassed and provided comment on staffing and waste processing requirements. Operating and maintenance costs were projected based on industry standards for a project of this type and projected for the life cycle. Note that existing staff may choose to transfer and potentially upgrade skills, which in combination with other possible savings (such as GHG reduction costs, GHG taxes, etc.), we estimate should reduce Township budgets by ≈$4-500,000 annually but has not been taken assumed in the models, i.e. we expect there will be further savings. O&M budgets vary depending on the scenario used and are included as line 02 in Figure 30.

5.4 Revenues

IRM systems have multiple potential outputs which are saleable and the revenues are used to partially or fully offset system costs. The main revenues include:

- **Electricity**. Currently, BC Hydro is not actively pursuing new sustainable energy contracts because the province is a net exporter of electricity, but electricity generation can be added later, should circumstances change and BC Hydro express interest in supporting sustainable local power generation. Note that we have modelled electricity viability and conclude it is a marginal financial and environmental benefit, largely due to high costs of compliance with BC Hydro requirements, extended process and contract, increased risk and a low feed-in tariff. This may change if local generation rises in priority, for example to avoid expenses in funding additional transmission lines.

  Since BC's electrical generation is dominantly hydro-electric, the potential CO_2e reduction from sustainable electrical energy is not high, except in displacing air conditioning, which can also be achieved with a DEL. We have thus excluded electricity from the planned model at this point.

	Heat	Power
Thermal	3.23mw/tonne	—-
Thermal & electrical	2.26mw/tonne	0.73mw/tonne

Figure 36: Yield Per Dry Tonne of Waste

- **Heating and cooling**. Gasification generates substantial amounts of heat and by using absorption chiller systems can produce cooling, which means that gasification can displace both natural gas and electricity. On average, Canada uses fossil fuels for an appreciable portion of its thermal needs and the lifecycle GHG intensity of natural gas is 0.252tCO_2e /MWht whereas electricity's lifecycle GHG intensity is 0.071tCO_2e /MWht.[39]

  Natural gas typically costs in the range of $2-2.50/GJ (adjusted for efficiency to $3/GJ), but government is pressing suppliers to achieve increasing percentages of "Renewable

[39] GHGenius model v4.03 and Government of Canada 2018 National GHG Inventory.

Natural Gas" (RNG) to displace fossil-based methane. The syngas produced by RotoGasification is not directly usable as natural gas and so has historically not qualified as being renewable, however this appears to now be changing where syngas displaces natural gas. In the case of the proposed Esquimalt plant, syngas would displace natural gas for heating.

While confirmation will be required from the BC Utilities Commission (BCUC), we have discussed with Fortis and other utilities the potential for output to in effect, qualify as RNG, which is achieving prices of $20-30/GJ, so we have thus adopted a value of $20/GJ in modelling and assessed the implications in initial sensitivity models. Cooling is priced equivalent to the cost of electricity so for modelling purposes we have adopted $0.11/kwh. The ≈1km DES cost has been estimated and included as part of the system capex and the IRM model includes adjustment for conversion losses etc.

- **Water**. The largest single element of solid waste is in fact water but this is almost never reported. Kitchen scraps, yard and garden waste can contain as much as 70% moisture, i.e. only 30% is the dry component that creates energy. This is why incineration of waste is expensive, since combustion of waste requires it to be as dry as possible. By contrast Advanced Gasifiers work best with a moisture content of 20-25%, but can tolerate up to 50% moisture content, making them ideal for managing both liquid waste residuals and solid waste. In addition water (H_2O) when gasified, separates into hydrogen and oxygen, which the gasifier turns into hydrogen and carbon monoxide, the main components of syngas. Recycled heat is used to dry waste to the requisite level, with the water condensed as a bi-product, which has the potential to be filtered and reused as distilled water. In the IRM models we ran, we calculate up to 3.2 million litres of water may be generated and potentially reused annually as distilled water.

  Capital Regional District has an efficient potable water system with ample clean water supply at extremely low cost. Filtering water recovered from gasification for possible use and sale would thus add cost and not be competitive, net of revenues from sales. Therefore while the option exists to add filtration and bottle the water as distilled water, it would currently increase taxpayer cost to recover and sell water. We have thus assumed this will not currently be pursued, but can be explored and added in subsequent years if circumstances change and there is viable demand. The distilled water from gasification will be cleaned and discharged to storm sewers, or possibly to the main sewer. This decision can only be made once the volume is determined and wastes tested.

- **Carbon Credits**. Gasification of municipal waste has the potential to significantly reduce carbon emissions and is a verifiable offset able to be sold on carbon markets. Federal government has been pushing for a move towards carbon tax of $50/t$CO_2$e, by 2022 but this is not the level of revenues that might be achieved from sale of credits. The question thus arises as to the level that credits might achieve in the long term. If sale of heating is confirmed under BCUC regulations, the CO_2e benefit would not be available, which has been assessed as part of modelling.

  In emerging markets, long term values are difficult to predict and because carbon credits sell essentially to brokers, an allowance has to be made for profit margin. For modelling purposes we estimated half the expected value of carbon tax, then canvassed opinions from carbon sector professionals. They confirmed this as being reasonable. A rate of $25/t$CO_2$e has thus been applied which in reality, is likely to prove conservative as climate action strengthens.

- **Tipping fees**. Esquimalt collects waste from dominantly single family homes and charges based on cost recovery for this service. We calculate (Figure 22) the Township's total costs including haulage and disposal total on average approximately $191.81/tonne, although components are up to $277.50/tonne. As noted in s.4.3.2 (page 29), staff confirm that the Township does not collect all waste in Esquimalt and our research identified an additional 3,100 tonnes, which implies the total waste generated in Esquimalt may be in the order of 6,498 wet tonnes in 2019.

  There are thus two main initial plant options: a first that addresses solely the volume collected by the Township; and a larger volume that includes other Esquimalt waste volumes. Both would need Council and community support but the larger plant would be consistent with the need to plan for all the community's wastes. Both smaller and larger plant capacity options have been assessed.

  Regarding collection costs and to provide context, tipping fees at Hartland are currently $120/tonne for food waste, $59/tonne for yard waste, and $110/tonne for mixed MSW, which excludes the cost of collection and haulage. We used $75/tonne as a volume-adjusted average for food, yard and garden waste and $110/tonne for sorted MSW in modelling. This excludes haulage costs since these are needed to support collection and delivery of wastes to the plant, but which should be able to drop slightly, given that a local IRM plant should reduce or avoid trips to Hartland.

  While total revenues vary depending on plant size, it helps to provide context to this item. Tipping fees have historically risen roughly in line with inflation so this revenue is considered to have low risk. Tipping fee revenues are important in that where the plant is sized to cope with the full community waste, the tipping fees approach the cost of financing the plant. Since ≈52% of the tipping fees is controlled by the Township and ≈48% can be pre-contracted, this risk can be reduced before the project is committed.

- **Biochar**. Biochar represents an appreciable portion of the potential revenues from gasification and as it may be unfamiliar, greater detail is provided on this aspect.

  Most people will be familiar with biochar as charcoal for barbecues, which is usually wood, heated so the volatile organic compounds turn into gas and the residual is a crystalline carbon char, usually black and in lumps or powdery and containing minerals. Biochar is where the source is biogenic in nature and since waste is





Figure 37: Biochar Output & Testing

mostly biogenic (typically >88%), gasification of waste can create a biochar. It can be used as a sterile soil amendment for rehabilitation or stabilisation, or as a soil supplement. At the higher end, biochar may also be familiar as "activated charcoal filters", used for air filtration in the medical, laboratory and other sectors. Lower quality filters also use it, for example in pool and aquarium installations. Figure 50 provides a list of biochar uses, which are increasing because the carbon lattice structure retains organics, fertilizer, water and minerals, which are beneficial for restoring soils, improved plant growth etc.

Because it is sterile and retains minerals, biochar can essentially act as a fertilizer and subject to testing, should be able to exceed requirements for local land application, if this is desired. Figure 37 shows biochar output with weather testing. It can also be fabricated as a briquette (Figure 52), but an important benefit is its ability to maintain its structure and retain water, microbes and fertilizers.

Values for biochar have generally risen, linked to the biochar market and quality. Pivotal's research of retail biochar prices from late 2019 shows a range of retail prices, with the highest quality activated carbon filtration as high as US$48,000 per tonne.

Without testing and certification, values of biochar from waste are difficult to predict and likely to achieve lower levels of value. West Biofuels currently sell untested bulk biochar from RotoGasifier tests in California to a local municipal parks department, for use as a soil amendment, at US$750/tonne. Biochar used as a soil supplement is typically in the range of US$4,000 and higher retail. Following consultation with industry advisers in the US, we used US$2,000/tonne in modelling to test the sensitivity of the financial model.

Biochar has an element that commentators believe is increasingly likely to raise biochar's profile and value in the future. Independent studies have concluded that biochar sequesters carbon when used as a soil additive and the tCO_2e of biochar is 2.9336 times the weight. This means that with for food scraps for example, 100 "wet" tonnes would generate about 12 dry tonnes of biochar, which has a carbon sequestration potential of ≈35 tonnes CO_2e. While the amount sequestered varies depending on the nature of the waste, sequestration is gaining attention as a way to reduce atmospheric carbon but is not fully reflected in carbon credits or other revenues, which is currently the only financial value attached to sequestration. The intangible value of sequestration is increasingly substantial.

Because biochar is one of the more important contributors to the business case, and the exact amount of biochar can only be determined by testing and certification, we have recommended early testing so the value and sequestration potential are confirmed and pre-contracted before proceeding much further. Assessment of test results from biochar experts has been engaged but more will be required and as testing opens the potential for a system and yield guarantee, it is a recommended, fast and simple risk mitigation step.

5.5 Intangible Benefits

Over and above the tangible benefits of developing an IRM gasification system in Esquimalt there are numerous potential intangible benefits that will stimulate economic development and

prove to have benefits over and above the economics. The following list outlines some of the potential benefits likely to be achieved by the Township:

- The evidence of similar examples in Europe is that projects of this nature produce attention nationally and internationally, due to the linkage of financial and environmental leadership. An EU example resulted in demand for education and training, tourism, and partnerships from like minded business leaders, new commercial locations and hotels. We thus expect a multiplier effect where other business is generated because of the commitment to sustainability an IRM plant demonstrates. An example in Austria generated a 35% boost to a small rural community over a 5-10 year period after years of the community declining in commerce and size.

- We expect there to a local re-spending effect, where investment in local infrastructure and employment reduces payments to outside communities, and is replaced by retaining expenditures within the community. Examples of these include cessation of landfill spending, cessation of energy payments (heating, cooling) to external companies, and improved revenues from sale of biochar reducing taxpayer costs, allowing taxpayers to spend the financial benefit locally.

- External direct full-time jobs will likely be created in addition to the employees currently with the Township. Some employment will be technical but others will be more unskilled, thus providing broader employment opportunities. We also anticipate indirect service and support employment, the extent of which is difficult to quantify but unlikely to be large.

- There is an advantage for other BC and Canadian communities to understand how Esquimalt achieved and exceeded carbon neutrality on operations at negligible difference in cost, including sequestering carbon. In Europe this has generated eco-tourism and eco-training opportunities, increasing media coverage of the community. This creates media and recognition benefits without media expenditures and a positive association of the community with sustainable direction. As sequestration is a key international goal, this aspect is likely to gain the Township considerable and broad media coverage, with positive connotations.

- As noted previously, emissions from gasification are expected to be equivalent to a natural gas flue and are ≈88% atmospheric, i.e. not from fossil sources.

- A final relevant benefit for the region relates to Hartland Landfill. Assuming the recommended option is implemented in Esquimalt and then adopted across the region, there would be appreciable landfill diversion, which is projected to hit capacity by 2045. An Esquimalt IRM plant would only extend this life by approximately two years but if IRM is broadly adopted, the landfill's utility would be extended until at least 2186. We have not priced this benefit in financial or environmental terms, but it would be very considerable indeed.

5.5.1 Broader Carbon & Energy Reduction

IRM was in part conceived to reduce GHGs, which is a community objective. Should the decision be made to implement IRM, the plant will use an energy loop to distribute recovered energy to consumers, most likely in the vicinity of the municipal core and recreation centre – originally assessed by KWL. In that event, planning should include a review of facilities to

assess how to reduce their energy needs, which would permit the recovered sustainable energy to supply more buildings, thereby further reducing those buildings' carbon footprint and their energy costs. This is how IRM has been implemented in Sweden for example.

Our energy engineering advisor's review of the potential concluded that Esquimalt will benefit from a strategic Net Zero assessment to understand how to both reduce energy costs and carbon costs and also, how to phase in a District Energy Loop as part of a DES. This will benefit even if IRM is not pursued, because it is expected to support carbon reduction and reduce energy costs. Without this assessment, the DES will be planned based on existing energy demand, which will miss the potential to maximize both carbon and cost reduction. Most of this benefit will accrue to the Township, but we expect would also benefit other buildings and owners, and is thus recommended.

5.6 Risk & Procurement

Simple changes to how IRM might be procured could almost eliminate the cost, and/or near-eliminate the risk. Risk and Procurement are thus extremely important issues.

Many communities have common approaches to service delivery and use basic ways to obtain services. While self-supply and taxpayer funding of services may often be preferred, it has implications that should be carefully compared with other options. An introductory discussion of risk and procurement follows but a follow-up workshop is highly recommended.

5.6.1 Risk

We were asked to provide a preliminary comment on the main risks. While not a full risk assessment, it is intended to provide a preliminary grasp of the main aspects, their probability, impact potential and resolution options. There are a number of risks specific to projects of this nature worthy of note.

Item	Comment
Technology & operating risk	Almost all systems used in the waste sector have some form of technology risk, some being more widely known than others. The question is whether the risk/benefit ratio of pursuing an IRM direction makes the systems worthwhile; what alternatives exist; and whether the risks of the technologies are reasonable and can be managed. IRM uses more advanced technologies with fewer existing precedents in the way that Esquimalt intends to operate. This represents potential risk. However as shown by the technology review, other options to address waste have proven either incomplete, expensive, or fail to achieve environmental or resource recovery objectives and many have their own significant risks. While IRM has technology risk, the waste sector has few simple solutions, which is why innovation is needed with direct effort required to manage them. The issue for Esquimalt is therefore whether the risk represented by gasification is acceptable, given the alternatives and options for managing the risk.

Item	Comment

Firstly some studies suggest there are no gasifiers operating with MSW, which is incorrect. Internationally there are a significant number of gasifiers handling municipal wastes, with considerable operating track record. We have reviewed information on over 90 gasification plants operating in Europe and Asia processing MSW, scraps and biosolids with an equivalent total of more than 1,000 years' operation and more certainly exist operating successfully, processing MSW or MSW components. This is because gasifiers work with any carbonic material and do not treat MSW's carbonic feedstock differently.

Secondly, the risk can be managed either through running physical samples of the waste through a test unit in California, or by purchasing a small mobile unit (similar to that shown in Figure 38) for extended on-site tests.

Thirdly, the risk can be managed through guarantees. These would ensure handover and payment only occurs when the systems are achieving stable yields equal to those in the business case. Long term operating risk is partly a function of technology, but mostly down to the operator. This risk can also be offset through offsite monitoring. Combined, these insulate taxpayers from technical risk.

Lastly initial demonstration tests have been successful using local wastes and prove the systems work (Figure 27). The tests were independently observed and separate laboratory tests also confirmed suitability.



Figure 38: Mobile RotoGasifier Unit

The main technology selected is Advanced Rotary Gasification (RotoGasifier) manufactured by TSI Inc. of Washington State. The company was established in the 1990's with a long track record of successful operations and plants at multiple scales, including the world's largest gasifier pellet plant (Figure 47). Construction companies and operators with balance sheets exceeding C$20bn are prepared to underwrite the system and provide a full wrap (i.e. a guarantee). The fact that large companies with substantial funds are prepared to underwrite the gasifier provides assurance that the system works.

Should there be any concern about the technology after formal laboratory and physical tests, it may be possible to test the recommended system with an initial 5 tonne removable sled unit (similar to Figure 38). This should provide comfort with the system's capability and resolve any remaining questions about technology risk.

Item	Comment
	In summary while the probability of technology risk is high with all systems – not just Advanced Gasification - the impact is considered low/minimal (i.e. underperformance until corrected) and the ability to mitigate is high. Technology risk should not be a reason to reject the approach.
Feedstock risk	Esquimalt's feedstock characteristics have varied over the past ten years and can be expected to continue to vary. Any approach to managing waste must thus be adaptable to changes and resilient to feedstock fluctuations. Even though the plant is a multi-fuel system, this can be a challenge because waste quality will be managed by operators, not system manufacturers, making it difficult for them to guarantee systems. The community will want to dispose of waste but often lacks the diligence to separate wastes correctly, which places higher emphasis on ongoing management. Feedstock risk thus needs careful consideration. Historically landfills have been used and easily handle waste fluctuations, but these result in leachate, odour and rising GHGs, and fail to capture energy except at high additional cost and have significant residual post-closure costs and environmental challenges, which are rarely included in the cost during their operating life cycle. New technologies based on biological systems do a better job of capturing energy and avoiding environmental risk, but are susceptible to fluctuation (e.g. anaerobic digestion is sensitive) and have a high life cycle cost and thus, risk. Biological systems also have a limited band of wastes they can manage and are a less complete solution than gasification (noted in Figure 7). Feedstock variation is a less important risk for the Advanced RotoGasifier, which is a thermochemical and physical process. This provides a greater degree of control and certainty and the systems can be adjusted to manage changes in feedstock within broad operating limits. While the above should be sufficient to address technology risk, all technologies are susceptible to changes in feedstock, which is outside the technology supplier's control. A sample of waste from Langford, similar to Esquimalt's waste, has been tested by TSI and confirmed suitable for gasification. A demonstration test was also run (Figure 27), but has not yet been run for an extended duration, i.e. the system is expected to work, and has physically worked with similar wastes, but further testing is desirable. The system will be designed to handle a specific type of waste, with pre-specified tolerance. Ongoing effort will be needed to ensure the waste falls within the specifications, so this is considered a manageable risk but not without cost and process. Much of this can be addressed prior to substantial investment and commitment through testing.
Contract risk	There are multiple types of contract risk, the following considers some of the more distinctive risks only. Construction risks are common for capital projects with known mitigation strategies (insurance, bonding etc.) and

Item	Comment
	should be considered separately. The Township has some control of current waste collection services but this is not mandated by law and cessation is a potential risk. While the Environmental Management Act provides for the Minister to direct waste in a jurisdiction to be processed in a specific way, this has been declined for other communities such as Metro Vancouver, the issue being that doing so essentially expropriates a personal chattel. Private haulers expressed interest entering into long term contracts to deliver the waste. These contracts may also be at risk. This is managed by the system being sufficiently competitive to ensure that it can retain contracted haulers or if these fail, their replacements. This will be more challenging initially so care has been taken to assess the initial financial performance. While the taxpayer may be the 'underwriter of last resort' to the risk, most scenarios show that revenues should generate sufficient margin to avoid requiring subsidy. Other unique contract risks likely relate to long term systems maintenance, which has been raised with suppliers and can be managed through intellectual rights/permits, plans and licences in the event of supplier failure. Standard contract risks (such as construction) are typical for projects of this type and can be managed through appointing a General Contractor. Three qualified contractors are interested in taking this risk as a full wrap with this specific technology, two locally and one nationally, although more are likely to exist. This is positive as one in particular is familiar with the systems and suppliers and will guarantee them, with >C$10bn book value, i.e. substantial capability.
Cost/revenue risk	Revenue risks exist and are potentially significant, but most are considered low probability and manageable as they can be largely pre-contracted. Tipping fee risk can be contracted with haulers or is controlled by the Township. Biochar risk is the single largest risk so extra information on this component has been provided. Discussions with sector experts and gasifier experience is that this risk can be mitigated by testing samples and pre-contracting (see *Revenues* on page 45 and *Appendix 3:Biochar* on page 78 for more information). In terms of pricing, we re-checked with sector advisors to confirm potential and selected a sale price in the mid- to upper-end of the range for low grade soil supplements, knowing it should be feasible to exceed this price with good management, i.e. this risk is moderate as the price chosen is conservative. The volume output is also comparatively small, making it less risky to address. Biochar is an emerging market and currently prices are rising, but the long term growth risk of this revenue is not known. We tested the sensitivity of the IRM model to changes in biochar

Item	Comment
	revenues and mitigated this risk by ignoring growth potential for this item, beyond normal inflation. Revenues from heating and cooling can be contracted with community assets but recently, Fortis has indicated that it considers syngas to be equivalent to Renewable Natural Gas, making it eligible for RNG tariffs. We have a general LOI with Fortis for RNG production and have confirmed pricing potential with a major utility that has committed above the rates used. This price will require BC Utilities Commission ratification, but is logically being treated as RNG given that it replaces the need for natural gas and is from sustainable sources considered to be atmospheric carbon, and already complies with the sustainable electrical generation requirements. The value used in models represents a one third reduction from the maximum RNG rate indicated to us, i.e. is considered conservative, to manage risk. The risk of tipping fees and energy price reducing over time is considered low. This is as distinct from feedstock risk, discussed above. Cost risk was managed by obtaining budgets from providers and added appropriate contingencies however, until testing is undertaken and the feedstock and plant size confirmed, budgets should be regarded as preliminary but reasonable for current purposes. Enquiries were made to confirm debt and refinance rates under a range of possible procurement scenarios but the probability and impact of these is low. In summary revenue risk probability is initially high but addressed through pre-contracting, i.e., making it manageable. In the long term, contracts will require management and renewal, so this risk is considered low/moderate but manageable. Impact of both is likely to be limited to short term financial underperformance that is manageable. Initial cost risk is considered low in probability and impact given allowances in the model and will be addressed through underwritten performance-oriented fixed contracts. Long term cost risk exists and has been allowed for in modelling; impact is likely reduced financial performance.
Regulatory risk	While enquiries with the Ministry of the Environment indicate the Township should have authority to implement a system and the process to comply with environmental regulations is considered feasible, this requires confirming. As it should be feasible to mitigate this risk at low cost, but the risk is a pass/fail impediment, we recommend resolution of the ability to proceed first. Compliance is then a stringent but normal and manageable process. Environmental and other regulations could change, which is a concern for any private sector company or investor contemplating a project of this type. This affects emissions, aspects such as mandated recycling processes, and more. Typically existing permitted systems are either grandfathered or additional equipment added to provide compliance. RotoGasifier air emissions are

Item	Comment
	similar to that of high efficiency natural gas boilers, and particulates are handled through the Best Available Control Technology (BACT), so these risks can be pre-managed prior to commitment and managed continually. The risk is considered to have low long term impact and to be manageable. Community permitting is known to the Township and in its control. Planning and zoning risk require community participation but prior efforts (West Shore Innovation Days etc.) all indicate support. This risk is considered manageable. Over time community support could change, in which case the plant could be dismantled and moved, but this risk is considered low and manageable with reasonable cost to mitigate if it occurs. Regulatory risk may exist with BCUC approval for RNG, but would also occur if the plant moved into electrical generation. As this is a normal and understood process and associated risk, it exists but is considered low. While the probability of regulatory risk is considered low/moderate, it is manageable through grandfathering so the overall impact is considered low.

In summary, risks exist and in projects of this type are to be expected. The largest risk – technology performance matching the business case – can be offset using suitable procurement management. Most other risks can be mitigated before making final commitment to proceed. We do not consider any risks identified to date to be insuperable.

5.6.2 Procurement Through Delegated Management

One option for Esquimalt is that waste management is delegated to CRD. The advantage to this is that it would reduce complexity for Esquimalt, albeit with the associated risks and costs. Esquimalt would be reliant on CRD's planning and management and their solution, which Esquimalt taxpayers would pay for, but have less control of. Staff thus asked us to comment on this aspect.

The first consideration is how CRD plan to proceed with managing waste. In 2018 CRD issued an expression of interest for respondents to provide proposals to handle organics and residuals, but to date this call has not proceeded. As it was an expression of interest the responses were not firm proposals, so the cost is unknown and timescale uncertain. We have been advised that CRD are now considering using anaerobic digestion, which would cope with Esquimalt's organics but not other wastes. As noted earlier, digestion would leave ≈63.5% of Esquimalt's solid waste stream unaddressed whereas gasification should cope with all solid wastes. To fully compare the cost to Esquimalt taxpayers of using CRD's digestion approach with gasification, we would need to add CRD's cost of addressing the remaining ≈63.5% of Esquimalt's waste stream (per Figure 7), which raises the question of the planned other solutions to waste management.

CRD commenced public engagement to prepare a new solid waste management plan in 2019, which can typically take several years to complete and approve, so it does not currently have a plan or budget for the remaining 63.5% of solid wastes. This prevents us estimating the cost, timescale or environmental benefit of CRD's direction with an IRM plan for Esquimalt,

however digestion requires lifetime taxpayer financial support, which gasification avoids, so on this item alone, CRD's direction is expected to be more expensive.

This report concludes that appreciable GHG reductions are possible from gasification and an IRM approach – significantly exceeding the Township's corporate emissions and making an appreciable contribution to overall community GHG reduction. For the aspects of CRD's direction confirmed to date, we could not find an assessment of the GHG potential of anaerobic digestion (from when the CRD Liquid Waste Management project's business case was approved). While we cannot calculate this impact, the reduced energy capture of digestion compared to gasification means there is reduced ability to offset fossil fuels, and Hartland's location makes it difficult to deploy these benefits, so we expect at least on this aspect, that the environmental benefits of the known direction will be less than an IRM approach with a gasifier in Esquimalt. Should CRD maximize GHG reduction, this would be shared with other communities and the proportion shared with Esquimalt is not known.

It will be operationally simpler for Esquimalt to assign responsibility to CRD and it would reduce direct risk, but not avoid it. This risk would be handled by CRD and proportionately charged to Esquimalt taxpayers. Since this study concludes that implementing an IRM solution in Esquimalt could yield a financial and environmental dividend, devolving responsibility to CRD would probably reduce these potential dividends and benefits accruing solely to Esquimalt taxpayers – assuming CRD adopted them, which as noted above with CRD declining to pursue IRM (or the provincial direction, IRR), currently appears unlikely.

CRD's current known direction thus suggests it may be more expensive and less environmentally positive to delegate waste management to CRD than to have an IRM plant in Esquimalt. CRD could nevertheless revert to an IRM approach, in which case this aspect can be reviewed once CRD's plans and costs are firmer.

The main issue the Township will wish to consider is whether in overall terms, the potential financial and environmental benefits of an IRM approach are outweighed by the cost, risk and responsibility of setting up an IRM plant, and whether IRM is within Esquimalt's capacity and capability. While CRD is one way of addressing these issues, another is whether the costs and risks could be addressed by outsource contracting to companies with the technical and financial capacity to handle them. Initial enquiries (and the financial analysis) confirmed the potential for outsourcing with qualified companies, discussed below.

5.6.3 Alternate Procurement

In 1998 the NDP government at that time committed to using Public-Private Partnerships (P3's) with the objective of reducing capital debt, risk and costs, shifting procurement to a governance position where the direction, quality and performance criteria under which a service is delivered, whether by contract (with government ownership – the traditional mechanism) or some form of outsourcing. There are many variants to how such contracts can be structured and services delivered.

Two specific factors cause problems with standard procurement for IRM: (a) a lack of expertise in the consulting sector knowledgeable, experienced, qualified and competent with gasification; and, (b) very few technologies qualified and able to meet Esquimalt's needs, with typically few or no prior evidence of the exact wastes Esquimalt needs to process. This means quality advisory support for Advanced Gasification and IRM is low, making proposal

calls difficult to draft, review, rate and rank; and the technologies wanted are difficult to attract. Private sector providers are in consequence hesitant to bid – they lose confidence in the process – and rarely take risks they cannot control (e.g. emissions, regulatory etc.). These combine to make traditional procurement and contracting ineffective.

It is not the primary function of this report to provide recommendations on procurement but it would be remiss to omit it, because it can completely change the costs for taxpayers. For example one approach could eliminate the entire cost and substantially reduce or eliminate risk. Procurement is thus a critical aspect to consider.

Should Council decide to consider IRM further, we strongly recommend holding a procurement workshop because traditional procurement of IRM has repeatedly proven not to work and using it yet again will in our view be guaranteed to fail. This does not mean that IRM cannot be implemented however, as there are internationally adopted approaches[40] using benchmarks to protect taxpayer value, which are better suited and will in our view be necessary.

5.7 Implementation

In the event the Township considers proceeding further, it helps to have some basic understanding of what the next steps might be, because this illustrates how risk is managed. Foremost, we recommend taking a measured approach to mitigate risks as this will safeguard both project and taxpayer value. Aspects include, in no special order:

- Confirm IRM can meet MoE requirements and that CRD will amend the Solid Waste Management Plan accordingly. Confirm regulatory and development process;
- Undertake Detailed Development and Implementation Feasibility Assessment and develop an Implementation Plan;
- Undertake laboratory and physical tests for physical, chemical and energy suitability; model potential air emissions for the preferred option;
- Hold a workshop to more fully understand some of the key implications and options such as procurement, risk management, contracting etc;
- Confirm design and layout, costs and schedule; revise potential expansion and associated implementation plan, phasing and pricing;
- Undertake energy demand assessment for Esquimalt's core, map against plant outputs; prepare detailed DES plan including contract assessment; obtain pre-contractual commitments;
- Secure agreements with private haulers to confirm availability of waste supplies for an IRM facility through Letters of Intent with conditional contracts;

[40] See Wikipedia article and international legal expert summary.

- Prepare scope and cost for project management of IRM Plan implementation including bid process and selection of Prime Contractor, construction, testing, commissioning and certificate of performance and formal hand-over.
- Secure a suitable performance guarantee with gasifier manufacturer, and subsequently confirm a full engineering wrap from a qualified company/consortium with fixed cost contract and energy guarantee;
- Update capital and operating cost projections; update business case; and,
- Consider establishing an advisory committee with experienced appointees from disciplines able to provide advice and an element of oversight.

These steps and more should be structured following consultation with staff. Figure 39 illustrates phasing for an initial plant.

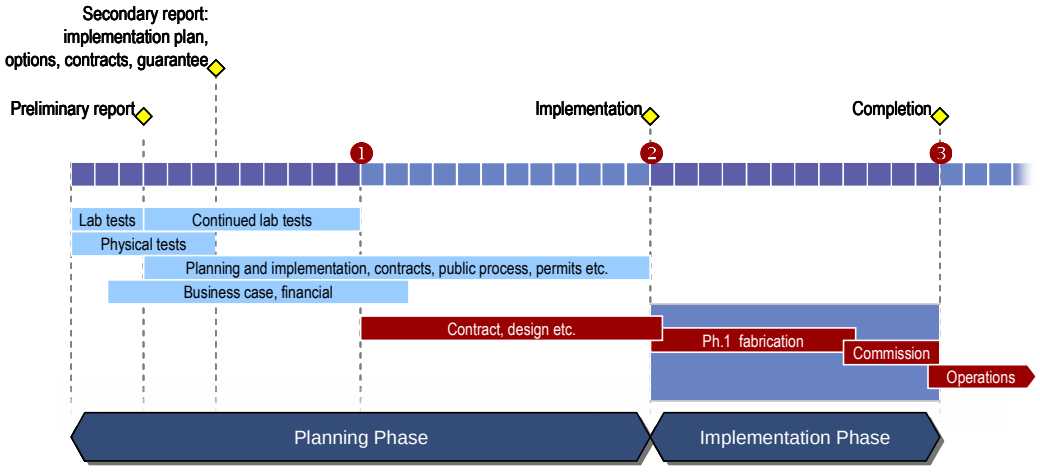


Figure 39: Implementation Outline

MoE and community confirmation, procurement approach and funding availability, testing and business case refinement are initially the most important. Testing is required to confirm a guarantee. Should any step raise concerns, the project would be suspended to allow for correction or the project cancellation, up to decision point 2. Up to that point costs will rise but will be comparatively low. We have not included phasing in Figure 39 (beyond a first phase) as this will depend on Council decisions. Most scenarios have the potential for a viable initial plant to be initially smaller but expand as demand and waste volumes rise.

6 Findings

6.1 Introduction

This section reviews modelling and findings from six scenarios developed with varying waste volumes and community growth potentials. The model combines financial and non-financial aspects, as described previously. Each scenario is a result of iterative assessment to attempt to optimize each scenario, to reduce costs, improve revenues and maximize resources and environmental results. This means additional research was undertaken to clarify wastes and obtain improved costs, but as the scope of the study is limited, further refinement of the preferred scenario is recommended, assuming the decision is taken to proceed further. The iterative optimization process is illustrated in Figure 2, *IRM Process Overview* on page 6.

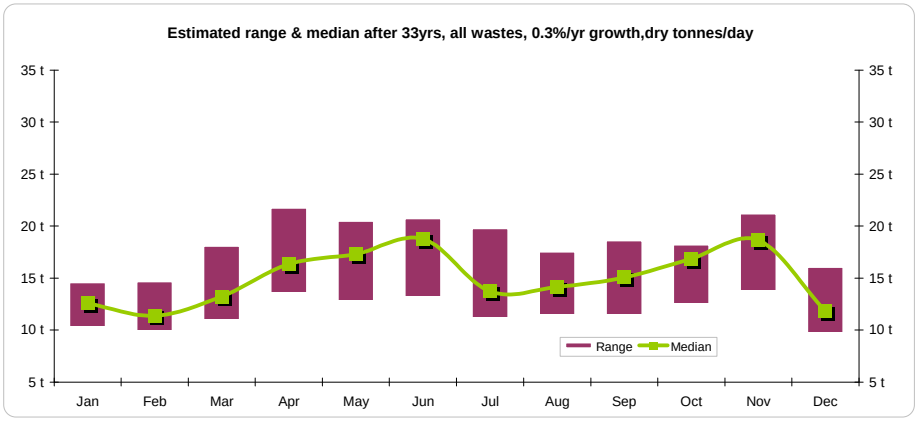


Figure 40: Scenario 2a – Minimum Growth

Reporting is summarized by major heading, since detailed modelling comprises full life cycle projections for 30 years plus residuals/reversion, adjusted for tiered equity and debt financing. Environmental models include full life cycle projection for GHG emissions (up to 150 years), since

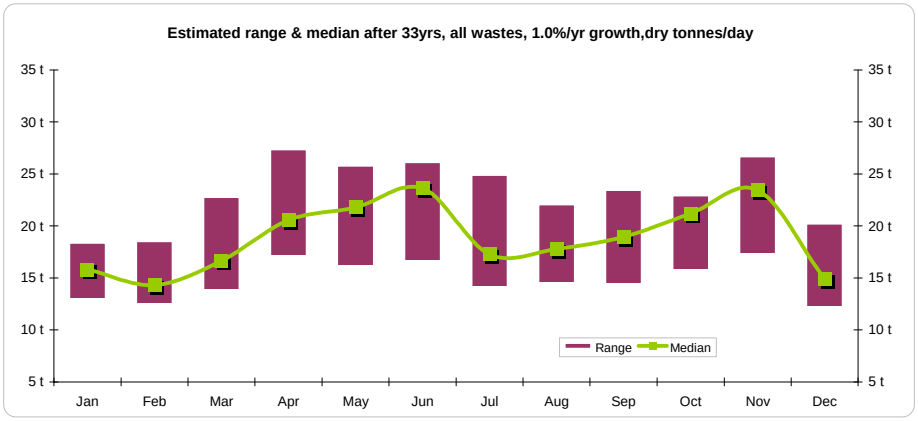


Figure 41: Scenario 2b - Moderate Growth

emissions have long life cycle. The environmental model was developed for Pivotal by Michael Wolinetz of Navius Research Inc., using international standards (government of Canada, EPA etc.) and includes life cycle projection by GHG emission gas and type so GHG reduction can be optimized. Should the project proceed, Navius should be contracted to undertake a more detailed assessment of the GHG and sequestration values.

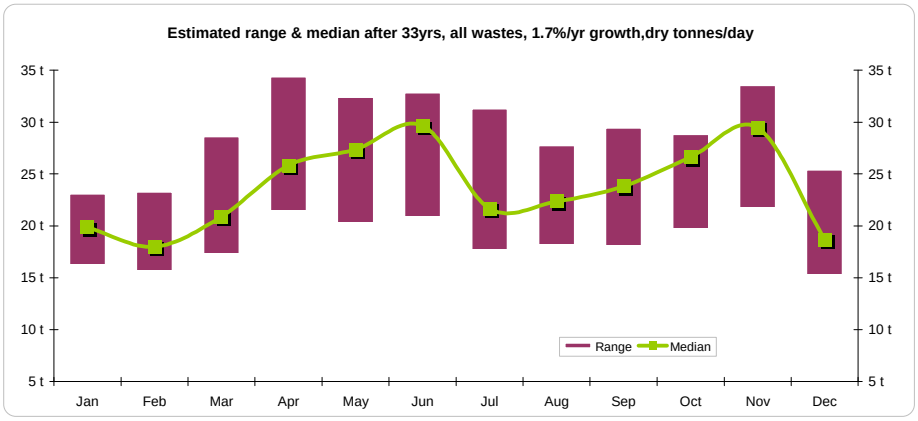


Figure 42: Scenario 2c - High Growth

Figure 30 summarized six main scenarios for assessment, however significant feedstock fluctuations mean that plant scale, unit sizes and the ability to adjust systems to meet changing volumes will be essential. Within the six scenarios, we thus looked at the implications of feedstock fluctuation, assessing both the median and range of possible flows, based on evidence of monthly data from 2011-2019. This was then applied individually to the Township's collections of MSW, yard and garden waste and food scraps, and interpolated to apply to private haulage volumes. While Figure 40, Figure 41 and Figure 42 look at combined wastes under low, moderate and high growth scenarios respectively, we assessed the implications for Township-only wastes and concluded that Figure 41 provides an understanding for plant and equipment sizing and planning.

6.2 IRM Results

Value is internationally defined as a financial sum that something can be sold, between a willing buyer and seller, acting at arm's length and without undue influence. This relies on something having a 'market' value, but government infrastructure often has little in the way of market equivalent or value, so the more applicable main metrics relate to the "worth" of a project. This allows for a broader assessment of environmental and resource benefits than purely their 'value in exchange', as in this case. An example of worth is that the community might think it is 'worth' undertaking something for the environmental and other benefits it creates, even if the cost exceeded revenues. In other words it is 'worth' implementing even though it couldn't be sold since it had negative 'value' on the open market. Worth can thus include the more intangible aspects of a project.

IRM models use financial metrics but also include non-financial metrics such as resource recovery and measurable environmental results. This moves towards a "Triple Bottom Line" assessment of worth. In this report the social dimension is not assessed, since this will be determined by Council and the community, who will have their own opinions of the project's overall "worth." The metrics in this assessment thus provide a range of indicators, so the community can reach its own conclusions of the project's "worth."

6.2.1 METRICS

The following explains the main indicators used in Figure 43 *Scenario Summary* on page 65. These metrics are intended to be used in combination, for example GHG reduction or landfill diversion indicators can be used with financial indicators, so the GHG results can be compared with the costs/revenues it took to produce them. Inflation is applied throughout the cash flow projection at BC's long term inflation rate of ≈2%.

One aspect we recommend strongly against is relying on discounted cash flow (DCF) metrics such as NPV and IRR. While useful in a market context, they fundamentally distort long term government project performance. While relevant should Esquimalt decide to partner with a private sector provider, they can be misleading and result in poor decisions if incorrectly interpreted. We will be pleased to explain this further if desirable.

A) Main indicators

The main project components for basic comparison of different options & scenarios		
01	Total capex	The total estimated cost of the plant in 2020 dollars, undiscounted.
02	Annual O&M	The annual operating and maintenance costs in 2020 dollars as at the plant's opening.
03	Waste volume	The total waste volume capacity of the plant, in original "wet" tonnes, as received. Plant operations (receiving, holding, metering, gasifier, dryer etc.) are adjusted to handle volumes and moisture content, by scenario.
04	Est. unit size/capacity	Volume processed by the gasifier in dry tonnes per day. This refers to gasifier capacity, which is adapted for each scenario to attempt to optimize overall net financial yields.

B1) Public Financial

Provides financial indicators for public delivery assuming 100% debt.		
05, 06	IRR, NPV	Internal Rate of Return and Net Present Value are discounted cash flow indicators used by the private sector to estimate the value of a project and are market indicators with limitations for public projects. The IRR is the percentage return over the project's life cycle from investing the project cost today, intended to be comparable with other investments where the project cost are invested initially. Few government infrastructure projects are undertaken in the way an IRR calculates. A common private sector threshold for an IRR in a 100% debt model might be 15%, but lower if there is a government covenant (say ≈11%). A lower yield may be perfectly acceptable for government undertaking a public project, especially if there are few alternatives.

		Governments often accept the IRR without appreciable challenge if it exceeds the cost of borrowing. The NPV is the "present value" of the project today, net of all future costs and revenues, over the project's life cycle, using a discount rate based (here) on the "cost of money." The discount rate emphasizes early costs and reduces longer term revenues, leading to distortion. For example $100 from sale of heating, in 30 years, becomes an NPV of $22.59. Since in practice costs of heating go up not down, discounting distorts long term project revenues. A positive NPV means the cost is exceeded by revenues and a higher value indicates lower likelihood of taxpayer support. A negative NPV may also be acceptable for a public project provided debt is included, which it is in our models.
07	ROI	The ROI is the ratio between the value of the project (i.e. its expected returns) as a ratio of the initial capital investment. The higher the ROI the better. Some analysts use different ways of calculating ROI but in this instance the ROI uses the net returns expected over the project's life (revenues minus costs, including the costs of capital). Generally, a positive ROI is good but a negative ROI may also be acceptable in a government context. The more the ROI exceeds the cost of capital the better it is viewed.
08	Life cycle profit/loss	The total net profit or loss from the project over its life cycle, undiscounted, inflation-adjusted. Similar to ROI, but provides an indication of the net profitability of the project over the projection period (here, 30 years). In a public context a positive net life cycle value indicates a dividend or profit and the higher the better, but a loss may also be acceptable (but suggests taxpayer support may be required). Note that this can disguise periodic negative cash flows where subsidy is required. #08 is not discounted and thus is not adjusted for time or risk, as compared with #06, which is discounted for time and risk. Metric #08 is distorted less by risk and time adjustments, since the cost of capital is included as a project cost, so it is closer to the net amount the taxpayer can expect over the life of the project.
09	EBITDA	Earnings before interest, taxes and depreciation. A standard financial indicator but has limitations for long term sustainable projects where debt etc. can be leveraged to improve viability. Largely an indicator used by the accounting professions, it helps to understand the overall revenue potential, undistorted by other factors.
10	Simple payback	Approximate number of years before the initial capital investment is repaid, net of costs. Less used by the public sector as it relates mostly to the point at which breakeven is achieved, which is of lesser concern in the public sector.

11 & 18	Taxpayer dividend/subsidy/yr, avg	The average dividend or subsidy required from taxpayers over the first ten years of operations. Adjusted and net of all costs and revenues, but assuming current tipping fees. Divided by the number of homes from Stats Canada 2016 totals, i.e. providing an estimate of the approximate dividend or subsidy for each home.

B2) Private Financial

Estimates the probable position of a private sector partner, financier and/or operator, for the project. Assumes 30% equity 70% debt, with refinancing.		
12, 13	IRR, NPV	See B1)05, B1)06. Private sector hurdle rates will vary depending on whether guarantees are available for aspects such as feedstock, but will typically be a minimum 15% at 100% debt and seeking 25-30% leveraged IRR on equity. NPV is typically compared to equity invested and usually required to at least exceed equity investment for the project to be of interest. The discount rate is usually set at the cost of capital or higher if the project is risky.
14	ROI	See B1)07. Private sector ROI is a less important metric for projects of this type but typically exceeding 15% ROI on 100% debt is a minimum requirement, with ROI >25% leveraged desirable.
15	Life cycle profit/loss	See B1)08. Private partners will require an appreciable return and will be interested to confirm a healthy long term cash flow, since #15 can tend disguise periodic dips in viability.
16	EBITDA	See B1)09. Private investors require a healthy EBITDA to sustain projects in the event viability changes over the project's life cycle. Threshold target requirements vary.
17	Simple payback	See B1)17. This is a basic indicator usually used in the private sector to estimate breakeven. Private sector interest is best with payback of ≈3-5 years or less. Beyond ≈7-10 years private interest in projects can be limited without underwriting or similar support.
18	Equity invested	Estimated total assuming 70/30 debt/equity on the initial capital investment. Depending on procurement structure and potential for public guarantees, lenders may require a higher equity ratio, reducing the potential leverage. 70/30 split is based on discussions with funds and an assumption of limited recourse but that Esquimalt will provide a long term contract for waste and associated fees.

C) Resource recovery

Physical resources recovered from waste, or resulting from conversion of waste, capable of beneficial utilisation.		
19	Face yield, mwt	Hourly gross thermal yield in megawatts. Measured gross at the point of generation, which will be greater than actually delivered.

20, 21	Total mwt/yr & life cycle	Total gross thermal yield in megawatt hours annually and over the project's life cycle. Measured gross at the point of generation, which will be greater than actually delivered.
22, 23	Total GJ/yr & life cycle	Total gross thermal yield in gigajoules annually and over the project's life cycle. Measured gross at the point of generation, which will be greater than actually delivered.
24, 25	Total biochar tonnes/yr & life cycle	Total projected maximum tonnage of biochar annually and over the project's life cycle, gross FOB plant. Note that this is not the same as the tonnes of CO_2e in #32 and #33, since the sequestered potential value is ≈3 times the weight of the biochar.
26, 27	Water potential, litres/yr & life cycle	Potential maximum water recoverable annually and over the project's life cycle. Note that this is initially expected to be filtered and discharged, as it is unviable to reuse at current CRD water rates.

D) Environmental

28, 29	tCO2e/yr && life cycle, redn/increase	Metric tonnes of carbon dioxide equivalent either reduced (in black) or red (a net increase) from the proposed project compared to the current management of waste (mostly landfilling). This is the projected GHG reduction/increase either annually (#28) or over the project's life cycle (#29). Note that this initial estimate compares between current waste processing and planned IRM system, net of emissions from each operation and assuming aspects such as unsold composting. The GHG reduction may increase once a detailed assessment is undertaken. Note also that the life cycle reduction is many times the annual tCO_2e reduction because emissions benefits have up to 150 years' life cycle.
30, 31	Vehicle equiv/yr & life cycle, less/more	The number of vehicles' emissions that the GHG reduction or increase is equal to, using standard government comparative indicators, either annually or over the project's life cycle.
32, 33	Sequestered carbon, tCO2e/yr & life cycle	The number of metric tonnes (GHG carbon dioxide equivalent) that biochar is potentially able to sequester. Note that tCO_2e is different to the total tonnage of biochar (#24 and #25 above) as biochar sequesters ≈2.9x the weight as tCO_2e. Further explanation including on sequestration is provided in *Appendix 3: Biochar* on page 78 and in section 5.4 starting on page 45.
34	Life cycle $/tCO2e profit/cost	The total project profit or cost, net, divided by the total life cycle tonnes carbon dioxide equivalent. This is useful for comparing GHG reduction options as it allows for net cost or profit comparison as a standalone GHG reduction strategy. Note that this includes any carbon taxes or credits, assuming these are paid/received. An amount greater than zero (i.e. a profit) indicates a net positive

		contributor financially, given the GHG increase or reduction noted by indicators 28 and 29.
35, 36	Tonnes/yr & life cycle landfill diversion	Total metric tonnes annually and over the project's life cycle, diverted by the proposed project. Useful for comparison of different potential waste diversion initiatives, in combination with other indicators (e.g. #'s 8 & 15), to determine whether diversion is achieved through increased taxpayer cost or conversely, profit.

6.2.2 MAIN FINDINGS

		Township waste collections only			Combined Township/Private Waste Collections		
	Scenario	1a	2a	3a	1b	2b	3b
	Population growth %	0.3%	1.0%	1.7%	0.3%	1.0%	1.7%
A) Main indicators							
01	Total capex	$16.4m	$17.3m	$17.8m	$21.3m	$21.3m	$25.3m
02	Annual O&M	-$1.5m	-$1.5m	-$1.6m	-$1.7m	-$1.7m	-$1.9m
03	Waste volume	3,740 t/yr	4,670 t/yr	5,830 t/yr	7,150 t/yr	8,930 t/yr	11,150 t/yr
04	Est. unit size/capacity	6 dtpd	8 dtpd	10 dtpd	13 dtpd	17 dtpd	21 dtpd
B1) Financial : Public delivery : Inflation-adjusted, 100% debt							
05	IRR	5%	9%	13%	16%	22%	24%
06	NPV	≈$1m	≈$11m	≈$24m	≈$46m	≈$71m	≈$93m
07	ROI (life cycle)	510%	660%	890%	1,040%	1,370%	1,470%
08	Life cycle profit/loss	$16m	$47m	$86m	$152m	$226m	$297m
09	EBITDA	$0.8m	$1.4m	$2.1m	$3.4m	$4.7m	$6.2m
10	Simple payback	≈21yrs	≈14yrs	≈10yrs	≈8yrs	≈6yrs	≈6yrs
11	Taxpayer dividend/subsidy/yr, 1st 10 yr avg	≈-$60/home	≈$0/home	≈$90/home	≈$200/home	≈$360/home	≈$480/home
C) Resource recovery							
19	Face yield, mwt	≈0.80 mw	≈0.90 mw	≈1.20 mw	≈1.60 mw	≈2.00 mw	≈2.50 mw
20	Total mwt/yr	6,700 mWht	8,300 mWht	10,400 mWht	14,100 mWht	17,600 mWht	22,000 mWht
21	Total mwt, life cycle	201,000 mWht	249,000 mWht	312,000 mWht	423,000 mWht	528,000 mWht	660,000 mWht
22	Total GJ/yr	1,000 GJ	1,250 GJ	1,560 GJ	2,110 GJ	2,640 GJ	3,290 GJ
23	Total GJ, life cycle	30,000 GJ	37,500 GJ	46,800 GJ	63,300 GJ	79,200 GJ	98,700 GJ
24	Total biochar tonnes/yr	460 t/yr	570 t/yr	710 t/yr	970 t/yr	1,210 t/yr	1,510 t/yr
25	Life cycle biochar, tonnes	13,800 t	17,100 t	21,300 t	29,100 t	36,300 t	45,300 t
26	Water potential, litres/yr	0.9 ml/yr	1.1 ml/yr	1.4 ml/yr	1.1 ml/yr	1.4 ml/yr	1.7 ml/yr
27	Life cycle water potential, litres	26.4 ml	32.9 ml	41.1 ml	32.8 ml	40.9 ml	51.1 ml
D) Environmental							
28	tCO2e/yr redn/increase	1,600 tCO2e/yr	2,000 tCO2e/yr	2,500 tCO2e/yr	3,600 tCO2e/yr	4,500 tCO2e/yr	5,600 tCO2e/yr
29	Life cycle tCO2e redn/increase	81,001 tCO2e	101,185 tCO2e	126,245 tCO2e	178,632 tCO2e	223,139 tCO2e	278,358 tCO2e
30	Vehicle equiv/yr less/more	350 cars/yr	440 cars/yr	550 cars/yr	780 cars/yr	970 cars/yr	1,210 cars/yr
31	Life cycle vehicles less/more	10,600 cars	13,200 cars	16,500 cars	23,300 cars	29,100 cars	36,300 cars
32	Sequestered carbon, tCO2e/yr	1,343 tCO2e/yr	1,678 tCO2e/yr	2,093 tCO2e/yr	2,844 tCO2e/yr	3,553 tCO2e/yr	4,432 tCO2e/yr
33	Life cycle sequestered carbon, tCO2e	40,290 tCO2e	50,330 tCO2e	62,795 tCO2e	85,333 tCO2e	106,594 tCO2e	132,972 tCO2e
34	Life cycle $/tCO2e profit/cost	$190/tCO2e	$470/tCO2e	$680/tCO2e	$850/tCO2e	$1,010/tCO2e	$1,070/tCO2e
35	Tonnes/yr landfill diversion	3,740 t/yr	4,670 t/yr	5,830 t/yr	7,150 t/yr	8,930 t/yr	11,150 t/yr
36	Life cycle landfill diversion, tonnes	112,200 t	140,100 t	174,900 t	214,500 t	267,900 t	334,500 t

Figure 43: Scenario Summary – Public Option

Figure 43 shows the results for each main scenario tested using the metrics in section 6.2.1 based on the plant being publicly financed and operated, with the recommended option highlighted in light green. In summary, we comment as follows:

- The scenarios are tabled in ascending order of waste volume from left to right (shown in lines 03, the wet waste volume and 04, the average dry tonnage processed daily). From a taxpayer perspective, viability is also arranged in ascending order from left to right with the least viable on the left and most viable on the right (note lines 05, 08 and especially line 11, which estimates the approximate taxpayer dividend or cost per door).

- The three scenarios with Township wastes (1a, 2a and 3a) are the most marginal and two may well require some taxpayer support (1a and 2a), with 3a viable, i.e. if community

and/or waste growth exceeds projections – and the likely maximum buildout – a plant would be viable with the Township's waste alone. It would nevertheless be possible to proceed only processing the Township's collected wastes, assuming careful management to avoid fiscal impact, but this would only address ≈52% of the community's waste.

- The extent of possible taxpayer support is not substantial in most scenarios, in part because we expect growth to exceed the minimum (≈0.3%) threshold. There will also be external savings not accounted for in this analysis (e.g. meeting corporate emissions targets without further cost, landfill diversion benefits, under-valued benefits from resource recovery price stability, sequestration etc.). The three Township-only waste scenarios are thus possible with minimal potential taxpayer exposure, but are more likely to result in taxpayer support at some stage, especially in the early years.

- All the scenarios with combined public and private wastes are expected to be profitable, with superior resource recovery and GHG/CO_2e reductions. Of these three scenarios, Scenario 1b uses the least growth experienced in 25 years and in our view could lead to under-assessing the capacity of waste going to an IRM plant. By contrast Scenario 3b assumes continued growth at one of the highest rates in recent years and probably over-estimates future waste growth. Note that the approach used allows for phasing to suit a variety of growth scenarios, allowing for phased expansion as growth occurs.

- The population and waste growth assumptions driving scenario 2b are considered the most realistic, not least because this assumes population growth roughly equal to the Township's current buildout projection estimates, and is in line with the regional trend. 2b is viable and is our recommended planning model should IRM proceed further. Note however that Scenario 1b shows that even in a worst case scenario with combined wastes, an IRM plant should exceed breakeven. These projections should be reviewed following receipt of better detail if the project proceeds.

- All scenarios are expected to be able to eliminate the Township's corporate GHG emissions. Scenario 2b should yield GHG reductions of ≈4½ times the corporate emissions profile and represents GHG reductions equivalent to ≈12% of the entire community's waste – roughly equal to taking 970 cars off the road or over 29,000 cars over the 30 year projection. This is a significant contributor to the Township's declaration in 2019 of a Climate Emergency and target of carbon neutrality by 2050. We are not aware of similar progress by other Canadian communities, except at appreciable cost or other impact, whereas this has the potential to generate a dividend.

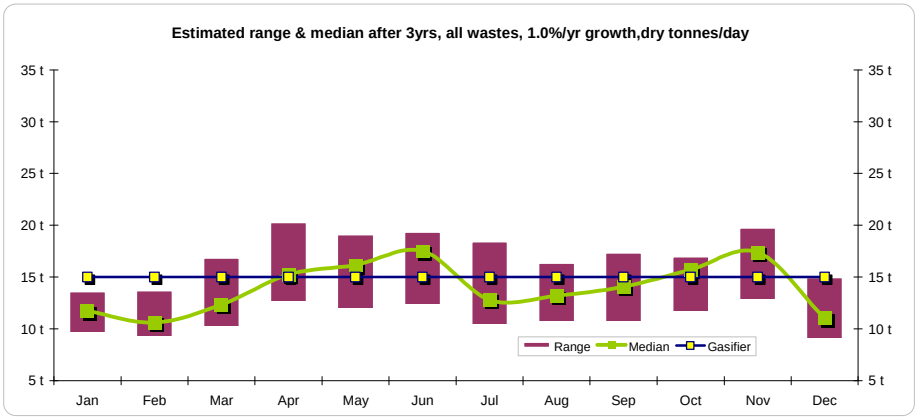
- Option 2b is expected to generate an additional sequestration potential in the range of ≈3,600 tCO_2e annually or ≈107,000 tCO_2e over the 30-year projection period. While the carbon credit value is included in the model (at \$25/tCO_2e), sequestration is more significant than accounted for by carbon credits, as it takes carbon out of the atmosphere. This is one of thee few mechanisms able to achieve this.

- In all scenarios the major resources recovered are heating, cooling and biochar with primary revenues from biochar, tipping fees and energy sales. The main costs are the gasifier and related plant and equipment. Most of the key costs can be controlled from an early stage through fixed price contracts, guarantees and bonding, including guarantees on system yield (on which the business case relies). This will limit cost impacts. Similarly, most of the main revenues can be managed through contracts signed prior to

proceeding, again stabilising the business case and managing risk. Phasing is discussed as part of the concluding comments in section 7 on page 71.

- Landfill diversion varies but is positive under all scenarios, with initial laboratory and demonstration tests running local wastes (Figure 27) confirm the systems can work with the proposed wastes. Under the recommended scenario (2b) diversion is estimated at ≈8,930 tonnes per year or almost ≈270,000 tonnes over the plant's initial projected life cycle. The review of technologies here and previously by CRD concluded there are few options as viable or as complete in handling wastes, which mirrors European and Asian experience.

- Waste volume fluctuations and population growth uncertainties affect viability. The scenarios were therefore mostly priced based on 5 tonne units, to allow for flexibility to increase capacity, as and when warranted. This allows for scaling to happen in pace with community changes, minimizing initial costs, but it increases smaller plant costs because 5 tonne units are more expensive than tailoring units to meet volume. Further review is expected to reduce costs further, which would improve viability and accuracy. In short Figure 43 and Figure 45 will tend to be somewhat conservative and should Council decide to progress further, further assessment and pricing should be beneficial.



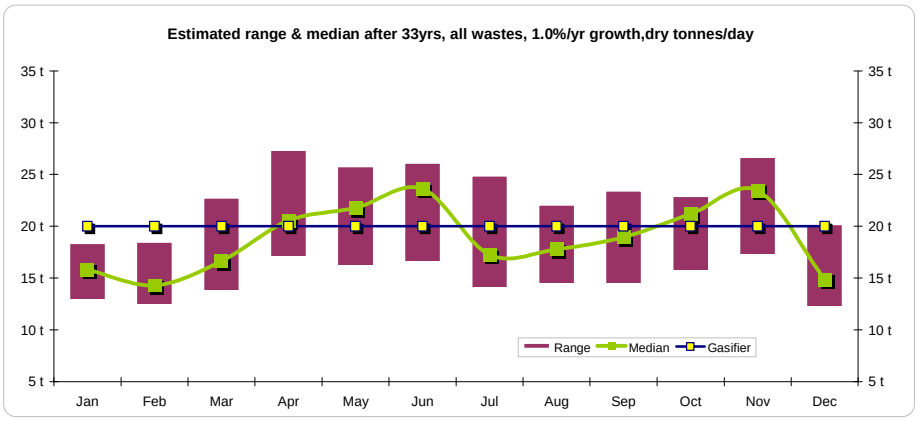


Figure 44: Phasing estimates, Scenario 2b

- Although Scenario 3b is designed to assess a high population growth scenario, it also assesses the impacts of having a larger plant. It suggests that working with neighbouring communities to accept their wastes would improve viability, resource recovery and environmental results, as would potential dividend and risk buffer. The difference might imply allowing up to two extra trucks per day, but be more economic and efficient. In the event that private sector engagement is pursued we expect this will be proposed.

- Figure 43 scenarios show a plant could be viably phased to minimize cost and risk. The initial plant would likely be based on Scenario 2a (Township waste), which would operate at breakeven. As private haulers confirm their wastes an extra unit would be added (Scenario 2b), which improves viability. This should be possible to conclude during the initial planning period. Depending on how growth proceeds, extra 5 tonne units can then be added as the community grows, so if growth exceeds expectations units can be added or if needed, resized and replaced. The potential maximum gasifier capacity on the site exceeds the Public Works site's ability to receive and process wastes without re-planning the site, so the constraints on waste handling and viability are more site-related, not technology- or viability-related. Note that should Council decide to proceed to a next stage of assessment, a more detailed review of wastes and phasing will be needed.

Figure 44 shows Scenario 2b initial volumes with three 5 tonne units (upper graph). A fourth unit can be added as required (lower graph). Projections indicate that if growth continues at the current high rate, extra units may be required within 5 years, but that extra units improve viability, environmental and resource recovery. Extra units can be added as needed in response to demand, peak flows or maintenance needs. Further assessment of this should be included in planning, assuming the decision is taken to proceed to the next steps.

6.2.3 Overall Viability

We also ran the same scenarios, adjusting the financials for possible private procurement, where the operator would also finance the project. This represents the viability as it might be assessed from a private sector perspective, summarized in Figure 45, with the recommended option highlighted in light green.

		Township waste collections only			Combined Township/Private Waste Collections		
Scenario		1a	2a	3a	1b	2b	3b
Growth %		0.3%	1.0%	1.7%	0.3%	1.0%	1.7%
B2) Financial : Private delivery : Inflation-adjusted, leveraged, 30% equity							
12	IRR	6%	13%	28%	40%	48%	49%
13	NPV	≈$0.7m	≈$11.0m	≈$28.8m	≈$51.7m	≈$70.8m	≈$94.0m
14	ROI (life cycle)	450%	1,020%	1,860%	2,620%	3,550%	3,950%
15	Life cycle profit/loss	$23m	$55m	$102m	$173m	$235m	$311m
16	EBITDA	$1.2m	$1.8m	$2.4m	$3.7m	$5.0m	$6.4m
17	Simple payback	≈28yrs	≈11yrs	≈5yrs	≈4yrs	≈3yrs	≈3yrs
18	Equity invested	≈$5.1m	≈$5.4m	≈$5.5m	≈$6.6m	≈$6.6m	≈$7.9m

Figure 45: Scenario Summary – Private Option

- Results from indicators 12-18 show that it should be possible to attract private sector participation if desired, but with caveats.

- Pursuing a plant that only processes the Township's wastes is likely to be more difficult as the financial metrics are generally below the level a private partner might want, without guarantees of some form. We expect private investors will typically wish to see leveraged returns in the order of 25% or better, subject to how risk is managed, so 1a, 2a and 3a are likely to require guarantees or other structures to help manage risk.

- Combined waste scenarios raise both issues and opportunities for the private sector:

  - All metrics for Scenarios 1b, 2b and 3b are positive for private involvement. Again, the Township is recommended to resolve issues it can control to reduce risk, maximize

the system and the opportunity. Full privatisation while possible, may reduce control and flexibility, not just taxpayer dividend. Metrics 12-18 generally show that Council has options, but we caution that standard procurement processes are problematic due to limited suppliers with few qualified and experienced advisors, as noted in section 5.6 *Risk & Procurement* on page 50.

- Leveraged returns are attractive with equity contributions of ≈$5-8m and total net life cycle returns (undiscounted, inflation-adjusted) of ≈$247m and net present value of ≈$77m for the recommended scenario. These are attractive numbers, however the project size is smaller than most suitable private partners would consider, thus potentially limiting the ability to attract a private partner unless a larger plant taking extra local wastes is considered acceptable.

- The private sector scenarios show that if higher waste volumes are acceptable, profitability improves, with similar environmental and resource recovery benefits. Should Council decide to engage the private sector in some form, there will likely be interest in taking more waste than purely Esquimalt's, to improve economies of scale. Should Council choose to limit this or other innovation, both interest and viability will be more difficult to attract.

In summary the higher waste volumes of combined Township and private waste scenarios are more likely to attract a private partner, if the Township considers this desirable to explore further. This is mostly because the improved viability with larger volumes helps with plant size in addressing fixed costs specific to this project (DES costs, rock, complex site etc.).

6.3 Initial Sensitivity Assessment

IRM models are generally less sensitive to assumptions than other infrastructure projects, largely because of the more varied range of possible revenues and ability to control costs through fixed price contracts, revenue- pre-contracting and technology guarantees. While reviewers may believe that specific assumptions have major impact on results, we generally find that the models are considerably less sensitive than first perceived. We have therefore run basic sensitivity analyses using the recommended scenario (Scenario 2b) as a basis, varying selected input assumptions by 20% in each case and measuring the impact on: (1) average net dividend per year over the first ten years; (b) total net profit over the life cycle; and, (3) the Internal Rate of Return. Comparisons used the public sector finance recommended model, debt financed.

Sensitivity to 20% change			
	Avg. profit/yr	Life cycle profit	IRR
Capex	-12%	-3%	-15%
O&M	-9%	-10%	-3%
Debt rate	-5%	-1%	0%
Tipping fees	-7%	-5%	-4%
Heating	-6%	-4%	-3%
Cooling	-7%	-5%	-4%
Biochar	-32%	-22%	-14%
Carbon credits	-1%	-1%	0%

Figure 46: Preliminary Sensitivity Analysis

Figure 46 shows the sensitivity of the items listed to a 20% "worst case" change (i.e. costs increased; revenues reduced). In Figure 46 a 20% increase in capex results in a 12% drop in average profit per year over the first ten years with only a 3% drop on overall net profits over the projection life (30 years) and a 15% drop in the IRR. Note however that this shows the

percentage drop, so while the capex changed by 20%, the original IRR fell from 22.3% to 19.0%, which is equal to the 15% drop in IRR shown in Figure 46.

While the "Average profit/.yr" column shows the change in average profit over the first ten years of operation, the "Life cycle profit" column shows the change over the entire projection (33 years). The IRR column is more helpful in understanding conventional market understanding of viability, which emphasizes early profits and is the reason we recommend relying on DCF indices for assessing long term infrastructure projects of this nature.

Biochar is the largest single revenue generator in the models and most sensitive aspect, and thus a key target for early risk reduction. Figure 46 shows that a 20% drop in biochar value results in up to a 32% drop in the average profit over the first ten years, with smaller but still appreciable impacts on the life cycle profit and IRR. It equates to a drop from $3.2m/year average profit down to $2.4m/year. It is thus important to confirm biochar revenues and mitigate this risk by pre-contracting revenues as soon as possible. It is also the reason we adopted low values for this item compared to market evidence noted in Figure 54 (we used US$2,000/tonne based on industry expert recommendations whereas retail is up to US$48,000/tonne). Thus while this is an important risk item to resolve early on, the potential exists for a plant to be more viable than assumed in all models. Elimination of any revenues whatsoever from biochar suggests a plant would be viable but marginal. No expert we consulted expects biochar to be unsalable.

Other items with sensitivity are the capital, operating and maintenance costs, which is to be expected. Strategies to deal with capital costs (and related performance and yield guarantees) have been explained. Operating costs will need continual diligence to maintain at manageable levels but are not a major item on their own. Maintenance will over time be important to maintain but again is manageable providing planned preventive maintenance is undertaken. A long term allowance for this has been made in the budget.

This is not intended to be an exhaustive assessment of the main sensitivities in the model, but is taken into account in the risk section (on page 50). The model and related recommended planning sequences are structured to try and mitigate risk, with implementation intended to address or quantify and mitigate the main risks before major financial commitment.

7 Conclusions & Recommendations

We conclude that IRM can be implemented in Esquimalt, with appropriate care and due diligence. The existing Public Works site appears to have sufficient space to be able to accommodate a plant of the scale needed to address the wastes currently in Esquimalt, and be able to cope with expansion of the plant to meet increased waste volumes, as the community grows and for the foreseeable future.

The Township collects ≈52% of the identified waste streams and while a plant could be implemented solely addressing this volume of waste, doing so is only anticipated to achieve breakeven and is likely to continue to be marginal. However discussions with haulers indicate they are willing to contribute their Esquimalt wastes under contract, which would raise both economies of scale and viability. We recommend pursuing this further as it helps pay for fixed costs such as site preparation, DES etc. while improving environmental results.

Uncertainties about waste volume, content and fluctuation in flow, as well as population growth, mean that a flexible implementation approach to IRM is important but achievable by phasing the plant. On this basis most scenarios are expected to be viable and could potentially yield a substantial dividend. A phased plant would likely start at ≈$15m but rising to ≈$21m as the waste volumes and community grows. This cost could be reduced or even eliminated, depending on: (a) procurement approach; and, (b) grants. Any financial shortfalls could be addressed by temporarily accepting waste from adjacent communities.

Under all scenarios the environmental benefits are potentially significant. The Township's declaration of a Climate Emergency and commitment to GHG reduction are reasons to consider IRM because the recommended scenario can yield GHG reductions of ≈12% of the entire community's GHG profile and ≈4½ times the Township's corporate GHG profile, i.e. ≈4,500 tCO_2e annually, ≈223,000 tCO_2e over the life cycle. It is also expected to sequester ≈40 tonnes (CO_2e) for every 100 tonnes of waste received, or ≈107,000 tCO_2e over the project's 30 year life cycle. This is a very significant advance in carbon reduction.

Ministry of the Environment guidelines revolve around the 5Rs process. The steps already taken by Esquimalt and reduced waste volumes already meet the guidelines, and technology reviews over the past decade, and this study, mean that Esquimalt is using best practices and technology. This means Esquimalt should be able to proceed to the next steps from a regulatory standpoint. MoE will have continued involvement through permitting, but gasification is a known item and permitted by them, so while there will be a rigorous permit and monitoring process, we do not expect this to be an overwhelming impediment.

In conclusion, a viable initial plant is likely to require a capital commitment in the order of ≈$15m (±15% on capital), but be expanded to ≈$19m (±15%) once other Esquimalt wastes are confirmed. Adding extra units to address larger waste volumes can be undertaken as and when required and while the initial plant is expected to only yield a small dividend, expansion

thereafter is expected to be increasingly viable, with commensurate improvements in environmental benefits.

In closing it is important to note that engagement was undertaken to confirm key aspects such as the potential to contract with haulers, manufacturer pricing and procurement options with alternate service delivery. Implementation is thus considered feasible and if undertaken appropriately, is expected to be both financially and environmentally beneficial for the Township and Esquimalt taxpayers.

Appendix 1: Glossary

5R's hierarchy	The 5 R's hierarchy is a pollution prevention principle to guide the recovery of wastes according to Reduce, Reuse, Recycle, Recover and Residuals Management
AD	Anaerobic digestion (see below)
Anaerobic digestion	A system where microbes are used to convert feedstock into gas, usually with a high methane content ("biomethane"), usable instead of natural gas. The digestion by the microbes happens in a sealed vessel where oxygen is minimized
Alternate Service Delivery	Different way of delivering services where a private company participates in the service delivery. Can range from full outsourcing through hybrid contracting and/or partnering, including funding variations
ASD	See Alternate Service Delivery above
Biochar	Biochar is charcoal like substance that is made by burning organic material in a controlled low or zero oxygen process and used as a soil amendment for both carbon sequestration and addition of minerals
Biogas	Product (usually but not exclusively) from an anaerobic digester. Typically contains contaminants (water, carbon dioxide etc.)
Biomethane	Methane generated from biogas after it has been 'cleaned' for use as natural gas
Biosolids	Solid portion of liquid waste
Carbon credits	A carbon credit is a tradable certificate that allows the company that holds it to emit a certain amount of greenhouse gases. One credit is equal to equivalent emission of one tonne of carbon dioxide (tCO_2e)
Carbon footprint	A carbon footprint is the amount of greenhouse gases, usually measured as an equivalent in terms of tonnes of carbon dioxide, released into the atmosphere by a particular human activity
Carbon neutral/negative	Reducing carbon footprint either to zero (i.e. Carbon Neutral) or where carbon is sequestered (carbon negative)
Capex	The capital costs

Circle Draft	Type of gasifier modified from normal up/downdraft systems where the syngas is recirculated to reduce tars and raise yields
DCF	See section 6.2.1 starting on page 61
DES	District energy system usually distributing heat in hot water pipes
DTPD	Dry tonnes per day
EBITDA	See section 6.2.1 starting on page 61
ESP	Electrostatic precipitator – used to remove particulate matter from air emissions
Feedstock	Feedstock is the processed waste stream material mixed for input into the dryer and gasifier systems. It may consist of municipal waste, food scraps, and yard and garden waste but can also include selected construction and demolition waste
Fluidized bed	A gasification system where a bubbling bed of sand or other similar material is heated to a high temperature and turns the feedstock into syngas
Gasification	Is a thermochemical and mechanical process where the feedstock is heated in a chamber with zero or minimal oxygen to produce a synthesis gas ("syngas")
GHG	Greenhouse Gas
GJ	Gigajoules, a unit of energy often applied to natural gas
Integrated Resource Management	Is an approach to water, energy and waste management that stops viewing them as wastes, and instead aims to maximise their use and value as resources, in ways that reduce costs to taxpayers (or even create profit) and reduce greenhouse gas emissions (GHGs) and pollution
IRM	See Integrated Resource Management above
IRR	See section 6.2.1 starting on page 61
MoE	Ministry of Environment and Climate Change Strategy
MSW	Municipal solid waste
MW	Megawatt, a unit of energy usually applied to electricity
Net Zero	Refers to buildings that generate 100% of their energy needs, either on- or off-site, from renewable energy sources. See World Green Building Council explanation. IRM generates renewable energy
NPV	See section 6.2.1 starting on page 61

OCP	Official Community Plan
Opex	The operating costs, usually including maintenance costs
Outsourcing	Arrangement with a private sector company where the private entity delivers some component a government need or service, either in whole or part. May or may not include finance, usually includes performance criteria
P3	See Public-Private Partnership below
Plasma & plasma arc	A system of gasification where the feedstock material is heated to a high temperature so that it creates a gaseous plasma. Typically high yielding but requiring high energy inputs to generate and sustain plasma generation
Public- Private Partnership	Contractual arrangement between government and a private sector company where services are delivered by the private party. Typically includes some form of private financing, either interim or long term
Renewable natural gas	Methane generated from processing a feedstock that is largely "atmospheric" in nature, i.e. is not extracted from mining or similar methods, and thus avoids being a "fossil fuel"
RNG	Renewable Natural Gas see above
ROI	See section 6.2.1 starting on page 61
SWMP	Solid Waste Management Plan
Syngas	A mixture of hydrogen, carbon monoxide and carbon dioxide plus small amounts of methane, butane, propane and pentane
Swiss Challenge	Procurement approach where government works with an identified proponent, then seeks bids based on the developed project to safeguard best value for the taxpayer
TPD	Tonnes per day
Tipping fees	Tipping fees are the charges applied by CRD for the disposal of waste types at Hartland landfill
Updraft	A gasification system where ≈10% air is introduced from the bottom and syngas comes of the top
Downdraft	A gasification system where ≈10% air is introduced from the top and syngas comes of the bottom

Appendix 2: Advanced Gasification

Gasification is a process that converts carbon-based materials into a mixture of carbon monoxide, hydrogen and carbon dioxide gases. Gasification is achieved by reacting the feedstock material at high temperature (above 500 degrees Celsius) with a controlled low amount of oxygen and/or steam. The molecules separate from the carbon containing material and form a gas mixture called synthesis (syngas) gas or producer gas which is itself a fuel. The energy or power derived from gasification and combustion of the syngas is considered to be a source of renewable energy if the gasified compounds were obtained from biogenic material like wood, food scraps, yard waste, biosolids etc.

During gasification the carbon containing material goes through two stages to efficiently extract its energy. In the first step, called pyrolysis, the material is heated to around 250 ˚C to produce volatile hydrocarbon gases and biochar. Then as the temperature increases the hydrocarbons and biochar with the proper mixture of oxygen or high temperature steam, produces syngas and crystalline biochar.

The advantage of gasification is that using syngas is potentially more efficient than direct combustion of the original fuel because it can be combusted at higher temperature where the upper limit of the thermodynamic efficiency is higher. Syngas can also be converted into hydrogen, methane and other fuels and chemicals via various additional processes.

We selected the Advanced RotoGasifier developed by TSI (Figure 47) as the technology the Township would use. The RotoGasifier is an improvement to up/down draft gasifiers and used in TSI's existing torrefaction systems[41] systems where the pyrolysis process is controlled to maximize biochar production. The first was built in 2010 in Everett, Washington to demonstrate operations and test feedstocks, with systems based on similar design in successful operation in the forest and agriculture industry across the USA, in Canada and internationally.



Figure 47: Plants in Georgia, California & Louisiana

[41] Torrefaction uses only the pyrolysis stage of gasification where the process is controlled to maximize biochar production.

Figure 47 includes (middle picture) a mobile demonstration unit with a capacity of 240kg/day (dry weight), with the largest current plant in Waycross Georgia (1,860 tonnes/day, 680,000 tonnes/year – pictured on the left). More typical systems will have multiple units to support maintenance to allow for peak volumes and 24/7/365 operations (e.g. the 44 tonne/day plant in Louisiana, right).

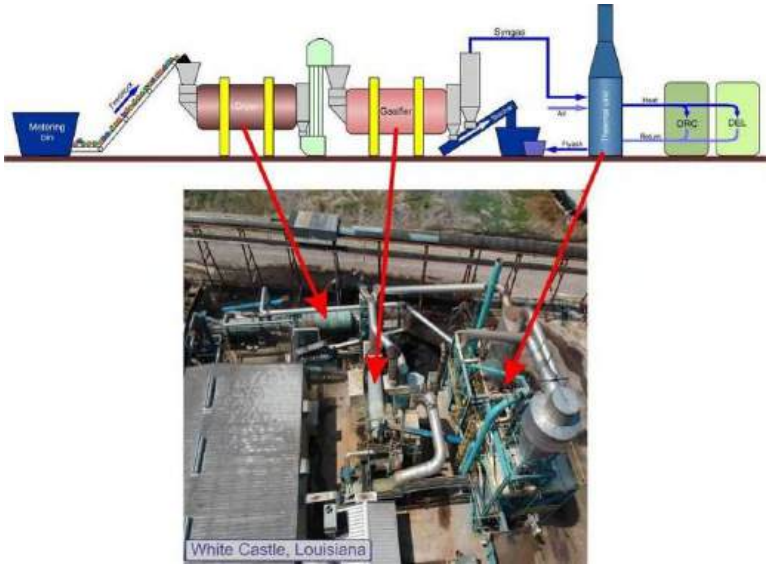


Figure 48: Schematic Overlay of White Castle Plant

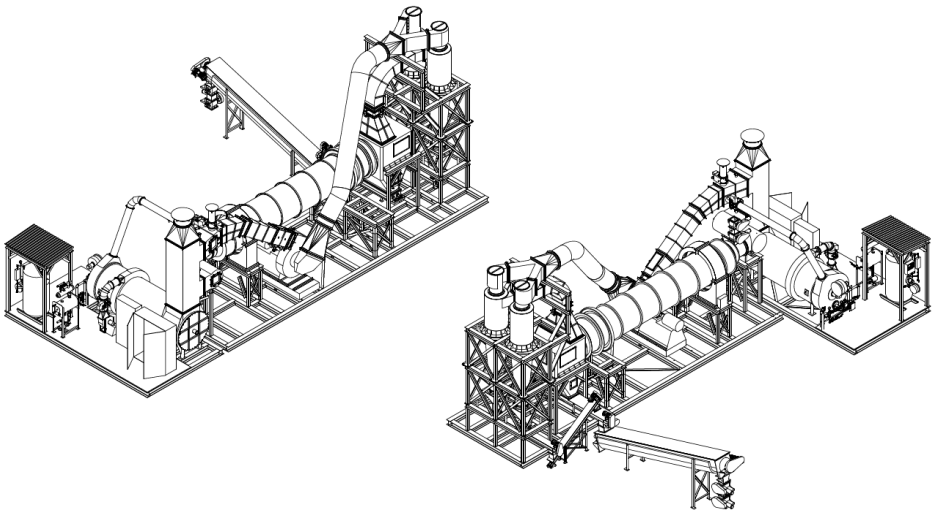


Figure 49: Gasifier Schematic

The horizontal rotating design addresses vertical processing issues by eliminating channelling and bridging, which can require shutdown to clear, thus improving operational efficiency. The RotoGasifier's horizontal rotating chamber improves flexibility in feedstock types and with its double airlock feed system, results in improved gas quality, better performance and overall improved efficiency, with its reduced downtime. The plant can be scaled to feedstock availability, implemented in stages to meet growing demand, is simple to operate and has a high level of automation.

Appendix 3: Biochar

An initial introduction to biochar is provided on page 79, with the following providing additional detail.





Background & Uses

Biochar is created by heating organic materials to produce something similar to barbecue wood charcoal. It has multiple uses and more are being identified, so both demand and value are increasing. Gasification is able to produce a quality biochar since it heats the feedstock without oxygen, thus avoiding combustion and producing biochar's crystalline carbon structure with other minerals.[42] While the quality, size, nature and granularity of biochar depends on the products it is created from, the main uses include:

A. Use as an energy storage material. Because carbonic material is combustible, biochar is a relatively high density means of storing energy;

B. Use as a filtration medium. At its most pure, "activated charcoal" or "activated carbon" but also used for lower-purity filtration. Uses include the medical, scientific, industrial and commercial sectors for odour management, particulate containment, but also water filtration and applications that don't require high purity, e.g. liquid waste etc.;

C. Use as a soil amendment to rehabilitate soils lacking structure or requiring improved water and nutrient retention, including use as a natural, organic fertilizer. Biochar's moisture retention capabilities supports communities with water scarcity or where nutrients are being washed out of the soils;[43]

D. Use as a mechanism to sequester carbon. It is one of the few viable and proven ways to be carbon negative, especially for Municipal Solid Waste, which is mostly atmospheric carbon. For every 100 tonnes of sorted MSW or food scraps for example, biochar can

[42] Char or charring refers to the darkening of a surface from combustion. It may be a charring of non-organic matter whereas biochar relates specifically to organic matter as described above. Some consider biochar as designating its use for organic purposes.

[43] An Overview of the Current Biochar and Activated Carbon Markets (Hugh McLaughlin, PhD, PE — Lee Enterprise Consulting, Inc. BioFuels Digest October 11, 2016).

sequester up to ≈35 tonnes CO_2e, which is a substantial potential contributor to GHG reduction commitments given this can be achieved incidentally to processing municipal biosolids or solid wastes.

While biochar's use can be traced back over 2,500 years, its wider utility has only recently been understood as a way to reduce Green House Gases.[44] Unlike many other approaches to GHG reduction through sequestration – which incur costs – biochar is a saleable, organic commodity, which reduces sequestration costs. It is also less energy-intensive to produce and qualifies as a "green energy" source, with lower GHGs.

Advanced Gasification biochar will vary depending on the source material, so the feedstock has to be assessed and tested to determine the most suitable market and process. Based on tests, sales can then be pre-contracted to reduce risk in the business case.

Primary uses for char & biochar

1. Animal farming – ≈90% of the market in Europe
   - Litter, silage and slurry agent/treatment
   - Feed additive / supplement
   - Manure composting agent
   - Water treatment in fish farming
2. Soil conditioner
   - Fertilizer, compost additive or substitute
   - Plant protection
   - Trace element substitute/rehabilitation
3. Building sector
   - Insulation material & humidity control
   - Air and sub-soil decontamination
   - Electromagnetic radiation barrier
4. Decontamination
   - Soil remediation (mine-works, military bases, landfill etc.)
   - Soil and wastewater filtration
   - Pesticide barrier
   - Pond and lake water aeration & filtration
5. Anaerobic digestion & biogas production
   - Biomass additive in anaerobic digesters
   - Biosolids and digestate treatment/filtration
6. Water & wastewater
   - Active carbon filter for wastewater treatment
   - Pre-rinsing additive for wastewater treatment
   - Soil substrate for organic plant bed wastewater treatment
   - Composting toilet wastewater treatment
   - Micro- and macro-filters for potable water
7. General commercial & industrial
   - Exhaust filters for emissions and intake
   - Industrial material – carbon fibres, plastics etc.
   - Electronics – semiconductors, batteries etc.
   - Metallurgy and metal reduction*
   - Cosmetics – soap, skin-cream, bath additives etc.
   - Paints and coloring, e.g. colorants, industrial paints
   - Energy storage/production* – pellets, lignite substitute
8. Medical - Detoxification, pharmaceutical carrier, topical etc.
9. Fabric additive – underwear, insulation, deodorant etc.
10. Wellness
    - Mattress/pillow filling to address odour, toxins etc.
    - Electromagnetic radiation shield – microwave ovens etc.
    - Food Conservation

*All uses are considered to sequester carbon except as noted by **

Figure 50: Biochar Uses

Market

The biochar market is expanding as new uses are identified and while supply is also increasing, demand is currently outstripping supply, resulting in rising prices. The following comments on the nature of the market as at late 2019.

The price of biochar varies depending on its characteristics and by market. There have been several qualified assessments of biochar markets, mostly focussed on activated carbon (i.e. the filtration market) because this is better developed with known retailers.

The "Global Activated Charcoal Market" report[45] assessed revenues and volumes from 2013 with projections through 2025. It concludes the activated carbon market was estimated at

[44] See the International Biochar Initiative (IBI) and the United States Biochar Initiative (USBI).

[45] Global Activated Charcoal Market (Androit Market Research, 2019).

US$4.72 billion in 2018 and is likely to exceed US$6.60 billion by 2025 with a broad array of sector demand for activated carbon, shown in Figure 51.[46]

A 2013 survey conducted by the International Biochar Initiative ("IBI") indicated prices between US$73/tonne and US$12,267/tonne, but did not distinguish biochar quality or whether the product is wholesale or retail. A 2014 IBI study found the mean price to be US$2,286/tonne[47] and by 2016, as demand and supply expanded in lower value ranges, that the mean price dipped to US$1,820/tonne.[48]

Roskill Market Reports[49] noted that internationally, the average value of shipments from the USA increased from US$2,700/tonne in 2012 to US$3,822/tonne in 2016. They expect international demand will raise US prices for speciality biochar grades, pressured by this international demand.

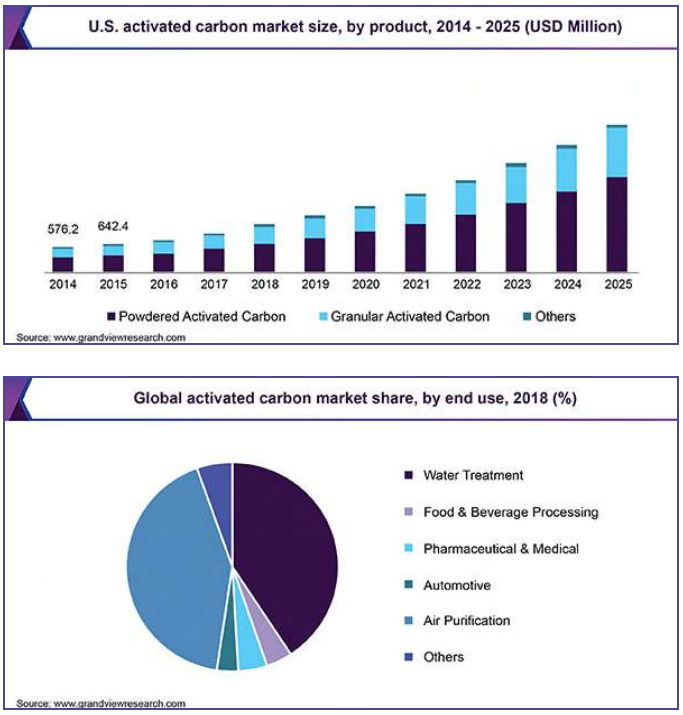


Figure 51: Activated Carbon Value & Demand

A 2018 US Forest Service analysis,[50] reported prices paid for biochar upward from US$660/tonne with an average price was US$1,134/tonne, but with US$1,758/tonne the most often cited price. This mostly considered soil amendment biochar however, which typically achieves lower values than filtration biochar. The report expects demand to continue to rise, outstripping supply, so prices are expected to rise despite expanding supply.

In summary, recent studies have shown an increasing demand and price for qualified biochar with the most recent studies showing it at a minimum US$2,000/tonne for soil amendment and lower quality biochars, with higher values paid for filtration medium. Wholesale prices are typically 25-50% of retail, subject to certification, and demand and prices are expected to rise for the foreseeable future.

In November 2019 we reviewed online biochar sales, mainly in the US. Listings are mainly for small retail packages of char sold as an amendment or for filtration, shown in Figure 54. Listings averaged ≈US$15,000/tonne for filters, ≈US$7,550/tonne for



Figure 52: Rotogasifier Biochar

[46] Grand View Market Research study summary.
[47] Applied Energy study, (Campbella, Anderson, Daugaard & Naughton, 2
[48] Biochar vs Activated Carbon (Finger Lakes Biochar, 2016).
[49] Roskill Market Reports (2017 activated carbon forecasts to 2025).
[50] Survey and Analysis of the US Biochar Industry (Preliminary Report, 2

soil amendments and the overall median is ≈US$10,000/tonne. 78% of list prices exceed US$5,000/tonne.

Generally, the higher quality biochar requires certification and attracts a higher price as filters than as a soil amendment. Note also that gasifiers can recycle filters and resell or improve energy yield, increasing productivity and value.

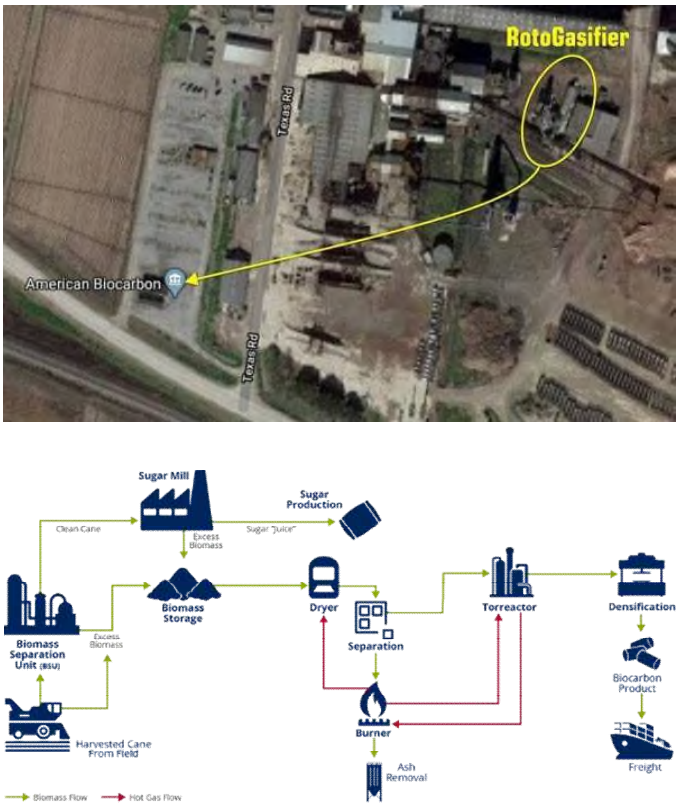


Figure 53: American Biocarbon Process, Louisiana

Sale price differences are mainly influenced by: (a) impact of product branding, marketing and market dominance of specific brands; (b) size of the individual package being sold – with smaller packages commanding a higher price per metric tonne; (c) the quality and certification, with filtration typically using a higher quality, more expensive biochar. Where used as an energy fuel the price is expected to relate to the price of electricity. The White Castle, Louisiana RotoGasifier plant produces biochar able to be used either for generation or other highest and best uses, making it a flexible product saleable into multiple markets (Figure 53[51]).

A characteristic of biochar is that it sequesters carbon when used as a soil supplement or 'buried'. Since municipal waste (liquid and solid) are largely atmospheric carbon in nature, biochar can sequester approximately 2.9336x its tonnage as tCO_2e (per academic assessments). This not only applies to soil supplements, so only energy use of biochar would fail to sequester carbon. The market benefit of sequestration is currently not being fully reflected in either market demand or pricing.

Quality

Currently, most biochar is sold without compliance with standards, which are increasingly developed around the International Biochar Initiative (IBI). This covers aspects such as chemical parameters, toxic elements, origin, feedstock, composition, metal and other properties (such as, moisture, organic carbon, C:H ratio, ash, nitrogen, pH, electrical conductivity, lime content and particle size distribution). Certification carries the "IBI Certified™" seal. Going forward we expect certification will be more important for uses that require quality control, e.g. laboratory or medical uses, than other uses.

With variable feedstocks, biochar is tested regularly to asses whether its properties create challenges with the intended use. Advanced Gasifiers can be adjusted to improve biochar

[51] See also American Biocarbon web site. Process diagram courtesy of American Biocarbon.

quality and volume, or to reduce aspects such as volatile organics. Organic feedstocks (wood, kitchen scraps and other organics) may mean adjusting separation to meet the quality required for specific markets. This means that the biochar's value can vary but is controlled through ongoing testing and specific application.

Advanced Gasification biochar (from wood chips) has been tested against IBI Standards and while they did not seek certification, the biochar is sold to the City of Woodland, CA for US$750 per ton. TSI tested organic-based biochar with electron microscopy and confirmed the high quality lattice required for quality biochar. Pivotal also supplied samples to University of Calgary researchers who considered it would be suitable as a soil amendment, with final confirmation being project- and feedstock-specific.

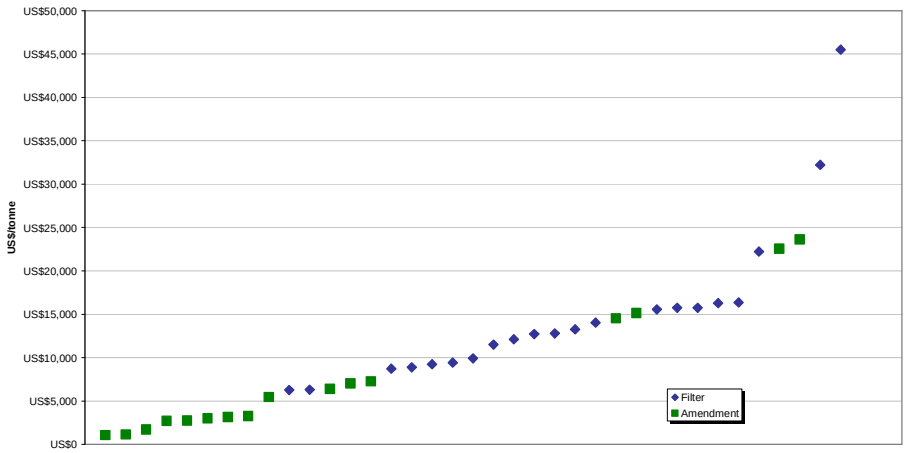


Figure 54: Retail Biochar Prices, 2019

Conclusion

Biochar is a product and market that is gradually maturing. A range of values are proving feasible, with increasing demand, linked to biochar quality and volume, which varies by feedstock and yield, so biochar futures are currently limited. Advanced Gasification biochar can improve revenues while potentially sequestering carbon, making it an area of rising interest. Because biochar value can affect Advanced Gasification project viability, biochar potential should be assessed through testing and using Pivotal's IRM model, so the project, feedstock, operations and contracts can be aligned to optimize potential.

Appendix 4: Grants

FEDERAL

1. Federal Infrastructure Fund – started in 2016 with $518m, and now has committed $9.2 bn for green infrastructure and clean technology projects that stimulate the economy with a focus on GHG emission's reduction and economic development at the community level, and includes solid waste management projects. The fund is open for applications. The IRM project would qualify for this funding.

    a. Green Infrastructure Fund – The current Phase II round of funding has been allocated, however, there are likely to be follow-on programs for renewable energy from solid waste management, GHG reduction and community climate action programs. The IRM project would be a suitable project for this funding.

    b. Municipal Climate Innovation Program is delivered by FCM and extends through 2022. It is designed to assist communities to adapt to the impacts of climate change and assist with GHG emissions reduction. The IRM project would qualify for funding under this program.

    c. Gas Tax Fund focuses on core infrastructure needs but does not specifically mention solid waste management but it may be applicable for the Township's IRM program with its benefits in resource recovery from wastes, GHG emissions reduction and potential revenue streams.

    d. Natural Resource Canada – The Clean Growth Program has $155 million for investment in the demonstration of projects in clean energy with an emphasis on GHG reduction. They are currently not accepting applications but are to in the future.

2. Western Economic Diversification program funds innovation initiatives for clean tech. The funding calls have very short application time frames. The IRM program would appear to qualify under the acceptance criteria for funding.

3. Green Municipal Funding Program has $120 million for feasibility studies, sustainability plans and waste management projects making it ideal for the IRM program. It is open for application.

New grants have been publicly mentioned, related to COVID-19 measures. These are changing rapidly so are not detailed here.

PROVINCIAL

1. Energy Mines AND Petroleum Resources – Community Energy Leadership Program provides funding for clean energy project owned (incl. partial ownership) by local Government or First Nations. Funding supports communities to reduce GHG emissions reduction, stimulate economic development and promote partnerships with industry to advance the clean energy sector. Going forward funding will be on a project by project basis. Previous funding ranged from $10,000 to $175,000 per project for construction costs. Contact is Nairn Albrecht, Ph: 1.778.698.7166; email is celp@gov.bc.ca.

2. Ministry of Environment and Climate Change Strategies and Municipal Affairs administer the CleanBC Communities Fund (CCF) which target capital infrastructure projects for public use and benefit to meet the following outcomes: increased capacity to manage renewable energy; access to clean transportation; energy efficiency of buildings and generation of clean energy. Calls for applications are not scheduled at this time. Available funds total $63 million. Contact: Municipal Affairs at 1.250.387.4060; email is infra@gov.bc.ca.

3. Municipal Affairs and Housing – Infrastructure Planning Grant Program offers funding to local government that supports energy and climate change action. Grants are provided for projects to study the feasibility costs and technology options. The funds are available to match funding up to $10,000. Contact: Municipal Affairs at 1.250.387.4060; email is infra@gov.bc.ca.

MUNICIPAL

1. Western Economic Diversification – Regional Inn ovation Ecosystems Program provides funding to municipalities for clean energy and added value agriculture projects. The IRM project would qualify for the clean energy and biochar production which could be used as an advanced soil supplement. Contact: Ph 1.604.666.6256.

2. Federation of Canadian Municipalities (FMC) – The Green Municipal Fund supports projects that reduce energy consumption (generating GHG reductions) and improve air, water and soil quality. Funds are available for planning, feasibility studies and pilot projects. Low interest loans and grants are available for capital projects. The IRM project would qualify for this funding program. Applications are open on a project by project basis.

3. Union of BC Municipalities (UBCM) provides funds for capital and planning projects for energy, sustainability planning, solid waste management, transit, water and wastewater. The IRM project would qualify for this funding. Contact: Ph. 1.250.356.5134; email ubcm@ubcm.ca.

4. Real Estate Foundation of BC provides matching funds for planning studies with single or multiple phases for renewable energy projects. Applications are due in February and August annually. The IRM project would qualify for this funding but call before submitting application. Contact: Ph. 1.866.912.6800; nick@refbc.com.

5. VanCity Credit Union – Community Partnership Program provides funding for planning and assessment of community based clean energy projects that address sustainability and climate change action. The IRM project meets those criteria. Funding maximum is $10,000. Applications are open.

6. Columbia Basin Trust provides funding for community based clean energy project development up to $50,000. The IRM project qualifies for this funding. Contact: Ulli Mueller; Ph. 1.800.505.8998; email umueller@ourtrust.org.

7. BC Bioenergy Network provides funding for municipal projects on a project by project basis including partnership funding. Funding is focused on technology feasibility, development engineering design, project management t, and capital costs. The IRM project would likely qualify for this funding. Contact: Scott Stanners; Ph. 1.604.889.4549; email scott.stanners@bcbionetwork.ca.

Appendix 5: Study Team

Person	Role & Qualification
Graeme Bethell	Graeme is a gasification specialist, President and co-founder of Pivotal IRM. He specializes in the integration of solid and liquid wastes and biomass to produce clean heat (cooling) and power (CHP); biochar markets; and district energy systems. As a Technical Specialist, he specializes in advanced gasification, sustainability and climate change, with a focus on community invigoration through job creation, integrated energy resources, carbon reduction, environmental sustainability and economic development.
Chris Corps	Chris is a Land Economist and is CEO and co-founder of Pivotal IRM. His experience has included feasibility and viability assessments for sustainable land development, economic development and energy projects. He specializes in complex business cases and has worked on some of the largest and most difficult projects in Europe and Canada. He has lead international projects and set financial standards in current use in 132 countries covering sustainability and valuation, and has been a leading member establishing government financial standards. Chris originally recommended BC government investigate IRM, which led to the Provincial Integrated Resource Management study, liaising with Treasury Board and Climate Action Secretariat staff. Chris advised multiple ministries and agencies on how to embed sustainability into capital planning and advised on sustainability revisions to the Capital Asset Management Framework, which is BC's procurement policy.
Dr. Matt Summers	Dr. Summers is a professional engineer with a background in both the liquid waste treatment and Advanced Gasification. He specializes in bio-energy system design and analysis and is a Specialist in kinetic and thermodynamic measurement and modeling; manufacturing systems design and analysis, and precision sensors and control systems. He is Chief Operations Officer, West Biofuels, LLC, with responsibilities for design, construction, and start-up of commercial biomass gasification systems, plus he supervises staff, contractors and project partners to coordinate projects and directs the research at their Research Center used for testing technology performance, controls and emissions.
James Pratt	James is a Registered Professional Planner, James brings 25 years of experience as an independent consultant serving governments, First Nations, non-profits, and network organizations. A specialist in

Person	Role & Qualification
	participatory engagement, he facilitates opportunities for meaningful involvement of residents and affected parties who can provide valuable feedback and input. He has provided consultation services as part of planning in local and regional governments, as well as First Nations and non-profit organizations. Based in Victoria since 1995, he has a reputation as a principled, dedicated professional.
Albert Bicol	Albert Bicol PEng LEED AP is internationally experienced in energy systems and sustainable energy master planning and development. Albert's background with Energy Net Zero master planning and development led him to conclude that Advanced Gasification is one of the only ways that buildings can be self-sustaining in term of energy, while reducing carbon. Albert has advised on Vancouver's False Creek development, Shangri-La Hotels in East Asia and is currently advising on projects including a major global airport, a 1m sq ft Vancouver development, a major multinational with 26 outlets in the Lower Mainland alone, and a 1m sq ft multiplex entertainment centre in Japan, all sole sourced and direct awarded and assessing Advanced Gasification. This includes Canadian federal agencies.
Michael Wolinetz	Michael is a Partner at Navius Research Inc., who helped develop the GHG automated calculations in Pivotal's IRM model. We expect to use this in developing GHG assessments relative to Esquimalt's 2030 and 2050 GHG reduction goals where Michael will help evaluate Pivotal's GHG modelling and will review the model's estimates. It is envisaged that this summary reporting will be sufficient at this stage, but Michael would then be able to provide more complete assessment as part of a separate study. Michael specializes in quantifying greenhouse gas emissions and their impacts from actions and policies undertaken by government. He specializes in CIMS energy-economy modelling, in designing and executing energy and air emissions forecasting analyses with this model.

Appendix C

First Nations Relations
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FIRST NATIONS RELATIONS MANDATE REFRESHER

September 30, 2020

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PURPOSE

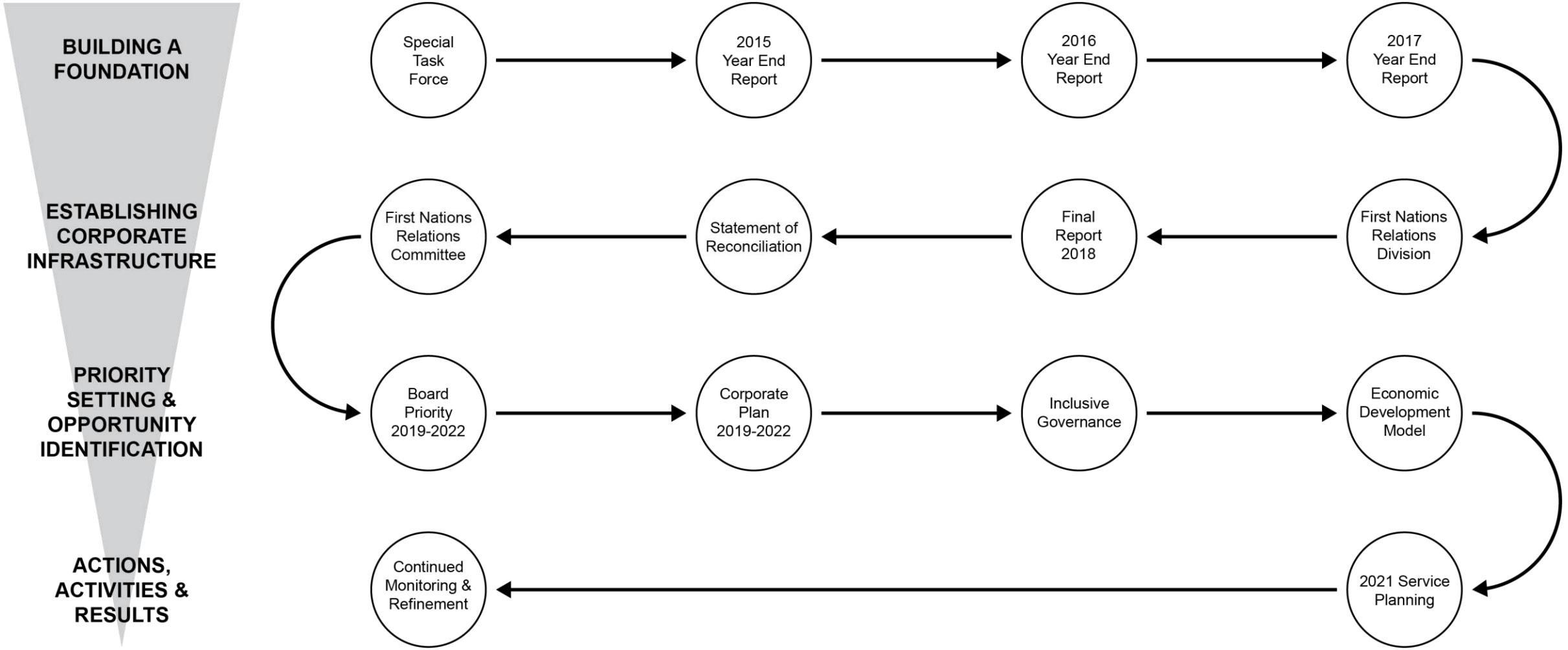
To provide an overview of past CRD efforts to support better First Nations relations and outline how these efforts have helped to shape the current and planned activities related to First Nations Reconciliation.

Focus on:

- Special Task Force on First Nations Relations
  - 2015 Year End Report
  - 2016 Year End Report
  - 2017 Year End Report
- Final Report (2018)
- Statement of Reconciliation (2018)
- CRD 2019-2022 Board Priorities
- CRD 2019-2022 Corporate Plan

FIRST NATIONS RELATIONS TIMELINE

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SPECIAL TASK FORCE (2015 – 2017)

Established in January 2015, initially with a one-year time-frame and the purpose to:

- Meet with the Chiefs and Councils of each First Nation with Reserve Lands in the CRD to hold discussions about how First Nations might want to participate in the CRD governance framework;
- Report out on these conversations with recommendations to the CRD Board through the Governance Committee; and,
- Have conversations about governance and does not extend to other CRD programs or services.

2015	Met with seven First Nations to establish foundational relationships and explore matters of interest including: participation in regional discussions and decision-making, economic development, ecological restoration to allow for a renewed connection to the land and water for food, medicine and culture.
2016	Extended the term of the Task Force, hosted indigenous cultural training and made a number of key recommendations including committee and commissions membership, advocating for changes to the LGA, sharing of information, include First Nations in a COW meeting, and identify resources to accommodate greater participation, engagement and Reconciliation
2017	Worked in support of the WWTP with First Nation Liaisons, Crown consultation, archaeological protocols, completed the Sea to Sea Traditional Use Access Agreement with T'Sou-ke Nation and the E&N Rail Trail Agreement with Esquimalt Nation and developed service agreement templates for water, sewer and fire protection.

SPECIAL TASK FORCE FINAL REPORT (2018)

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The Final Report summarized the Task Force's governance and Reconciliation findings and recommendations, documented successes and some of the lessons learned and proposed a CRD Board committee structure to guide future relationship building.

Importantly, the Report introduced "Reconciliation through Economic Development" as a mutually beneficial framework for building partnerships with First Nations governments.

"Indigenomics is a process of claiming our place at the economic table of this country. This modern claim to our existence, is facilitated as a right to an economy, a right to our modernity, a right to be consulted and is further interwoven with the establishment of legal pressure points for higher standards of stewardship and reciprocal prosperity."

- Carol Anne Hilton, CEO and Founder of the Indigenomics Institute

STATEMENT OF RECONCILIATION

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This Statement, approved in 2018, was intended to guide decision-making for years to come. It expressed an understanding that Reconciliation is a long-term goal with no defined end point. The UN Declaration of the Rights of Indigenous Peoples is the reference framework for the CRD's commitment to Reconciliation, which aims to address activities within the scope of the CRD's authority.

1. **Self-Determination** - The CRD acknowledges the fundamental right of self-determination to Indigenous peoples. In the spirit and intent of inclusivity, the CRD is committed to working with First Nations through the governance systems they choose. When First Nations wish to participate in our decision-making process then we will support them. The CRD will look to First Nations for leadership in understanding how to create new decision-making systems together on their Traditional Territories.

2. **Shared Prosperity** - The CRD recognizes the gap in wealth between First Nations and settler governments. The CRD will work towards a prosperous economic future for all of its residents and believes that improving the lives of the most vulnerable citizens creates a stronger and more resilient region for everyone. The CRD will seek partnerships, share information and deliver fair and equitable services in working with First Nations on achieving their economic goals.

3. **Relationship with the Land and Water** - The CRD recognizes the integral relationship First Nations have with the land; often the names for the people of the land and the land itself were one and the same. The CRD will work with First Nations on taking care of the land while providing space for cultural and ceremonial use, food and medicine harvesting, traditional management practices and reclaiming Indigenous place names.

2019 – 2022 CRD BOARD PRIORITIES

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While all issues are important, limited resources require the Board to make strategic decisions. The Board carefully selected strategic priorities and associated initiatives that can be addressed within the CRD's legislative mandate, that are new, or that require more intense or urgent effort than has previously been applied.

FIRST NATIONS RECONCILIATION

The CRD Board will take measurable steps toward developing respectful government-to-government relationships and partnerships with First nations to foster shared prosperity for all.

WHY?

It is important to acknowledge historic harms, overcome current inequities and respect local indigenous laws and culture.

DESIRED OUTCOME

We envision strong relationships with First Nations based on trust and mutual respect, partnerships and working together on shared goals.

2019 – 2022 CRD CORPORATE PLAN

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RECONCILIATION STATEMENT - The CRD believes that a positive working relationship with First Nations is good for the whole region. For the CRD to have a positive relationship with First Nations we need to acknowledge, respect and complement their Indigenous laws, customs and systems of governance.

- Look to First Nations for leadership in understanding how to create new regional planning and decision-making systems together on their Traditional Territories.
- Seek partnerships, share information and deliver fair and equitable services in working with First Nations on achieving their economic goals.
- Work with First Nations on taking care of the land and water while providing space for cultural and ceremonial use, food and medicine harvesting, traditional management practices and reclaiming Indigenous place names.
- Prepare an ecological asset management plan that includes natural infrastructure, First Nations guiding principles, First Nations language and place names, historical uses and invasive species management.
- Develop, monitor and report out on a First Nations Relations Strategic Plan.
- Present an amended First Nations Relations division service plan & budget to the Board in consideration of Task Force recommendations with financial and resource implications.

FUTURE PLANNING

Activities related to First Nations Reconciliation are planned in two ways:

1. Annually, the First Nations Relations Division prepares its Service Plan highlighting critical new initiatives that are intended to be undertaken that either require new resources or may impact the capacity of other CRD divisions. This process provides for an important opportunity to collaborate across the organization and is critical to advance potentially transformative initiatives, such as:

    - Developing a Cultural Confidence Program;
    - Establishing an Indigenous Internship Program; and,
    - Building a First Nations Economic Opportunities Portal

2. In addition to those projects contained within the annual service planning process, CRD staff continue to advance the recommendations contained within the Special Task Force on First Nations Relations Final Report.

As priority projects are identified, planned, and implemented, all efforts are made to work collaboratively with First Nations to **take measurable steps toward developing respectful government-to-government relationships and partnerships with First nations to foster shared prosperity for all.**

THANK YOU

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First Nations Relations

a division of the Capital Regional District

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REPORT TO FIRST NATIONS RELATIONS COMMITTEE
MEETING OF WEDNESDAY, SEPTEMBER 30, 2020

SUBJECT **First Nations Inclusion in CRD Governance**

ISSUE SUMMARY

To amend the CRD Board Procedures Bylaw No. 3828 (the Procedures Bylaw) and the identified Board Standing Committee and Advisory Committee Terms of Reference to enable increased inclusion of First Nations' elected representatives in CRD governance beginning in January 2021.

BACKGROUND

On March 11, 2020, the CRD Board accepted the recommendation of the First Nations Relations Standing Committee (Appendix A):

> "That staff bring back implications and draft amendments to the Capital Regional District Procedures Bylaw No. 3828 to enable the inclusion of First Nations' elected representatives on Board Standing Committees, Select and Advisory Committees, Commissions and other appointed bodies of the Board."

Core to the Model of First Nations Inclusion (Appendix B) is the creation of a First Nation Member definition within the Procedures Bylaw that will enable First Nations' elected representatives to participate on matters that are of particular interest to their First Nation in a flexible way while ensuring the CRD's ability to provide essential regional services is maintained. It is important to note that the committees listed in Appendix B do not include each and every discussion topic that could be of potential interest to a First Nation. The intent is to begin with a select number of committees where it has been identified there is a high-degree of interest and to prototype a model of more inclusive governance that can then be refined going forward to reflect the evolving interests of First Nations and the CRD and the growing government-to-government relationship.

At present time, full participation of First Nations in CRD governance is not possible, but there remain opportunities to advance this interest though advocacy for amendments to provincial legislation outlined on the First Nations Inclusion Chart (Appendix C).

ALTERNATIVES

Alternative 1
The First Nations Relations Committee recommends to the Capital Regional District Board:

1. That Bylaw No. 4368, Capital Regional District Board Procedures Bylaw, 2012, Amendment Bylaw No. 11, 2020 be introduced and read a first, second and third time;
2. That Bylaw No. 4368 be adopted;
3. That the Terms of Reference for the First Nations Relations Committee, Governance and Finance Committee, Environmental Services Committee, Solid Waste Advisory Committee, Planning Transportation and Protective Services Committee, and Regional Parks Committee be amended to allow for First Nations Membership starting in January 2021; and,
4. That staff be directed to include $75,000 in the 2021 Provisional Budget to support the planned amendments to the Board Remuneration and Travel Reimbursement Policy.

Alternative 2
The First Nations Relations Committee recommends to the Capital Regional District Board:
That this report be referred back to staff for additional information.

IMPLICATIONS

Intergovernmental Implications

The proposed amendments outlined in Bylaw 4368 (Appendix D) will permit First Nations' elected representatives to identify specific issues that are of interest and participate fully in those deliberations. This model of flexible and open participation will enable First Nations to better define their level of engagement on matters being discussed within CRD governance, while also supporting the development of new relationships or strengthening existing ones between CRD Directors, their alternates and First Nations' representatives. It is critical to note that this approach to more inclusive decision-making will not replace the need for direct engagement and, where necessary, consultation as may be required by the Crown. Staff will continue to engage First Nations' staff to share information and discuss various matters in an effort to support a multi-faceted approach to enhanced relationships at both an operational and political level.

Legislative Implications

Though s.196(1) and s.253(1) of the *Local Government Act (LGA)* establish limitations restricting CRD Board members to only municipal or electoral area Directors or Treaty First Nation Directors, s.218(3) enables persons who are not directors to be appointed by the Board to a Select Committee or by the Chair to a Standing Committee. S.229(1) of the *LGA* permits the CRD to, by bylaw, delegate its powers, duties and functions subject to any limitations identified in s.229(2). When exercising its power under s.229(1) of the *LGA*, s.229(4) allows the board to establish any terms and conditions it considers appropriate. CRD Commissions may include persons other than a director subject to compliance with the qualifications detailed in the enabling bylaw and any related provincial legislation that would otherwise limit membership. The CRD is acting within its authority to include First Nations' elected representatives as appointed members of the tables outlined in Appendix C.

First Nation Members would not attend the closed session of Committee meetings due to sections 90 and 91 of the *Community Charter* which contain restrictions on sharing *in camera* information with non-CRD Directors. However, in the event the Committee wished to request the attendance of a First Nation Member in a closed Committee meeting, it may do so with a vote of the Committee taken at the start of the closed session. At the start of their term, First Nations Members will be asked to sign a confidentiality agreement as an acknowledgement of their duty to maintain *in camera* information in confidence.

Social Implications

Moving toward more inclusive governance could be thought to be introducing uncertainty into existing CRD processes. While there will likely be a need for enhancements of current processes, this is a critical step in improving the understanding how First Nations and the CRD can work together more effectively on matters of shared interest. Establishing space for First Nations to participate will begin to build a shared understanding of how the interests, priorities, values, beliefs

and rights of First Nations can be implemented and expressed within a CRD process to better inform its outcome.

Financial Implications

On endorsement of the recommendation in this report, staff will bring forward a report to the Committee in November 2020 proposing amendments to the CRD Board Remuneration and Travel reimbursement Policy to support the remuneration of First Nations' elected representatives on various CRD tables. It is estimated that the participation of First Nations' elected officials could cost up to $75,000 in 2021. To ensure these funds are available in the event the proposed amendments to Bylaw No. 3828 and subsequent amendments to the CRD Board Remuneration and Travel Reimbursement Policy are approved, staff are recommending the CRD's provisional 2021 budget include an allocation toward this effort as the costs are expected to begin being incurred in January 2021.

Service Delivery Implications

It is not anticipated that there will be significant implications associated with this proposal to move toward more inclusive governance that would prohibit the CRD from continuing to effectively deliver services. However, there are a number of important considerations that should be reviewed within the context of moving in this direction. There may be an increase in reports being sent back to staff for additional information that would result from First Nations not feeling their interests were adequately considered. Though the frequency of work being sent back to staff as a direct result of First Nations participation in decision-making would likely diminish overtime as CRD staff processes became more inclusive and as First Nations develop their understanding of CRD roles and responsibilities, it could still lead to some uncertainty and/or a rethinking of established corporate processes.

Not every item on a given agenda will be of interest to a First Nation and it could be considered inappropriate for a First Nation to be expected to vote for or against a matter that may not relate to, or impact them. The *LGA* is explicit that each director present must vote on a matter being considered and when a director does not indicate a vote that person is deemed to have voted in the affirmative. The *LGA* defines director as a Municipal Director, Electoral Area Director or a Treaty First Nation Director and does not extend to include members of a Standing Committee, Select Committee, Advisory Committee or Commission. First Nations' elected representatives will be extended the opportunity to abstain from a vote. This will add an additional component when recording votes at meetings, but will permit First Nations an opportunity to clearly determine the nature of their participation on any given issue.

The proposed model of First Nations participation in CRD governance will not fetter CRD Board decision-making or limit its ability to provide critical regional services. The CRD Board can exercise discretion on how it weighs the recommendations from a Standing or Select Committees. Commissions do exist with delegated authority as defined in the establishing bylaw, but the approach being taken ensures the CRD will not be limited in moving initiatives forward. However, moving towards greater inclusivity is expected to enhance the process by which the CRD makes its decisions in a way that is more collaborative and respectful of First Nations' interests.

Appointment Implications

The appointment of First Nations' elected officials to CRD Standing, Select and Advisory Committees will mirror that of the existing CRD process. The Board Chair will make the appointments to Standing Committees as outlined in s.26(2) of the Procedures Bylaw. The Board shall make appointments to Advisory Committees and Select Committees though these appointments could be delegated to the Board Chair through s.27(2) or s.28(3) of the Procedures Bylaw.

Through October and November, staff will work to further engage First Nations to solicit a First Nations elected official to participate as an appointed member and another as their alternate to each CRD Standing and Advisory Committees identified on Appendix B. Staff will then provide this list to the Board Chair or to the Board for appointment as appropriate. This process will enable the CRD to host a First Nations Orientation Session in December where those identified as First Nation Members or their alternates could be formally introduced to CRD committee processes and systems.

It is expected this process of identifying First Nation Members and their alternates will take place annually to coincide with the existing CRD appointment schedule.

Alignment with Board & Corporate Priorities

The 2019 – 2022 CRD Board Priorities include Reconciliation with First Nations, specifically:

3a Look to First Nations for leadership in understanding how to create new regional planning and decision-making systems together on their Traditional Territories.

3b Seek partnerships, share information and deliver fair and equitable services in working with First Nations on achieving their economic goals.

3c Work with First Nations on taking care of the land and water while providing space for cultural and ceremonial use, food and medicine harvesting, traditional management practices and reclaiming Indigenous place names.

Alignment with Existing Plans & Strategies

The following strategies have been identified as related to the Reconciliation with First Nations Board Priority:

- Special Task Force on First Nations Relations Final Report and the Statement of Reconciliation
- Regional Climate Action Strategy
- Regional Food and Agricultural Strategy
- Regional Growth Strategy
- Regional Housing Affordability Strategy
- Regional Parks Strategic Plan
- Regional Water Supply Strategic Plan
- Organizational Development Plan
- Corporate Asset Management Strategy

CONCLUSION

First Nations have expressed a desire for an increased role in regional decision-making.

Provincial legislation limits full First Nations participation on the CRD Board except through a modern treaty, but there are significant opportunities for the CRD to create space for more inclusive discussions at Standing, Select and Advisory Committees. Though the proposed model of First Nations involvement in CRD governance does have the potential to impact ongoing or upcoming projects, First Nations participation will support a more collaborative and, ultimately, a more effective process. This effort to facilitate increased participation of First Nations in CRD governance is an important and measurable step towards the Board priority of First Nations Reconciliation and in working toward strong relationships with First Nations based on trust and mutual respect, partnerships and working together on shared goals.

RECOMMENDATION

The First Nations Relations Committee recommends to the Capital Regional District Board:

1. That Bylaw No. 4368, Capital Regional District Board Procedures Bylaw, 2012, Amendment Bylaw No. 11, 2020 be introduced and read a first, second and third time;
2. That Bylaw No. 4368 be adopted;
3. That the Terms of Reference for the First Nations Relations Committee, Governance and Finance Committee, Environmental Services Committee, Solid Waste Advisory Committee, Planning Transportation and Protective Services Committee, and Regional Parks Committee be amended to allow for First Nations Membership starting in January 2021; and,
4. That staff be directed to include $75,000 in the 2021 Provisional Budget to support the planned amendments to the Board Remuneration and Travel Reimbursement Policy.

Submitted by:	Don Elliott, MUP, Manager, First Nations Relations
Concurrence:	Kristen Morley, J.D., General Manager, Corporate Services & Corporate Officer
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT(S)

Appendix A: Report to First Nations Relations Committee Meeting of Wednesday, February 26, 2020
Appendix B: Model for First Nations Inclusion
Appendix C: First Nations Inclusion Chart
Appendix D: Bylaw No. 4368

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REPORT TO FIRST NATIONS RELATIONS COMMITTEE
MEETING OF WEDNESDAY, FEBRUARY 26, 2020

SUBJECT **First Nations Inclusion on CRD Board Standing Committees**

ISSUE SUMMARY

This report seeks direction for staff to bring back implications and proposed draft amendments to Board Procedures Bylaw No. 3828 (the "Procedures Bylaw") and appropriate Board Standing Committee Terms of References that would enable the inclusion of First Nations elected representatives in discussions that take place through the existing CRD governance structure.

BACKGROUND

Several First Nations within the capital region have signaled their interest in being a part of the CRD Board and its committee structure, expressing a desire for more involvement in discussions and, ultimately, in decisions that may impact First Nations. There are provincial legislative restrictions within the *Local Government Act (LGA)* and practical reasons related to the requisition, regional service structure and weighted voting requirements as to why First Nations are not Members of the CRD Board as defined in the Procedures Bylaw. However, a number of approaches have been explored and implemented by other regional districts that the CRD can consider that are within its authority to create more opportunities for First Nations inclusion in regional discussions.

A compete timeline of activities related to this initiative is attached to this report (Appendix A). Following Lək̓ʷəŋən (Songhees First Nation) Chief Ron Sam signaling the Nation's interest in having formal representation on the CRD Board in October 2014, the CRD established the Special Task Force on First Nations Engagement (Task Force) with the mandate to recommend more inclusive models of governance and decision-making. The Task Force undertook direct engagements with First Nations and letters were sent to the province from past CRD Board Chair Nils Jensen in 2015 (Appendix B) and past CRD Board Chair Steve Price in 2017 (Appendix C) along with a supporting letter from W̱SIKEM (Tseycum First Nation) in 2018 (Appendix D). The letters all expressed, in various ways, the need for the provincial government to address the legislative and capacity barriers impacting the ability of local governments and First Nations to move their relationships forward.

In December 2016, the CRD Board adopted the suite of recommendations contained within the Year End Report from the Task Force (Appendix E) with the direction that the Task Force guide the completion of the items that include, among others, developing recommendations to allow for First Nations representation and options for increased resourcing to accommodate greater participation, engagement and reconciliation. Staff are now looking to reaffirm the commitment of the sitting CRD Board on this approach in support of more inclusive regional discussions with First Nations participation.

ALTERNATIVES

Alternative 1
The First Nations Relations Committee recommends to the Capital Regional District Board:

That staff bring back implications and draft amendments to the Capital Regional District Procedures Bylaw No. 3828 to enable the inclusion of First Nations elected representatives on Board Standing Committees, Select and Advisory Committees, Commissions and other appointed bodies of the Board.

Alternative 2
The First Nations Relations Committee recommends to the Capital Regional District Board:
That this report be referred to staff for additional information, as directed.

IMPLICATIONS

Legislative Implications
The LGA is explicit under Section 196(1) that a Regional Board consists of municipal Directors and electoral area Directors, except in the specific case under Section 253(1) where a Treaty First Nation is a member of a regional district. This section limits any non-treaty First Nations from full participation on the Board or as a service participant, other than as a third-party client of a service (such as a water supply contract to reserve lands). Section 218(3) of the *LGA* allows persons who are not Directors to be appointed by the Board to a Select Committee or by the Chair to a Standing Committee. Within the context of this staff report, Section 218(3) allows voting participants at a Select Committee and/or at a Standing Committee to include First Nations at the discretion of the Board or the Board Chair. Should there be a questions of matters discussed in closed meetings, the *Community Charter* Section 91(2)(b) allows for any participants the Board considers appropriate, which could include First Nations, to be present in matters discussed in closed.

Staff have identified that there will remain some specific commissions where First Nations participation will not be possible. In response to First Nations expressing an interest in participating in regional water commissions, staff undertook a review of the ability to do this and identified that the *Capital Region Water Supply and Sooke Hills Protection Regulation*, BC Reg. 287/97 sets a fixed, elected-official-only membership for the Regional Water Supply Commission and the Juan de Fuca Water Distribution Commission. This regulation only allows for local government participants to be members of the commission, with voting being conducted according to *LGA* weightings. Under the regulation, First Nations participation is limited to the Water Advisory Committee, where they are already included as members in the Water Advisory Committee Terms of Reference. The regulation permits one or more First Nations entities to propose a member, who may be appointed by the Board to the Water Advisory Committee.

Environmental & Climate Implications
It is likely that as First Nations participation increases in discussions relating to the environment and climate that elements relating to cultural practices and traditional uses of areas are brought forward with the expectation that these shared teachings are woven into existing approaches. This could add additional time and complexity to projects that are already underway as staff consider how to incorporate any information that may come forward. However, this additional perspective also could enhance the effectiveness of efforts being made by the CRD through the incorporation of cultural knowledge as well as additional partnership or collaborative opportunities as First Nations are also looking to support work related to taking care of the land and water.

Governance Implications
The proposed inclusion of First Nations would require amendments to the Procedures Bylaw to define the various appointments as well as amendments to the Terms of Reference of the

identified Committees and Commissions. An amendment to the Procedures Bylaw would then enable Committee and Commission Terms of References to be updated upon request by First Nations Band resolution so as to enable First Nations inclusion. As staff work on the proposed bylaw amendments, consultation will be conducted with the First Nations to gauge specific levels and items of interest.

Intergovernmental Implications
First Nations currently have the ability to participate on the CRD Water Advisory Committee, the Core Area Waste Liquid Waste Management Committee and the Saanich Peninsula Water Supply Commission. Providing additional opportunities for First Nations to participate in discussions on Committees and Commissions and for the Nations to have the space to bring items forward for discussions or information sharing, will significantly enhance the ability of First Nations and the CRD to work together towards building strong relationships that are based on trust and mutual respect, partnerships and working together on shared goals. Based on the expressed interests of First Nations, staff will look to take an incremental approach towards increased inclusion.

Financial Implications
Parallel to this report, staff are bringing forward a report proposing amendments to the CRD Board Remuneration Policy and the creation of a First Nations Remuneration Policy in order to establish a corporate approach to providing First Nations elected representatives with remuneration for participation on Committees and Commissions as well as to establish guidelines relating to the way the CRD compensates First Nations for supporting the CRD with meeting openings and cultural work.. In the 2020 CRD Budget, which has received provisional approval, $12,000 was included in the CRD Board Budget with the intent that these funds would be available to support First Nations participation when an enabling amendment to the Board Remuneration Policy was approved. Specific costs for increased First Nations participation would be borne by each individual commission budget or, in the case of Committees, by the CRD Board budget.

Service Delivery Implications
Provincial legislation does not permit for First Nations to have a vote at a Regional District Board without signed modern treaties. Increased inclusion of First Nations in discussions at the CRD Board will not fetter the decision-making authority of Directors in any way. However, it will likely bring additional perspectives forward that contain new information or approaches that directors may wish to consider in their decision-making.

Alignment with Board & Corporate Priorities
The 2019 – 2022 CRD Board Priorities include Reconciliation with First Nations, specifically:

- 3a Look to First Nations for leadership in understanding how to create new regional planning and decision-making systems together on their Traditional Territories.
- 3b Seek partnerships, share information and deliver fair and equitable services in working with First Nations on achieving their economic goals.
- 3c Work with First Nations on taking care of the land and water while providing space for cultural and ceremonial use, food and medicine harvesting, traditional management practices and reclaiming Indigenous place names.

Alignment with Existing Plans & Strategies
The following strategies have been identified as related to the Reconciliation with First Nations

board priority:

- Special Task Force on First Nations Relations Final Report and the Statement of Reconciliation;
- Regional Climate Action Strategy;
- Regional Food and Agricultural Strategy;
- Regional Growth Strategy;
- Regional Housing Affordability Strategy;
- Regional Parks Strategic Plan;
- Regional Water Supply Strategic Plan;
- Organizational Development Plan; and,
- Corporate Asset Management Strategy.

CONCLUSION

First Nations have previously expressed an interest in increased participation in regional discussions and, ultimately, an impact on regional decision-making. Provincial legislation limits full First Nations participation at the CRD Board prior to the completion of a treaty process, but there are options for the CRD to move towards greater inclusivity in discussions at the CRD Committee and Commission tables. Taking a more inclusive approach has the potential to impact ongoing or upcoming projects with the inclusion of First Nation's perspectives in various plans and strategies. However, the reconciliation mandate adopted by the Board requires that we look to include the perspective of First Nations in CRD projects and plans, and having greater inclusion on Committees and Commissions could support a more collaborative and effective process. It could also strengthen existing partnerships and identify additional collaboration efforts.

RECOMMENDATION

The First Nations Relations Committee recommends to the Capital Regional District Board:
That staff bring back implications and draft amendments to the Capital Regional District Procedures Bylaw No. 3828 to enable the inclusion of First Nations elected representatives on Board Standing Committees, Select and Advisory Committees, Commissions and other appointed bodies of the Board.

Submitted by:	Don Elliott, MUP, Manager, First Nations Relations
Concurrence:	Kristen Morley, J.D., General Manager, Corporate Services & Corporate Officer
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT(S)

Appendix A: Background on Activities Related to First Nations Inclusion
Appendix B: Letter to Premier Christy Clark, 2015
Appendix C: Letter to Scott Fraser, Minister of Indigenous Relations and Reconciliation, 2017
Appendix D: Letter to Scott Fraser, Minister of Indigenous Relations and Reconciliation, 2018
Appendix E: Year End Report on the Activities of the Special Task Force on First Nations Engagement, 2016

APPENDIX A: BACKGROUND ON ACTIVITIES RELATED TO FIRST NATIONS INCLUSION

Related to this work on First Nations participation at the CRD Board and/or Committees, the following timeline illustrates the various steps that have been undertaken from 2014 to present day. Identified steps include:

- **October 2014** - Lək̓ʷəŋən (Songhees First Nation) Chief Ron Sam signalled the Nation's interest in having formal representation on the CRD Board.
- **January 2015** – The CRD's Special Task Force on First Nations Engagement (Task Force) was established with a mandate to recommend more inclusive models of governance and decision-making between the CRD and First Nations governments.
- **April 2015** – W̱SIKEM (Tseycum First Nation) Chief XÁLÁTE (Jacks) acknowledged that Tseycum would like to sit and share knowledge with the Board. He said that it is time to "cut the strings that separate us and start working together".
- **May 2015** - SȾÁUTW̱ (Tsawout First Nation) Chief Underwood identified that representation on the CRD Board has been an ongoing issue for SȾÁUTW̱ and recalled that this topic was discussed at Chief and Council 30 years earlier.
- **June 2015** – Alberni-Clayoquot Regional District Chair Josie Osborne shared with the Task Force that the most noticeable benefit of having First Nations at the table is the expansion of minds and diversity of perspectives that is brought to the decision making. It has brought fulsomeness to discussions around the Board table.
- **July 2015** - W̱JOŁEŁP (Tsartlip First Nation) expressed a challenge relating to existing capacity limitations should W̱JOŁEŁP sit on committee positions to fully participate in regional decisions.
- **August 2015** - BOḰEĆEN (Pauquachin First Nation) Chief Harris noted that is it time to learn more about local government, the CRD, and is interested in learning more.
- **September 2015** – T'Sou-ke First Nation Councillor Dumont stated that they are looking forward to future meetings and decisions about either sitting on the CRD Board or an alternative that supports shared governance.
- **October 2015** – CRD Board Chair Nils Jensen sent BC Premier Christy Clark a letter thanking Premier Clark and John Rustad, Minister of Aboriginal Relations for a meeting at the 2015 UBCM conference and further detailing that the province remove identified legislative barriers and support First Nations capacity to participate in local government matters.
- **November 2015** - Xwsepsum (Esquimalt First Nation) Chief Andy Thomas expressed to the Task Force that he has asked for a seat at the CRD for a long time.
- **November 2015** - W̱SIKEM (Tseycum First Nation) newly elected Chief Jimmy emphasized the importance of W̱SIKEM involvement in (local government) matters whenever they are able. The Nation is looking to work on together on practical day-to-day activities to build experience at the "lower level" and work up to higher level governance such as the CRD Board.
- **December 2016** – The suite of recommendations contained within the Year End Report from the Task Force were adopted with the direction that the Task Force guide the completion of the items that include the following selected recommendations:

  - To undertake a comprehensive review of the suite of policies and procedures bylaws for CRD Committees and Commissions with recommendations for proposed amendments that will allow for First Nations representation; and,
  - Direct staff to develop options for increased resourcing and financial implications to accommodate greater participation, engagement and reconciliation.

- **November 2017** – CRD Board Chair Steve Price sent a letter to Scott Fraser, Minister of Indigenous Relations and Reconciliation requesting the opportunity to connect on obstacles faced by First Nations and local governments, legislative barriers for First Nations in obtaining a vote at the CRD Board, and understanding the provincial governments approach to historical treaties.
- **August 2018** - W̱SIKEM (Tseycum First Nation) sent a letter to Scott Fraser, Minister of Indigenous Relations and Reconciliation requesting that First Nations not participating in the modern treaty process are offered a formal voice in matters that affect the territories, rights, and W̱SIKEM people.
- **2018 Onward** – The CRD continue to meet with staff from the Ministries of Ministries of Municipal Affairs and Housing and Indigenous Relations and Reconciliation to explore other avenues to address the challenges relating to increasing First Nations participation in regional discussions.
- **2019 Onward** – The provincial government tabled Bill 41: Declaration of the Rights of Indigenous Peoples Act, which received Royal Assent on November 28, 2019 and has passed into law. This Bill mandates the provincial government to bring provincial laws into harmony with the UN Declaration of the Rights of Indigenous Peoples through:
  - The development of an action plan to achieve alignment over time;
  - Requiring regular monitoring on progress;
  - Allowing for flexibility for the types of agreements the Province can enter with Indigenous governments; and,
  - Provides a framework for decision-making between Indigenous governments and the province.

DRAFT

APPENDIX B

Making a difference...together

Capital Regional District
625 Fisgard Street, PO Box 1000
Victoria, BC, Canada V8W 2S6

T: 250.360.3000
F: 250.360.3234
www.crd.bc.ca

October 14, 2015

File: 0220-20

The Honourable Christy Clark
PO Box 9041 Stn Prov Govt
Victoria, BC V8W 9E1

Dear Premier Clark:

RE: AUTHORITY TO HAVE FIRST NATIONS AT THE CRD BOARD

I would like to thank you and the Honourable John Rustad, Minister of Aboriginal Relations and Reconciliation for taking the time to meet with myself and members of the Capital Regional District (CRD) Board and First Nations Task Force at the Union of British Columbia Municipalities Conference.

During the meeting we expressed our interest in exploring ways to have First Nations participate more directly in decision making at the CRD. As a regional district we provide a wide range of local, sub-regional and regional services and are actively involved in providing services to First Nations through a variety of service agreements. As we expand our relationship with First Nations, particularly the 9 Nations which have occupied reserves in the region, it has become evident that there are some barriers to participation in service delivery as compared to the service participation model available to our member municipalities and electoral areas. We recently amended our Procedures Bylaw to allow First Nation participation from the Songhees & Esquimalt First Nations on the Core Area Liquid Waste Management Committee (CALWMC) of the CRD Board. However to enable direct participation by First Nations on specific service decisions, there would need to be legislative changes which are beyond the authority of the CRD Board.

At our October 14, 2015 Board meeting we announced that the Songhees and Esquimalt Nations have formally joined our CALWMC as voting members. These Nations have also expressed a desire to join the Board to vote on issues which impact them directly as participants of a service. Other First Nations with Douglas Treaties have also expressed a desire to participate, however as there is currently no legislative avenue to provide for direct participation on service delivery, outside a modern day treaty, we are unable to make any progress on this issue.

Some of the suggested avenues we would like you to consider include:

1. Removing Legislative Barriers:
   a. Review of Division 3.1 of Part 24 of the Local Government Act with consideration to allow Douglas Treaty First Nations the ability to join regional districts

   b. In the interim, create a governance vehicle that allows First Nations to be equivalent participants in local services without mandatory membership on the regional board
      - Issues imbedded in this framework will have to address:
        - Indemnification/liability/ insurance provisions
        - Regulatory powers
        - Exit provisions
        - Service review

2. Support First Nations Capacity to Participate:
   a. Training and education for both local government and First Nations staff
   b. Programming funds, which build on the Community to Community Forum grants

Thank you again for taking the time to meet with us and we greatly appreciate any consideration you are able to give to our concerns and suggestions.

Yours truly,

Nils Jensen, Chair
Capital Regional District

cc: All CRD Board Members
Robert Lapham, Chief Administrative Officer, Capital Regional District
Sonia Santarossa, Corporate Officer, Capital Regional District

APPENDIX C

Making a difference...together

Capital Regional District
625 Fisgard Street, PO Box 1000,
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November 29, 2017

The Honourable Scott Fraser
Minister of Indigenous Relations and Reconciliation
Parliament Buildings
Victoria, BC
V8V 1X4

Dear Minister:

We are requesting a meeting with yourself to offer an update and to seek assistance with recent activities undertaken by the Capital Regional District's (CRD) Task Force on First Nations Engagement.

Over the past two years, we have met with the majority of First Nations governments in the south island to discuss how they might like to be involved in regional decision making. Last year we approved a report with recommended actions for addressing the issues raised in those discussions. Some of the recommendations require further conversations with provincial officials in order to realize the opportunities that exist around sharing governance with First Nations.

We are requesting a meeting to discuss the following issues:

- Obstacles faced by First Nations and local governments for deep engagement and meaningful relationship building
- Legislative barriers for First Nations to participate as full voting members on the CRD Board
- Current provincial understanding of the responsibilities to pre-confederation treaties such as the Douglas Treaty.

We understand that scheduling can be a challenge and we would be looking to sometime in the New Year when you are already in Victoria on other business. Our staff can follow up to arrange a time. We look forward to this discussion and to working together with you on these issues.

Sincerely,

Steve Price
Board Chair, Capital Regional District

Cc: Director Marianne Alto, Chair, First Nations Task Force, CRD
Bob Lapham, CAO, Capital Regional District

APPENDIX D

Tseycum First Nation
1210 Totem Lane
Sidney, BC V8L 5S4
Phone: (250) 656-0858
FAX: (250) 656-0868

August 21, 2018
The Honourable Scott Fraser
Minister of Indigenous Relations and Reconciliation
Parliament Buildings
Victoria, BC
V8V 1X4

Dear Minister Fraser:

Tseycum First Nation is focused on working with other governments towards a better relationship that places the emphasis on moving forward together. We want to be involved in decision making that affects our territories, our rights and our people. It is important for the work of healing and reconciliation that we are able to be in partnership with those decision makers who are active in our territory.

To this end, Tseycum is interested in exploring a workable solution for the governance gap that exists with the current Regional District system where First Nations who have not signed modern treaties are not offered a formal voice at the table. Decisions Regional Districts make have the possibility to affect our rights and so we are looking for a way to be included in the process. We are looking for a respectful solution that incorporates our governance structure and allows us to meaningfully engage with the Capital Regional District.

We are looking forward to hearing from you as to what this could look like and would like to set up a meeting to discuss possibilities at your earliest convenience.

HÍSW̱KE

Chief Tanya Jimmy

Cc: Director Marianne Alto, Capital Regional District

APPENDIX E

Making a difference...together

Special Task Force on First Nations ENGAGEMENT

YEAR END REPORT ON THE ACTIVITIES OF THE SPECIAL TASK FORCE ON FIRST NATIONS ENGAGEMENT
MEETING OF WEDNESDAY, December 14, 2016
SUBMITTED TO: CAPITAL REGIONAL DISTRICT BOARD
SUBMITTED BY : THE TASK FORCE MEMBERS

EXECUTIVE SUMMARY

Local government has a critical role to play in supporting First Nations economic aspirations and cultural resurgence. A proactive approach with deep engagement and a commitment to establishing a thoughtful governance framework that both resonates with First Nations and reflects the Board's strategic priorities, will ensure a strong fully regional approach relative to growth management, environmental protection and restoration, efficient service delivery and smart infrastructure planning.

Building on the solid footing established through the Aboriginal Initiatives Office (AIO) and the Special Task Force on First Nations Engagement (Task Force) this report recommends that the Board support a continued and ongoing role for the Task Force in shaping the Aboriginal Initiatives Office as the Board's tool for ensuring strong and enduring First Nations relations, as well as practical ways and means for ongoing two-way information sharing and, where appropriate, establishing a decision making framework on matters of common interest.

This area of governance is emergent and evolving and requires a pragmatic, incremental approach that builds on and is responsive to local successes as well as best practices from other jurisdictions.

The funding for this work is largely covered within the existing AIO budget, which draws from the General Government and Legislative Services requisition. This report recommends that the AI0 office be temporarily resourced with a half time term position (to 2018) bringing the staff complement for the division to 2.0 FTE along with a modest increase in funds to accommodate the expected increase in remuneration for First Nations participation on Committees. No new additional funds are required.

In addition to providing oversight to the AIO, the Task Force will continue to foster the leadership relationship with elected First Nations by meeting with Chiefs and Councils. The Task Force will be accountable to the Board, and its strategic priorities, by way of quarterly reports, The term for this mandate would extend to the end of this election cycle in November 2018.

SUBJECT **Year End Report from the Special Task Force on First Nations Engagement**

ISSUE

The purpose of this report is to provide a year-end summary of the activities and outcomes of the Special Task Force on First Nations Engagement (Task Force) with recommendations to the Board for seeking direction in how the CRD can continue to move forward on including interested First Nations governments in decision-making on regional matters of common interest.

1.0 BACKGROUND

The Task Force was established in January 2015 with a mandate to meet with Chiefs and Councils of each First Nation with Reserve Lands in the CRD to discuss their respective interests in participating in the CRD governance framework. The Task Force had an opportunity to meet with 8 of the 11 First Nations in the first year. A final report was submitted to the Board in November 2015 with a request for a time extension to allow for further engagement with First Nations. The Task Force mandate was extended to December 2016.

The Task Force's second year focused on follow-up actions stemming from feedback received from the initial delegations, as well as research into governance options and some further meetings with First Nations. This report briefly summarizes the outcomes from both years and offers a suite of recommendations for future work for the Task Force.

1.1 Summary of Task Force Activities

Over the course of the Task Force's two year mandate, 12 Committee meetings were held (minutes posted on the website) and 9 delegations were made to First Nations communities. The Task Force reached out to the Chair of the Alberni-Clayoquot Regional District (ACRD) regarding that region's experience with First Nations participating on the Board. Detailed summaries can be found in the 2015 Year End Task Force 2015 report (document link) Following that communication, the Task Force approached the Province to discuss the legislative barriers in the Local Government Act (LGA) for First Nations participation on the Regional Board, and met with the Premier during the UBCM conference. Staff followed up with the Ministry of Community, Sport and Development, the results of which are summarized below (Section 2.1.1).

Corollary activities included:

- Undertaking an Indigenous cultural training event as a Forum of Councils (YouTube Link)
    - Approval to extend invitations to First Nations for participation in all future Forum of Council events.
    - Approval of remuneration for FN attendance at Forums of Councils

- Amending Procedures Bylaw to better reflect and accommodate cultural protocols
- Inclusion of First Nations on the CALWMP Committee
- Integration of an opening Territorial Acknowledgement by the Board Chair
- Presentation to the Board on FN Taxation Authority

1.2 Summary of Findings

The delegations to each of the First Nations revealed a diversity of perspectives, interests and priorities on the part of the First Nations. Although each Nation is unique, there were some common threads:

1.2.1 Common messages from First Nations:

- Local and regional government are not tangibly differentiated from Provincial and to some extent, Federal government.
- The legacy of exclusion by all levels of government, in decisions that have directly impacted First Nations, has allowed for a culture of distrust to take hold.
- There is an interest in either exploring improved ways of engagement with the CRD and /or mechanisms for shared decision making on matters of common interest.
- A demonstrable commitment to building trust and establishing an enduring relationship is imperative before any formal commitments can be made.
- Although there is genuine interest in deeper engagement and consultation with local governments, First Nations do not have the capacity to respond to the multitude of requests from all levels of government and agencies.
    - Governments are being asked to consider resourcing these consultation requests in order to meaningfully engage with First Nations.

1.2.2 Areas of interest include:

- Employment of First Nations community members in government positions
- Economic development opportunities
- Protection and respect for ancestral remains
- Access to parklands for traditional uses and cultural practices, including harvesting plant medicines, ceremonies
- Protection and promotion of Douglas Treaty Rights
    - Education of local governments on the ways those rights are perceived to be infringed.
- Environmental restoration including eradication of invasive species, shellfish harvesting, habitat protection, ecological stewardship.
- Financial accommodation to support referral and review processes

1.2.3 Differing perspectives from First Nations:

- Some Nations are pursuing modern treaties through the BC Treaty process and as a result will have an ability and responsibility to participate in the decision-making process with local government - (Scia'new (Beecher Bay), T'Sou-ke, Songhees, MÁLEXEŁ (Malahat), Pacheedaht First Nations)
- Some Nations are choosing greater independence from the Indian Act through other means such as adopting their own Land Code. (Tsawout, Songhees and T'Sou-ke)
- Each Nation has a unique set of priorities for its community to which its resources are assigned. Communications and familiarity are increasing as a result of the relationship-building activities, but the ability to fully and meaningfully engage with the region is contingent on the Nation's capacity to assign its under-resourced government services to the particular issue, project plan or initiative. In competition for scarce resources, certain priorities take precedence depending on the community.

2.0 Governance Options

With increased understanding of the long-term impacts of assimilation on Indigenous cultural recovery and resilience, the Task Force expressly conveyed to First Nations the understanding that while full Board participation may be a long-term goal, accommodating First Nations at the Board table is not the only option for first Nations' participation into the CRD's existing framework. Discussions also considered the development of a common framework that reflects the values, protocols, regulatory and legislative realities of both local and First Nations governments.

The Task Force discussed options that would both include First Nations into the existing CRD governance framework as well as options for new co-developed decision-making models.

2.1 Inclusion of First Nations into Existing Regional Governance Framework

2.1.1 Board Membership

In 2007, the *Local Government Act* was amended to enable Treaty First Nation (TFN) membership in a regional district, out of acknowledgement that a TFN is no longer governed by the federal *Indian Act*. As a government with natural person powers, a TFN has the authority and capacity to commit their governments to participating within the regional district legislative framework thereby ensuring the administrative and financial stability of the regional district system.

Of the 11 First Nations with reserve lands within the CRD, 9 of those Nations hold Douglas Treaty rights with the "liberty to hunt over unoccupied lands" and the right to "carry on their fisheries as formerly."

Six of these Nations are in the modern Treaty process (See Table 1). [1] It will likely be years before the final treaties are signed and implemented. The other Douglas Treaty Nations have declared that they have no intention of engaging in the modern treaty process and intend to hold to their Douglas Treaty rights.

Currently within the CRD there are no First Nations with ratified Treaties and therefore under current legislation it is not possible for First Nations to participate as full members of the CRD Board.

Changes in provincial legislation would be required to enable "non-treaty" (in the case of the CRD, this includes Douglas Treaty) First Nations regional district membership. There are a number of complex considerations:

- Any Legislation amendments must be considered for applicability Province-wide and in the context of precedent setting for other Treaty negotiations.

- Under the *Community Charter*, the Province is to consult with municipalities on proposed changes to local government legislation. Generally, this is done through the Union of B.C. Municipalities.

- Regional district members have the capacity to relinquish some autonomy to be part of a larger body and adhere to regulatory frameworks and provincially legislated dispute resolution. Similarly, a regional district director has the authority to make decisions on behalf of their jurisdiction at the board table.

    - It is not known if or how autonomy could be relinquished by a non-treaty First Nation as they operate under the *Indian Act* and other federal legislation and depending upon their governance model, their powers and authorities vary.

- All regional district directors are elected officials with the same functions, powers, duties and obligations including voting rights, provisions for participating in or withdrawing from services, conflict of interest and disqualification rules, all of which fall under provincial legislation. It is not known how equivalency functions and powers within the Federal Indian Act context could be reasonably assured.

- The regional hospital district legislation and system are tied to the regional district membership and therefore would have to be modified to either include or exclude First Nations participation.

[1] It is not yet known the status of whether a BC Treaty will include the rights inherent in the Douglas Treaty or extinguish the link in favour of the agreements established in the modern Treaty document.

Examples from other jurisdictions

The following regional districts have Treaty Nations on their boards:

- Metro Vancouver – Tswaassen First Nation
- ACRD – all 4 of the Maa-nulthTreaty Nations are now Board Members

There is an example of non-modern treaty Nations participating as voting members on a regional district by way of representatives in Electoral Areas. First Nations typically fall within the letters patent of Electoral Areas (EAs) therefore citizens living on Reserve, including members can run for the position of EA Director. In the Central Coast Regional District (CCRD) Board is composed of five directors. Four of the five directors are First Nation from each of the Wuikinuxv (Area A), Heiltsuk (Area B) and Nuxalk (Area D and E) Nations. Recently, the Area A position was vacated by the elected representative, who was not First Nations. A subsequent bi-election did not fill the position, so the regional board appointed a member of the Wuikinuxv First Nation. His appointment will stand until the next local government election in October 2018. *(Source: CoastMountainNews)*

2.1.2 Ex-Officio, non-voting board participation

Barring full Board membership there are other ways that non-treaty First Nations can (and do) participate in local government activities within the existing legislative framework.

Observer Status

First Nations could propose to join the Board in the capacity of Observer(s) where they engage in the discussions and submit agenda items through the Chair, however they would not be able to vote, second or move on motions. Observer status can take many forms, from an occasional appearance at regional district meetings, to regular ongoing involvement. Typically observers are not permitted in closed meetings, however on topics that are of direct interest, non-disclosure agreements could be signed to allow their attendance, subject to Board approval on an item by item basis.

In other communities where First Nations participate as observers, it is understood that this approach provides opportunities for relationship building, two-way mentorship and capacity building and generating interest in, and understanding of, regional governance as well as indigenous ways of knowing and decision making.

Observer status in BC is typically used by Treaty First Nations or soon-to-be-Treaty Nations to familiarize themselves with regional district governance before becoming full members when their final agreements conclude.

Examples from other jurisdictions

- Strathcona Regional District has, as "expanded observer" status, Ka:'yu:'k't'h' / Che:k'tles7et'h' First Nation which is one of the five Maa-nulth Treaty Nations. This Nation has its own designated seat at the table and the right to participate in debate and to submit items for the agenda.

- Huu-ay-aht, Toquaht, Uchucklesaht and Yuułuʔiłʔatḥ First Nations, originally sat as observers of the Alberni-Clayoquot Regional District board before joining as full members, once they finalized their Treaty.

- Westbank First Nation is a non-voting member of the Central Okanagan Regional District (CORD). Westbank's appointed representative sits at CORD Board meetings and, by invitation, attends closed Board sessions. Services are provided under a 15 year general servicing agreement that includes all the services of a typical municipality. Some of the services are provided by Westbank to participating areas of the regional district such as law enforcement, snow removal recreation, utilities and public works. The terms and services provided under the agreement are discussed once a year and the parties meet every 5 years to review the agreement as a whole. The Westbank / Regional District of Central Okanagan and Sechelt (Self-government Agreement)

2.1.3 Committee and Commission Membership

Membership on Board Committees is at the call of the Chair. In 2016, CRD's procedures bylaws were amended to create two seats for First Nations on the Core Area Liquid Waste Management Committee. The CRD Board could change its procedures bylaws, to allow for First Nations representation on all standing committees at which point the Chair could appoint First Nations representatives to those committees. First Nations members could be remunerated for their participation on those committees, similarly to how Alternates are remunerated.

Examples from other jurisdictions

Metro Van has created an Aboriginal Relations Committee of the Board, made up of 13 Directors of which one is the Treaty First Nation that sits at the Board. (Appendix XX for more detail). This Committee meets quarterly and is supported by the Aboriginal Relations Division. The Committee is also tangentially linked to the work of a municipal working group, made up of staff from other municipalities and First Nations (see below under Technical Committees)

There are over 60 CRD Commissions, the composition and authorities of which vary. Some commissions are set up through letters patent and so may have limits to First Nations membership while other bylaws could be amended as approved by the CRD Board. Appendix C lists the Commissions and their respective structures.

There is (at least) one CRD Commission that currently has seats reserved for First Nations representation (Peninsula Water Commission) and the Advisory Committee of the JdF Water Commission also has a seat allocated to a First Nations representative.

There is a growing interest, on the part of both commission members and First Nations, to have greater First Nations representation on other CRD Commissions. For example, the Southern Gulf Islands Electoral Area (EASC) is working with the SGI Community Economic Sustainability Commission (CESC) to amend its bylaw to provide 4 seats representing the four Nations with Reserve lands on the islands (link to the staff report). Tsawout First Nation has expressed its interest in having representation on the Regional Water Commission.

Changes to the Commission structure to accommodate First Nations must be thoughtfully considered, to avoid unintended consequences. For example, overlapping territories will inform which communities should be approached for membership, and cultural and political protocols will inform the ability or the authority for one nation to represent another as a commission members. Equitable remuneration that acknowledges the draw on capacity and resources that participation demands must also be considered.

2.1.4 Technical Committees

The technical committee structure, operating at the staff level, is an increasingly common framework in other jurisdictions. Such a committee can be struck by the Board or can be initiated by staff outside the Board's direction.

Examples from other jurisdictions

Metro Vancouver has a Treaty Nation Board member and 3 non-treaty neighbouring First Nations. Much of the relationship is fostered at the staff level through various technical committees: The Regional Administrative Committee, made up of CAO's from local government and First Nations, meet regularly. There are technical committees that are project specific and First Nations participate if there is a direct interest. For example, Musqueam staff attend Parks Committees for specific parks, Squamish staff attend the Lions Gate Wastewater project committee. There is also a Technical Committee whose purpose is to provide direct and quarterly updates to each of the First Nations on Metro Vancouver projects.

2.1.5 Formal Agreements

Agreements in the form of Memorandums of Understanding (MoU), Protocol Agreements, Consultation Agreements or Community Accords can be useful tools for establishing expectations and protocols. The CRD has completed a comprehensive Cultural Use Access agreement with T'Sou-ke First Nation for the water supply lands and is in the process of developing a similar agreement for Cultural Use in the Sea to Sea Park. These two agreements build on the original MoU developed with T'Sou-ke in 2008 which laid out a blue-print for how to proceed in areas of collaboration. With the establishment of the Aboriginal Initiatives office, resources were allocated this year to foster the relationship and implement the spirit of the MoU.

Appendix D has links to a variety of formal agreements from other local government jurisdictions.

An example of a successful model for consultation has been developed by Parks Canada for the Gulf Islands Conservation Park, which has a requirement for deep consultation on park management. The W̱SÁNEĆ Leadership Committee was developed to facilitate regular and ongoing engagement and oversight. The W̱SÁNEĆ Leadership Committee is made up of 4 Chiefs, 4 Councillors, 4 Elders and a staff person. The committee is charged with providing oversight, guidance and is mandated to speak on behalf of the W̱SÁNEĆ Nations on particular matters. Parks Canada provides an annual contract for services.

This type of model would benefit CRD's engagement process by ensuring timely and deliberate discussion that would include feedback from First Nations on CRD projects where the current process tends to be an extra burden on their communities. However, this type of commitment will result in the requirement for additional staff and financial resources.

2.2 Options for a New Co-developed Framework

It was the original hope of the Task Force that through the engagement process, a new governance model, co-developed with First Nations, would be proposed within two years. More time is required to allow for the exploration of and familiarization with, our respective governments. As the number of interactions increases, the closer we are to identifying an approach that both respects indigenous laws and ways of making decisions, while acknowledging the regulatory framework in which the CRD operates.

For example, much has been learned through the negotiation process with T'Sou-ke First Nation in the development of a Traditional Access Agreement. Similarly, engagement with Songhees and Esquimalt Nations with the sewage treatment process and participation on the CALWMP and Westside Committees, the Shellfish Closure project, First Nations participation in Forum of Councils and the newly launched regional emergency management planning initiative are all bringing First Nations communities into the regional planning network.

These and other engagement activities, reveal a variety of ways to share knowledge and decision-making that resonates with First Nations and integrates well with their systems. With more time, there is little doubt that a model will be revealed that is supportable by all, makes CRD decision-making stronger and more inclusive, and is able to be sustained in the long-term.

Some of the concepts that have emerged so far include:

- Annual (or bi-annual) Committee of the Whole Meeting
    - with co-developed agenda topics.
    - decisions to be made by consensus.
    - meetings would not be considered 'consultation' with implied consent for any given topic, rather it would be a forum for information and perspective sharing
- Membership of First Nations on a Task Force, Standing or Select Committee
- Creation of a Leadership Council of south island First Nations, to provide guidance, referral responses and direction to the Board on specific areas of interest.
- Establishment of a staff technical committee from municipalities, Islands Trust and First Nations

3.0 RECOMMENDATIONS

The Task Force recognizes that to meaningfully engage with First Nations, strong relationships must be built and maintained; from that foundation, a mutually agreeable approach to decision-making on a wide array of issues and interests will emerge. There is no single solution, rather a continuum of engagement that involves, but is not limited to:

- Greater accommodation in the form of staff and leadership resources as well as financial remuneration to support First Nations capacity to meaningfully participate
- Incremental development of protocols for referrals and information exchanges that build on real-world practice (versus conceptual approaches that have no practical application)
- Agreement on processes and procedures when First Nations and the region would come together on a regular and routine basis
- Better mechanisms / tools for on-going communications.
- Conflict resolution approaches, in the event a First Nation or Nations do not agree with a regional decision or approach.

The Task Force recommends a renewed commitment to the Board's priority of relationship-building with First Nations, with a focus on experimenting with various mechanisms for engagement. A suite of recommendations has been developed by the Task Force, as a blue print of support for the next phase of relationship building. The recommendations touch on the role of the Task Force itself, its relationship to the AIO and resourcing.

3.1 Collection of Recommendations:

1. To undertake a comprehensive review of the suite of policies and procedures bylaws for CRD Committees and Commissions with recommendations for proposed amendments that will allow for First Nations representation.
2. Continue to advocate, through UBCM, for changes to the Local Government Act that address complex legal issues raised for regional districts, with respect to non-treaty First Nation regional district membership.
3. At the next UBCM conference, hHst / facilitate an information / knowledge-share session with other local governments with First Nations participation within the governance structure, at the next UBCM conference
4. Dedicate a Committee of the Whole meeting, each year, to include First Nations Chiefs (and Councils where practical), with the agenda for that session to be co-developed with First Nations.
5. Direct staff to develop options for increased resourcing and financial implications to accommodate greater participation, engagement and reconciliation.

6. Extend the term of the Task Force to 2018, to coincide with the next Board strategic priority timeframe.
7. Expand the mandate of the Task Force to include support and oversight of the Aboriginal Initiatives office
8. Amend the Task Force Terms of Reference to include the possibility of First Nations representation
9. Change the name of the CRD Aboriginal Initiatives Office to First Nations Relations to better reflect the scope of the office and the focus on government to government relationship building
10. Expand the scope of the Aboriginal Initiatives Office to support municipalities in relationship building with First Nations in an effort to share emergent best practices, information sharing and efficiencies.
    a. Activities and services could include:
        i. Shared cultural training opportunities
        ii. Facilitated inter-municipal and First Nations staff committee
        iii. Clearinghouse for service agreements, contracts, protocols in the region; oversight and assistance in drafting agreements in support of consistency, equity and fairness
        iv. Support for a collaborative approaches to Calls to Action from the Truth and Reconciliation Commission
11. Direct CRD Staff to be directed to survey municipal staff for interest and needs assessment and to report back to the Board with a proposed approach, including resources.

4.0 SUMMARY

The Task Force has made significant strides in reaching out to First Nations, gaining a better understanding of the interests, the opportunities and the challenges to greater collaboration and decision-making between and amongst our respective governments.

Reconciliation and Indigenous resurgence is a national priority, and the next decade promises a significant shift in the role and participation of First Nations in nation-building. Local government has a responsibility to support its First Nations neighbours in their economic development and community-building aspirations, and we have an obligation to our constituency (residents) to ensure a strong, seamless and sustainable relationship with our neighbouring governments.

4.1 Resources

The Task Force supports the thoughtful and often 'deep' engagement undertaken by the Aboriginal Initiatives Division in its first few years of operation, and asserts the importance of continuing the work and the time commitment and the resources required to foster greater understanding, familiarity and strong, resilient relationships.

As the field of "First Nations relations" continues to evolve and inevitably becomes a discipline, the Board's direction will inform the shape and tenor of this area of interest for the CRD. The Task Force is well situated to provide that guidance to the AIO with direct and ongoing accountability to the Board.

The added administrative work of supporting the Task Force in an oversight role, as well as the additional workplan that will inevitably be directed to staff, requires a two-year term position of 0.5 FTE to the existing 1.5 FTE staff compliment that makes up the Aboriginal Initiatives Office. Additional funds will be required for the remuneration of First Nations leaders to attend formal meetings. Budgeting for bi-annual meetings with 20 First Nations attendees receiving a $100 honorarium, results in a funding requirement of $8,000 over the course of two years. No new funding is required at this time, as funds to support this increase in resources can be drawn for the AIO's reserve fund.

4.2 Reporting

Within the first quarter of 2017, the Task Force will produce a workplan for Board approval, which will address an approach for further governance discussions with First Nations leaders, as well as identification of key policy and procedure reviews to be undertaken.

The Task Force will report quarterly either directly to the Board, or by way of a Committee, at the call of the Chair.

4.3 Alignment with Board's Strategic Priorities

The Board has made relationship building with First Nations a strategic priority specifically:

- Organizing Board Training and education on First Nations' traditions, culture, history and approaches
- Exploring the feasibility of hunting protocols in CRD lands in recognition of the Douglas Treaty
- Investigating ways to best support First Nations economic development activities in co-operation with local government partners
- Completing the work of the Special Task Force on First Nations engagement
- Supporting dialogue between the public, municipalities, electoral areas and First Nations

The recommended actions in this report are all linked to these strategic priorities.

Appendix A – Summaries of Delegations to First Nations

TSEYCUM FIRST NATION

Date of Event: April 17, 2015
Location: Tseycum First Nation Band Office

Representing the CRD:

- Ex Officio, Chair Nils Jensen
- Director Ryan Windsor
- Staff from Aboriginal Initiatives, Sue Hallatt and Erich Nahser-Ringer

Representing Tseycum First Nation:

- XÁLÁTE – (Chief Jacks)

XÁLÁTE began by first thanking the CRD for coming to Tseycum and welcoming the delegation to their community. He said this conversation is a good start and is long overdue. Communication is key to a strong relationship and all he asks is for the CRD to communicate with his government about regional decision making.

Policies have been a hurdle for Tseycum. They are often used as a shield to defend this or that action that is not beneficial to the First Nations peoples of this land. The shield needs to be brought down in order to honour the rights of the Douglas Treaty. XÁLÁTE: "Are you the local government willing to support us on the Douglas Treaty?"

XÁLÁTE also mentioned that his Nation is not just concerned with decisions made in the CRD, but other regional districts that reside in their Traditional Territory. Tseycum needs help protecting the natural environment.

Key issues:

- the cost of fresh drinking water,
- polluted shorelines / access to shellfish,
- desecration of ancestors / archeological protocols,
- potential relocation of CVRD sewage outfall to Satellite Channel.

Regarding participation on the Board, XÁLÁTE acknowledged that Tseycum would like to sit and share knowledge with the Board. He said that it is time to "cut the strings that separate us and start working together". Chief Jacks does not feel he needs to be a part of all decision making at the CRD, only issues that affect First Nations such as fish, parks, land, food, and data sharing.

TSAWOUT FIRST NATION

Date of Event: May 21, 2015
Location: Tsawout First Nation Band Office

Representing the CRD:

- Director Ryan Windsor
- Director Maja Tait
- Staff from Aboriginal Initiatives, Sue Hallatt and Erich Nahser-Ringer

Representing Tsawout First Nation:

- Chief Harvey Underwood
- Councillor Samantha Etzel
- Councillor Louis Claxton
- Councillor John Wilson
- Cathy Webster
- Councillor Stanley Sam
- Councillor Allan Claxton
- Councillor Elizabeth Hermsen
- Administrator Eric Pelkey

Chief Underwood welcomed the Task Force.

The many initiatives between the CRD and Tsawout were discussed including the sewage treatment plant, discussions around the land-use referral initiative called WSANEC Connect, stormwater monitoring and Tetayut creek monitoring. There are also service agreements for building inspection, fire protection and a source control agreement to prevent grease from damaging Tsawout's sewage treatment system.

The recently developed watershed maps that show the health of the watershed in the area were shared with Tsawout.

Representation on the CRD Board has been an ongoing issue for Tsawout. It was recalled that this topic was discussed with the Chief and Council 30 years ago. Tsawout has representation on the Peninsula Water Commission but that is not enough.

Legal cases are bringing meaningful consultation forward however the exclusion of First Nations under the *Local Government Act* is "an insult".

Tsawout staff provided background to the Douglas Treaty that stemmed from the Royal Proclamation of 1762 that stated that the Crown had to enter into treaty with the legal owner of the land. "This has led us to where we are today." Tsawout is not part of the BC treaty process and never will be. "Canada and the Province don't recognize our pre-confederation, constitutionally protected treaty." As a practical example of how this plays out, Tsawout wanted to put a sign on the highway pointing to their Nation's reserve land and were told that because they weren't legally part of BC they would not be permitted.

Key issues:

- Concerns regarding agreement for sewage overflow from the CRD system utilising Tsawout's system
- Outstanding service contract to engage CRD to inspect grease traps
- Land use referrals and capacity to fully engage
- Closures of traditional shellfish harvesting sites
- Leachate / pollution into Saanich Inlet
- Biosolids as a valuable resource, going to waste
- Cost of drinking water
- Overall health of WSANEC territory

Closing remarks – Tsawout would like to work with the CRD to produce better solutions for the region.

WJOŁEŁP (TSARTLIP) FIRST NATION

Date of Event: July 03, 2015
Location: Tsartlip First Nation Band Office

Representing the CRD:

- Director Ryan Windsor
- Task Force Chair, Marianne Alto
- Ex Officio Chair, Nils Jensen
- Staff from Aboriginal Initiatives, Sue Hallatt and Erich Nahser-Ringer

Representing Tsartlip First Nation:

- Councillor Gord Elliot
- Councillor Joni Olsen
- Councillor Simon Smith Jr.
- Councillor Verna Ellsworth
- Administrator Karen Harry

The Task Force was welcomed to the table. It is important to acknowledge the traditional territory. Tsartlip would like to see a change from a consultation paradigm to one of more consent.

Further discussion about erosion of natural resources due to development and the fact that serious changes are needed to protect the environment. "We believe you (CRD) play an important role in protecting the environment and our part is integral to that."

Tsartlip acknowledged efforts by the CRD in the RGS and the CRD's efforts in sensitive areas. Tsartlip has 3 reserves with ~ 1100 members and that they continue to strive in local economic development projects. They face difficult decisions to make for their community and they are looking forward to some meaningful dialogue.

It is difficult to square the Nation's federal connection and to connect the dots to local government and the CRD. The Nation works with the Department of Fisheries to address the Douglas Treaty rights, but it is not clear how CRD fits into the picture. In order to make effective change, it would be helpful to understand better how CRD is structured.

Capacity is an issue if Tsartlip is to sit on committee positions in order to fully participate in regional decisions.

Key issues:

- Marine sewage
- Runoff / pollution to the Todd Inlet
- Stormwater damage to local creeks / watersheds
- Economic development opportunities
- Environmental stewardship
- The draining of Mayber Flats
- Loss of critical habitat
- Access to traditional medicines
- Barriers created by the complexity of bureaucracy and many levels of government

Final comments expressed a desire to have a follow up meeting which focusses on the structure, funding and decision-making framework of the CRD.

The meeting concluded with a promise to have a follow up presentation from the CRD explaining how it operates and how it relates to W̱JOŁEŁP First Nation.

BOḰEĆEN (PAUQUACHIN) FIRST NATION

Date of Event: August 17, 2015
Location: Pauquachin First Nation Band Office

Representing the CRD:

- Task Force Chair, Marianne Alto
- Staff from Aboriginal Initiatives, Sue Hallatt and Erich Nahser-Ringer

Representing Pauquachin First Nation:

- Chief Rebecca Harris
- Councillor Darlene Henry
- Councillor Alan Tom
- Councillor Herman Henry
- Councillor SI,OLTENOT (see-el-te-not) Madeline Bartleman
- Acting Administrator Thelma

The Task Force was welcomed to the table.

Task Force Chair Marianne Alto opened with appreciation and gratitude for receiving the delegation on Pauquachin Territory.

The newly elected Chief noted that it is time to learn more about local government, the CRD and she is interested in engaging more.

It was noted that it appears that everything the CRD does, Pauquachin also does but on a smaller scale. "We have an interest in all those things that you mentioned in your presentation."

It is important for Pauquachin that the Douglas Treaty be recognized by any table that they sit at.

There was an interest to see an organizational chart that outlines how the CRD works for better understanding of how Pauquachin can relate to the CRD.

The meeting concluded with a promise of further conversation and information sharing about the CRD and ideas for shared governance.

T'SOU-KE FIRST NATION

Date of Event: September 18, 2015
Location: T'Sou-ke Band Office

Representing the CRD:

- Task Force Chair, Director Marianne Alto
- Ex-officio chair Nils Jensen
- Director Ryan Windsor
- Director Maja Tait
- Staff from Aboriginal Initiatives, Sue Hallatt and Erich Nahser-Ringer

Representing T'Sou-ke Nation

- Chief Gordon Planes
- Councillor Alan Planes
- Councillor Rose Dumont

Chief Planes welcomed the CRD to T'Sou-ke territory. He acknowledged the importance of having strong working relationships with neighbouring jurisdictions to support T'Sou-ke. Chief Planes spoke about Aboriginal rights within Canada and locally with the Douglas Treaty. He acknowledged that the Douglas Treaty was signed by various Chiefs as a *partnership agreement* with the newcomers. Chief Planes sees the Te'mexw Treaty as being a way to " fix the old things that are wrong with the relationship".

The T'Sou-ke people have always been stewards of the lands. They want to work with the CRD to continue as stewards of the park lands and watershed lands. The T'Sou-ke people are forward thinking and image what this place will look like in 100 years from now.

Land is critically important to the T'Sou-ke people because their culture, their way of life, their language and their medicines are linked to the stewardship of the land. "Our discussions when it comes to lands involve imagining fences around the lands that weren't there when we signed the [Douglas] treaty…it is good to establish words in stone so that our future will be preserved…we have to look at how we communicate about hunting and fishing."

Chief Planes believes that a relationship must start around formal recognition and that if the government could agree on formal recognition "we'd go a long way (together)." It is important to T'Sou-ke that these sacred sites and burial sites remain in their hands. It is important to do things in a respectful way, important that local governments formally recognize indigenous culture and spirituality.

Formal recognition lays the groundwork for agreements that are iron clad. The Chief is interested in drawing up formal agreements. He knows there are other examples of cooperation and partnership that can be duplicated from other jurisdictions, such as Cowichan Tribe's participation as Co-chair on the Cowichan Watershed Board.

Councillor Planes expressed his support for CRD's initiative in building relationships with T'Sou-ke by coming out and meeting with Chief and Council. With each visit, everyone learns a little bit more about each other.

Councillor Dumont looks forward to future meetings and decisions about either sitting on the Board or an alternative that supports shared governance.

Key issues:

- Access to land for cultural purposes
- Hunting and fishing in their traditional territory
- Economic development
- Stewardship of the land

ESQUIMALT NATION

Date of Event: November 09, 2015
Location: Esquimalt Nation Administration Office

Representing the CRD:

- Task Force Chair, Marianne Alto
- Ex Officio Chair, Nils Jensen
- Staff from Aboriginal Initiatives, Erich Nahser-Ringer

Representing Esquimalt Nation

- Chief Andy Thomas
- Administrator Janice Rose

Discussion began with reflections on the recent economic development summit that Chief Thomas and Chair Jensen attended. The Chief spoke about the economic opportunities that have been lost to his people over time. “We’ve been facing a lot of hurdles in terms of economic development. We have a vision and sometimes it takes a generation to achieve that. We are trying to find our place in our own land.”

The Chief talked about how he stopped travelling in 1992 and decided to focus here at home on building relationships. Mayor Alan Lowe was a big part in that for him and they have had a good relationship with Victoria since that time.

The Chief spoke about some of the struggles for his community. He said that it is a struggle for capacity with Esquimalt Nation because when a crisis happens it puts everything else on hold and crises happen often enough.

He appreciates that the CRD wants to build partnerships with First Nations and believes it’s hard to get 9 nations together but that it would be good to try to do so. It is important to understand that each community has their unique challenges that they are working to address. “The cycle of poverty binds our Nation and stops us from living like the rest of the world. If we build partnerships it has to be something real so that we can be involved in the economy.”

A discussion ensured regarding the CRD as a service delivery model, and the work the Task Force is undertaking to find a way for First Nations to participate in regional decision making.

Chief Thomas stated that he is not overly familiar with the CRD and it was agreed that a follow-up presentation on the CRD’s structure would be beneficial to be able to move this conversation forward.

The Chief has asked for a seat at the CRD for a long time. In terms of CRD initiatives he has an interest in being able to access financing for housing, working together on sewage treatment and having access to the drinking watershed or other CRD lands for Winter Ceremonies.

Discussion finished with a desire to have another presentation about the CRD and to have a larger presentation about what some other Regional Districts have done in terms of First Nations representation.

WSIKEM (TSEYCUM) FIRST NATION (SECOND VISIT, NEWLY ELECTED CHIEF AND COUNCIL)

Date of Event: November 10, 2015
Location: Tseycum First Nation Band Office

Representing the CRD:

- Ex Officio Chair, Nils Jensen
- Director Ryan Windsor
- Staff from Aboriginal Initiatives, Erich Nahser-Ringer

Representing Tseycum Nation

- Chief Tanya Jimmy
- Councillor Brian Jimmy

The Chief welcomed the CRD to Tseycum and emphasized the importance of Tseycum's involvement in (local government) matters whenever they are able. They have received a mandate from their community to work on generating economic development, building housing for community members and to continue to practice Douglas Treaty rights in order to keep the community fed.

There was discussion about how the CRD operates as a service delivery model for the municipalities. It was recognized that some of the Chiefs in the area have said that they want to be a part of the decision making and the CRD is now working to figure out how that can be done.

There was a discussion about CRD water services to Tseycum First Nation and what happens in case of a drought. The Chief is concerned about drought years in the future.

Chief Jimmy expressed her interest in "moving forward" and that Tseycum wants to be an active, involved participant; they want to work on practical day-to-day activities in order to build experience at the "lower level" and work up to higher level governance such as the CRD Board.

The Chief's goal is to look after the six generations that come after them. She wants to see Mother Earth taken care of and wants to be a part of that legacy of change for the next generation. Chief Jimmy would like to see more engagement and is happy to start anywhere that is appropriate, with the CRD.

In closing, Chief Jimmy offered herself as a resource in connecting to the other Nations or bringing information that the CRD might be looking for.

SONGHEES FIRST NATION

Date of Event: November 18, 2015, 6:30 pm
Location: Songhees Wellness Centre

Representing the CRD:

- Task Force Chair, Marianne Alto
- Director Ryan Windsor,
- Ex Officio Chair, Nils Jensen
- Staff from Aboriginal Initiatives, Sue Hallatt

Representing Songhees First Nation:

- Chief Ron Sam
- Councillor Gary Albany
- Councillor Jackie Albany
- Councillor Frank George
- Councillor Karen Tunkara
- Councillor John Rice Jr.
- Administrator Christina Clarke
- Director of Programs and Services, Danny Henry

Chief Sam welcomed the CRD to Songhees. He acknowledged the growing relationship and number of common areas of interest between Songhees and the CRD. He invited the delegates to begin the conversation.

Board Chair and Ex Officio member of the Task Force, Nils Jensen reflected on the CRD Board's strong priority in reaching out to First Nations governments to begin the good work of building enduring relationships. Evidence of this commitment is the creation of the Aboriginal Initiatives Office, which reports directly to the Board's Governance Committee and the creation of this Special Task Force.

Task Force Chair Marianne Alto spoke about the mandate of the committee and gave an overview of the Nations the Task Force has met and summarized the messages the members had received so far.

Ryan Windsor acknowledged Songhees's leadership in calling for greater participation by First Nations in regional matters and acknowledged that it was the Chief's delegation to the CRD Board, requesting full membership on the Board that sparked this Task Force.

Chair Alto spoke about the legislative barriers to membership that fall within the purview of the Province.

Chief Sam noted that Songhees met with the Premier and broached this issue.

The Task Force members noted that the Board had sent a letter to the Premier and also met with the Premier during a very short meeting as part of the UBCM convention.

All parties agreed to keep each other in the loop as discussions progress.

Christina Clarke mentioned that they were asked by UBCM organizers to (2016 convention to be held in Victoria BC) to present on First Nations Tax Authority.

The Task Force members also suggested that the Board would also benefit from learning more about FN Tax approaches and it was agreed that staff would work with Christina to schedule a presentation to the Board.

The meeting ended at 7:00 pm

MÁLEXEŁ (MALAHAT) NATION

Date of Event: August 29, 2016
Location: Malahat Nation Administration Office

Representing the CRD:

- Director Rick Kasper (Alternate for Director Tate)
- Staff from Aboriginal Initiatives, Sue Hallatt, Erich Nahser-Ringer

Representing Malahat Nation:

- Chief Caroline Harry

- Councillor Vincent Harry
- CEO Renee Racette
- Administrative Assistant Miya Inkster

Director Kasper expressed gratitude for Malahat Nation welcoming the CRD and conveyed the purpose of the CRD coming was to engage in areas of common interest. It was referenced that the Water Supply Area and other CRD lands are within the traditional territory of the Malahat peoples.

Chief Harry welcomed the CRD and said that the door is always open to meeting with other levels of government.

CRD representatives discussed:

- the infrequent communications that they have had with Malahat
- recognition that Malahat is a member of the WSÁNEĆ family
- the purpose of the Special Task Force on First Nations engagement.
- CRD's interest in "becoming whole" by including First Nations in governance and decision making;
- CRD's appreciation for the impact land use decisions can have on Malahat's interests
- The potential interest of Malahat's leadership in participating in decisions of regional concern

Malahat brought up some of their more challenging relationships with other government agencies and expressed support for a more proactive approach towards relationship building.

Malahat further conveyed the following messages:

- It is important to have lines of communication with other levels of government and it is optimal if this is formalized, perhaps in the form of an annual meeting or a one page agreement that lays out how parties can talk to each other.
- There is an important opportunity for Malahat and CRD to model good relationships for other levels of government to witness and build upon.
- It is a good sign that local government has invested in an office dedicated to relationship building with First Nations.
- Malahat is working on a consultation policy and would like to workshop that policy with the CRD.
- Malahat believes that consultation is a two-way responsibility and is committed to keeping its neighbours informed as to the Nation's development aspirations;
- Malahat also has an interest in understanding what decisions the CRD makes that impacts Malahat's decisions.
- Referrals can take up significant resources, but timely responses to referrals is important to Malahat.
- When governments include First Nations, this can showcase what is possible to other governments.
- Malahat Nation is poised for significant and exciting economic development in the near future;
- The Chief mentioned that as a leader, she is also focused on learning more about language, culture, history, treaty rights and family connections. People are coming to help in this regard and such support is welcomed by Malahat.

Summary Comments:

The CRD has come to understand the importance of building strong relationships with First Nations as a foundation on which to build government to government protocols. Because Malahat's primary local government relationship will be with the CVRD, it will be helpful to establish ongoing communications with CRD; the Board would prefer direct channels with Malahat so that any decisions or discussions are not received second hand or in the media and Malahat feels confident it can approach the CRD with its concerns.

Director Kasper framed his perspective by saying: "It's about negotiating the needs and wants of each community, it is not a *problem* discussion but rather an *opportunity* discussion."

The CRD has begun to include First Nations Chiefs and Councils in the bi-annual Forum of Councils events with the hope of holding regular *all council* gatherings to discuss emerging topics of common interest. The first Forum of Councils was held in June 2016 around the topic of Indigenous Cultural Training. Future topics include Food Security (October 2016) and Adaptation to Climate Change (Nov. 2016).

The CEO will try to make sure a technician or other representative from Malahat attends future meetings of this kind.

A map of the region was left with Malahat Nation and gifts were shared with the attendees.

Next Steps / Action Items:

- Both the CRD and Malahat are keen to have a follow-up meeting.
- CRD staff will meet with Malahat Lands Department to begin the work of establishing a communications protocol between the two governments.
- The CRD will extend invitations to Malahat Nation to future Forums of Councils or other relevant regional meetings.
- The CRD also offered support in terms of connecting to regional counterparts with the CVRD as well as any mapping resources they may need.

Appendix B – Examples from other jurisdictions

METRO VANCOUVER

One Treaty FN sits on the Board (Tsawassen)

- They did not sit as an observer before Treaty but rather had workshops and meetings with Metro representatives to get an understanding of the governance system

Regional Administrative Committee

- Composed of all the CAOs in Metro Van
- First Nations staff attend these meetings
- Formal meetings that take place regularly throughout the year

Technical Committee for parks or specific projects

- Separate staff committees with staff from different First Nations
- Musqueam staff and Metro Van staff on a parks committee for a specific parks
- Squamish staff on Lions Gate Wastewater project committee
- Meets at least quarterly depending on the project
- Committees were set up by staff and did not need direction from the Board

Technical Committees to update First Nations on projects

- Three separate meetings with three separate First Nations
- Take place every three months
- Aboriginal Relations staff, technical staff and staff from First Nations
- Terms of Reference is to update First Nations on projects
- Found to be more effective than sending letters

Other general notes:

- Committees were mainly initiated by Metro Van after hearing feedback from First Nations however, recently a new committee was suggested by Musqueam First Nation.
- Metro Vancouver does **not** pay meeting fees, they were clear from the beginning that they would not be compensating these meetings
- Regional Politicians and FN elected leadership have had informal breakfast meetings before Aboriginal Relations Committee meetings
- Metro regularly engages with 3 of the non-Treaty FNs in addition to the Treaty FN that is a member. There is very little engagement with the other First Nations, who have not, as yet, expressed interest.

REGIONAL DISTRICT OF CENTRAL OKANAGAN

Westbank First Nation has signed a self-government agreement with the Province

- They were invited to participate as an observer member by the Regional District Board
- Observer can't vote, move motions or put items on the agenda but they can speak to any item that is on the agenda
- Westbank pays in the wastewater treatment service and sits on that committee as a member
- Sometimes staff members attend on the committee instead of the elected councillor who attends the Board meetings

The Regional District of Central Okanagan has no other standing committees as it is all dealt with through Board meetings.

They have a services agreement:
http://www.civicinfo.bc.ca/Library/First_Nations_Service_Agreements/Services_Agreement--CORD_Westbank_First_Nation--2007.pdf

And a protocol agreement:

http://www.civicinfo.bc.ca/Library/First_Nations_Service_Agreements/Protocol_Agreement--CORD_Westbank_First_Nation--1999.pdf

The protocol agreement outlines meetings at least twice a year to discuss issues of mutual concern. Recently they met regarding issues of Regional parks.

The Regional District of Central Okanagan also shares a border with the Okanagan Indian Band however they don't deliver any services to that community and they do not have a relationship with them.

REGIONAL DISTRICT OF OKANAGAN SIMILKAMEEN

The Regional District of Okanagan Similkameen as a protocol agreement with three First Nations which form part of the Okanagan Nation of the Region - http://www.rdos.bc.ca/departments/office-of-the-cao/community-to-community-relations/

Staff Steering Committee on First Nations issues

- Senior Staff and Band Managers meet to discuss common issues
- Meet every 6 weeks to 2 months
- Relationship Building meetings and to discuss projects or issues

Joint council meetings twice a year

- Composed of 3 of the Chiefs, The Chair, Vice Chair and 1 other Director
- They receive reports from the Staff Steering Committee
- The Regional District has a task to look at including FN membership on their Board in 2017

Celebrate the Anniversary

- Ceremony every year to celebrate signing of the protocol agreement (It's been three years since it was signed)

Referrals working group

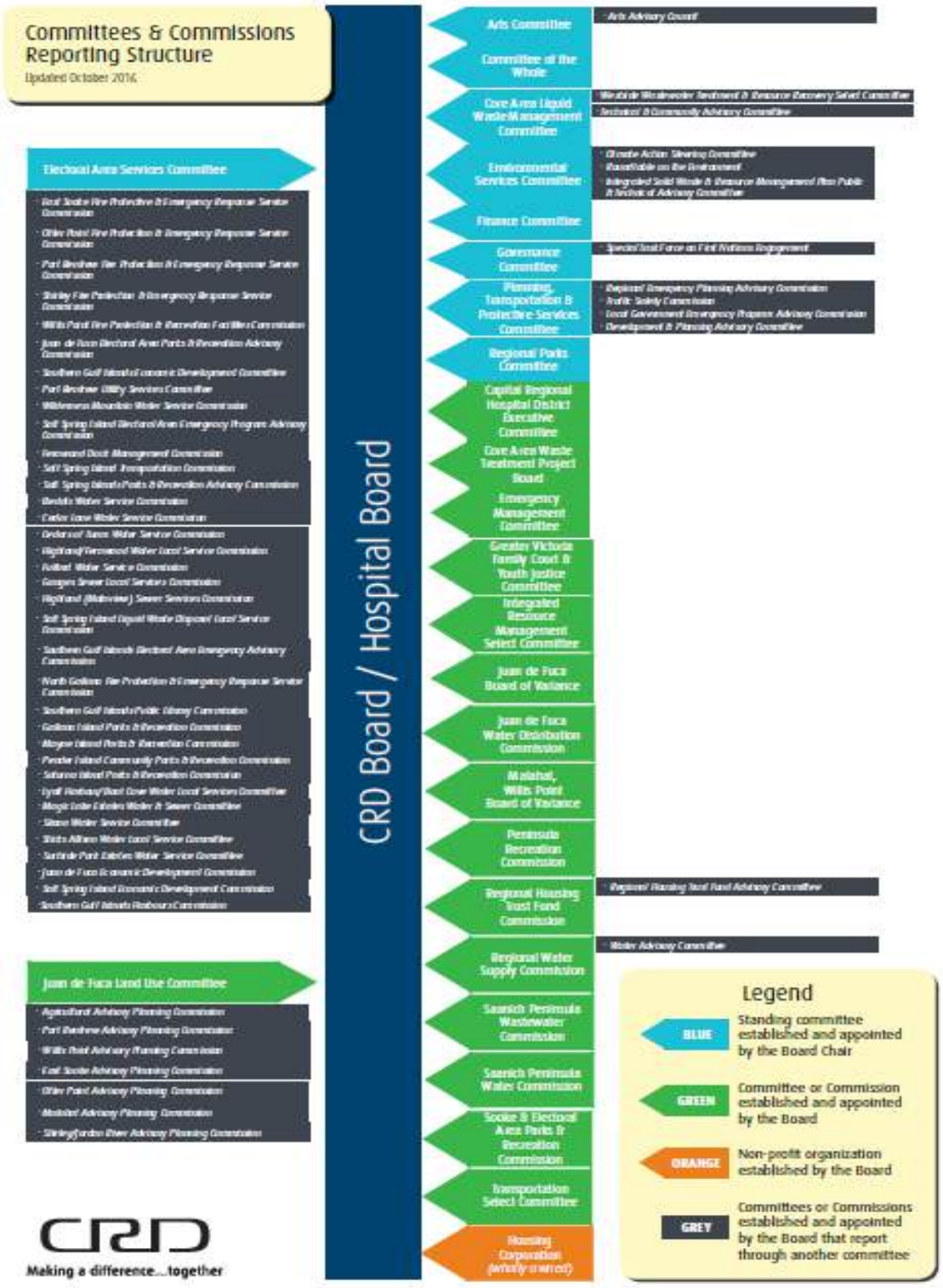
- Land use departments from the First Nations and planning departments from member municipalities and the Regional District are meeting to discuss how to better do referrals
- Referrals are not paid at the moment but First Nations have indicated that they would like compensation for their time

ALBERNI-CLAYOQUAHT REGIONAL DISTRICT

- There are now 4 Board members from Treaty First Nations who sit on the ACRD Board, the Board totals 14 members.
- Before First Nations joined they sat as Observer members where they could participate in discussion but could not vote or move motions
- The Treaty First Nations had up to 10 years to join as formal members however they have all now joined the board.
- Under the treaty the First Nations have to join the general government services and the Hospital district, all other services were up for negotiation.
- The ACRD also has several service agreements with some of the First Nations around Fire services and Building Inspection
- First Nations sit on committees for geographical areas and for specific projects at the appointment of the Chair
- The ACRD sends all of its Board minutes and agendas to all other neighbouring First Nations who may attend to watch from time to time if there is an issue that concerns them

Orientation manual For ACRD and Maa-nulthTreaty Nations Cooperation - http://www.acrd.bc.ca/cms/wpattachments/wpID320atID1233.pdf

Appendix C – CRD Commissions



Appendix D – Formal Agreement Examples

A number of non-treaty First Nations are participating in local government activities within the existing legislative framework. Examples include:

- The City of Penticton and Penticton Indian Band have an agreement on joint economic development, land use and revenue sharing;
- The City of Kimberley and Ktunaxa Nation have a Memorandum of Understanding (MOU) to explore opportunities in economic projects, infrastructure, services, emergency preparedness and events;
- Sts'ailes First Nations and Fraser Valley Regional District have a MOU and Intergovernmental Relations Protocol) with plans to work together on economic development, land use, emergency services, and transportation;
- The District of Ladysmith and the Stz'uminus First Nation have a Community Accord guiding their work together on joint initiatives and partnerships, and;
- The Songhees Nation and Esquimalt Nation are voting members on the Core Area Liquid Waste Management Plan Committee (CALWMP) of the CRD Board

Non-treaty First Nations also sit as ex-officio (non-voting) members on the following regional district boards:

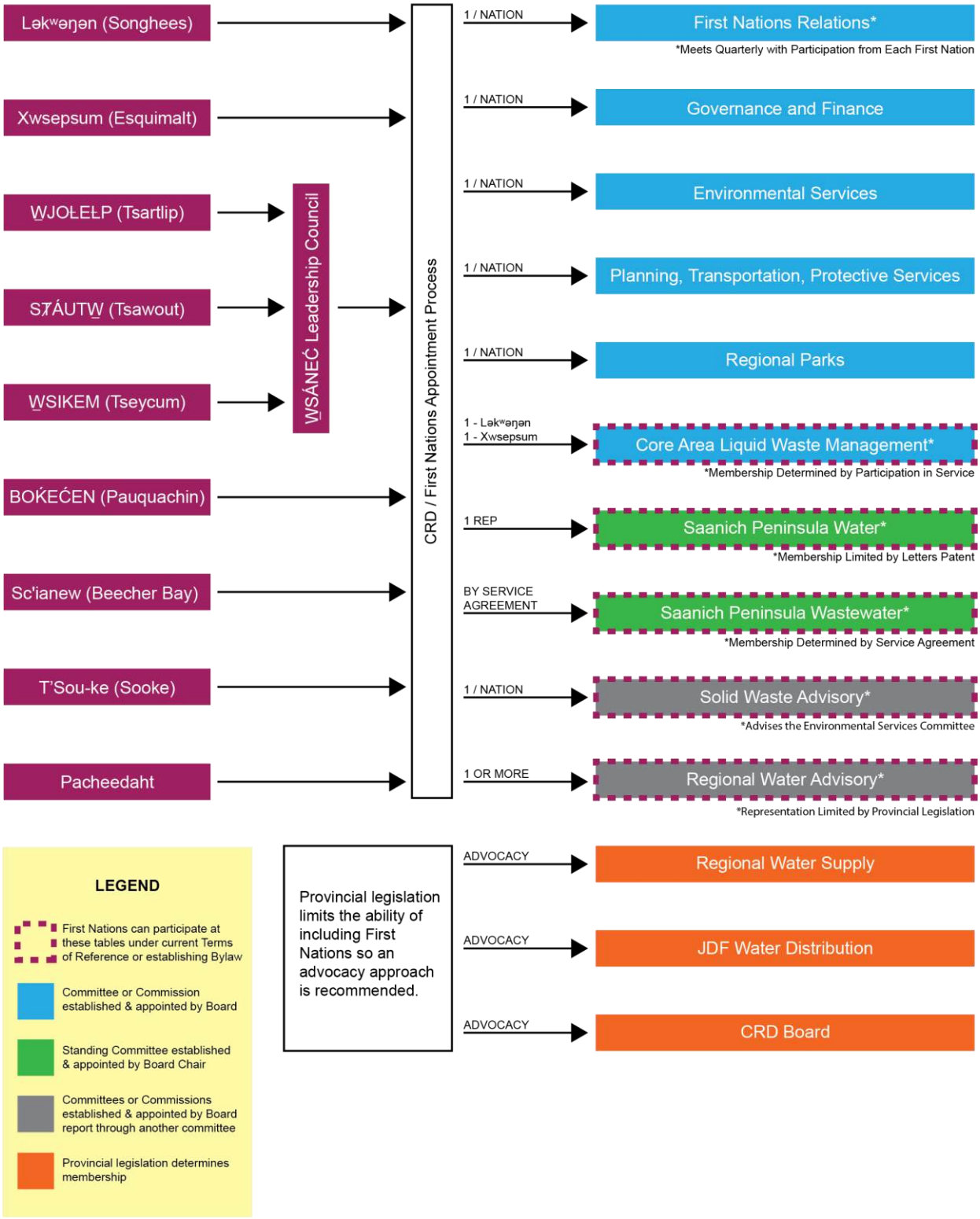
- Westbank First Nation / Regional District of Central Okanagan and
- Ka:'yu:'k't'h' / Che:k'tles7et'h' First Nation / Strathcona Regional District
- The Toquaht and Uchucklesaht Nations were ex-officio members of the Alberni-Clayoquot Regional District board before joining as TFN members

Protocol Agreements and MOUs:

Formal protocol agreements and MOUs are typically a first step towards deeper participation and collaboration. They are usually high-level agreements between two or more parties to work together on areas of mutual interest. Often they acknowledge the history and rights of both parties and *may* include specific points like a certain number of meetings per year to ensure continued dialogue or dispute resolution processes for the parties. There have been attempts to craft protocol agreements between the CRD and First Nations, but none executed, with the exception of a 2008 Relationship MoU with T'Sou-ke. There are some protocol agreements in place within the CRD with First Nations, including a 2011 Relationship Agreement between the District of Central Saanich and Tsartlip First Nation. This Relationship Agreement serves the intended purpose of supporting a stronger connection between the local government and the First Nation. There are numerous examples from across BC, including:

- Powell River Regional District - Tla'amin First Nation protocol agreement
- Squamish-Lillooet Regional District - Lil'wat First Nation
- Caribou Regional District – Williams Lake Band protocol agreement

APPENDIX B: MODEL FOR FIRST NATIONS INCLUSION



APPENDIX C: FIRST NATIONS INCLUSION CHART

CRD & FIRST NATION INCLUSION

Governance Body	Current Status	Proposed Status	Notes
First Nations Relations Committee	0	1 Seat Per Nation	Proposed approach is to bring together nine First Nations' elected representatives and nine CRD Directors quarterly to monitor progress on advancing the Board Priority of First Nations Reconciliation.
Governance and Finance Committee	0	1 Seat Per Nation	Create space for each Nation to have a single elected representative participate on matters that are of interest to their First Nation.
Environmental Services Committee	0	1 Seat Per Nation	
Planning, Transportation & Protective Service Committee	0	1 Seat Per Nation	
Regional Parks Committee	0	1 Seat Per Nation	
Core Area Liquid Waste Management Committee	2	2	Bylaw No. 3999 amended the Procedures Bylaw to include Songhees and Esquimalt First Nations as full participants of this committee. Participation on this is service-based and remains specific to Songhees and Esquimalt First Nation elected representatives.
Saanich Peninsula Water Commission	1	1	The Letters Patent allows for two members, appointed annually, each of whom shall be a resident of the participating municipalities but not from the CRD Board, Central Saanich, North Saanich or Sidney. Because of the residency requirement only a representative from Tsawout or Tsartlip First Nation is eligible. Additionally, in 1997 the CRD identified that it would look to use these two seats to engage both a representative from the agricultural community and a First Nation.
Saanich Peninsula Wastewater Commission	N/A	N/A	Under the Letters Patent, one representative from each service recipient that has concluded a written Service Agreement for capacity in the Peninsula Treatment Plant can serve a two-year term. Staff are currently working with First Nations on the Saanich Peninsula to explore interest and opportunity to engage in service agreement discussions.
Solid Waste Advisory Committee	2	1 Seat Per Nation	Create space for each Nation to have a single elected representative participate on matters that are of interest to their First Nation.
Regional Water Advisory Committee	1 or More	1 or More	The *Capital Region Water Supply and Sooke Hills Protection Regulation B.C. Reg. 284/97* lists members for the Advisory Committee, including that a First Nation may be invited to provide a representative provided there is a vacancy on the Advisory Committee.

ADVOCACY FOR INCLUSION

Governance Body	Current Status	Proposed Status	Notes
Regional Water Supply Commission	N/A	N/A	The *Capital Region Water Supply and Sooke Hills Protection Act* and *Capital Region Water Supply and Sooke Hills Protection Regulation B.C. Reg. 284/97* establish the membership for the Regional Water Supply Commission and the participation of First Nations would require an amendment to the act and regulation.
JDF Water Distribution Commission	N/A	N/A	
CRD Board	N/A	N/A	S. 196(1) and S. 253(1) of the *Local Government Act* limit First Nation participation on the CRD Board and advancing this interest will require an amendment to the act.

CAPITAL REGIONAL DISTRICT
BYLAW NO. 4368

****

A BYLAW TO AMEND BYLAW 3828, "CAPITAL REGIONAL DISTRICT PROCEDURES BYLAW, 2012"

****

WHEREAS:

A. Bylaw No. 3828 regulates the proceedings of the Capital Regional District Board and establishes how the Board Standing Committees, Select and Advisory Committees, Commissions and other appointed bodies of the Board operate within CRD governance;

B. The CRD Board approved a Statement of Reconciliation in October 2018 that includes supporting First Nations in participating in CRD decision-making processes and looking to First Nations for leadership in understanding how to create new decision-making systems;

C. The 2019-2022 CRD Board Priority of First Nations Reconciliation includes looking to First Nations for leadership in understanding how to create new regional planning and decision-making systems together on their Traditional Territories; and,

D. The Board wishes to amend Bylaw No. 3828 to allow for First Nations' elected representatives to participate on Board Standing Committees, Select and Advisory Committees, Commissions and other appointed bodies of the Board.

NOW THEREFORE, the Capital Regional District Board in open meeting assembled hereby enacts as follows:

1. Bylaw No. 3828, "Capital Regional District Board Procedures Bylaw, 2012" is hereby amended as follows:

    (a) By adding a definition for a First Nation Member to Section 1 to state:

        "First Nation Member" means a First Nations' elected representative who is permitted to participate on an Advisory Committee, Select Committee, or Standing Committee by the relevant Terms of Reference and includes their alternate if acting in the place of a First Nation Member;

    (b) By replacing Section 26(2)(b), "An elected representative and alternate from each of the Songhees Nation and the Esquimalt First Nation Councils may be appointed to a committee established for the purposes of the Core Area Liquid Waste Management Plan."

        In its entirety with:

        Where a Board Standing Committee Terms of Reference allow a First Nation Member to participate;

    (c) By changing Section 32, "The quorum in a Standing or Select Committee shall be a majority of the persons appointed to the Committee."

In its entirety with:

> The quorum in a Standing or Select Committee shall be the majority of the Persons appointed to the Committee, but shall not include First Nation Members.

(d) By adding section 33(2)(c) and (d) as follows:

> (c) First Nation Members are permitted to abstain from voting on an item, provided that they declare their abstention prior to the vote being called on the item.
>
> (d) When an abstention from voting on an item is declared by a First Nation Member, it shall be noted in the meeting minutes and the total number of votes on the item shall not include those First Nation Members who have abstained from voting.

(e) By adding a Section 35(6) to "Procedures for COW Meetings" to state:

> First Nation Members may attend COW when invited in advance by the Board Chair.

(f) By adding a new section 39 as follows:

> The provisions of sections 22 and 24 of this bylaw that apply to Members shall apply to First Nation Members.

(g) By renumbering sections 39 and 40.

2. This Bylaw may be cited for all purposes as "Capital Regional District Board Procedures Bylaw, 2012, Amendment Bylaw No. 11, 2020."

READ A FIRST TIME THIS	the	day of	2020
READ A SECOND TIME THIS	the	day of	2020
READ A THIRD TIME THIS	the	day of	2020
ADOPTED THIS	the	day of	2020

CHAIR

CORPORATE OFFICER

Making a difference...together

REPORT TO GOVERNANCE AND FINANCE COMMITTEE
MEETING OF THURSDAY, OCTOBER 01, 2020

SUBJECT 2019-2022 Accountability Service Planning

ISSUE SUMMARY

To provide the Governance and Finance Committee with an overview of relevant initiatives undertaken by corporate and executive services divisions in 2020 and planned for 2021 to deliver on approved Board Priorities and the Corporate Plan.

BACKGROUND

The CRD Board completed its strategic planning early in 2019 and approved the CRD Board Strategic Priorities 2019-2022.

The four priorities are:
1. Community Wellbeing – Transportation & Housing;
2. Climate Action & Environmental Stewardship;
3. First Nations Reconciliation; and
4. Advocacy, Governance & Accountability.

The priorities were confirmed at the annual check-in on May 13, 2020.

The 2019-2022 CRD Corporate Plan is aligned to the Board direction. It highlights the initiatives the CRD needs to deliver over the Board's four-year term to address the region's most important needs. The Corporate Plan identified seven initiatives under Accountability, which fall under the Governance and Finance Committee's mandate.

Appendix A *Community Need Summary – Accountability 2021* is a summary of the planned activities for 2021. It contains details about core service levels, new initiatives proposed and performance metrics.

Appendix B *Accountability – Initiatives Progress Report* provides insights into what has been delivered through the 19 delivery initiatives approved last year, for delivery in 2020.

The Service Planning process gathered information necessary to assemble a provisional budget for Committee and Board review. The purpose of this report is to explain how the corporate and executive services program of work connects to Board Priorities, Corporate Plan and provisional budget.

ALTERNATIVES

Alternative 1

The Governance and Finance Committee recommends to the Capital Regional District Board:
That Appendix A Community Need Summary – Accountability be approved as presented and advanced to the October 28, 2020, provisional budget review process.

Alternative 2

The Governance and Finance Committee recommends to the Capital Regional District Board: That Appendix A Community Need Summary – Accountability be approved as amended and advanced to the October 28, 2020, provisional budget review process.

IMPLICATIONS

Financial Implications

Initiatives identified in the Corporate Plan (including Board Priorities) cannot be undertaken without resourcing. The Board determines resourcing through its annual review and approval of financial plans. To support the Board's decision-making, staff, through the service planning process, provide recommendations on funding, timing and service levels.

During the service planning process this year, staff have been mindful of the fiscal challenges facing the region in the months ahead. To that end, any budget increase or other impacts have been mitigated, as much as possible.

Service Delivery Implications

The Community Need Summary provides an overview of all work that needs to be undertaken in order to meet regulatory requirements, satisfy Board direction and meet the needs of the communities served by the CRD.

Alignment with Board & Corporate Priorities

Staff have identified 11 initiatives that will have budget implications for 2021 (Table 1).

Table 1: Community Need Summary – Accountability, Initiatives

#	Initiative	Description	Year(s)	FTE impacts in 2021	Budget Impacts in 2021
5b-5	CAMS Lifecycle Costing	Develop policy and procedure to embed lifecycle assessments within the asset's lifecycle (i.e. business case analysis)	2021-2022	-	Included in Provisional Budget
15a-1	Commission Review	Review of CRD's 60+ Commissions and Committees in areas of governance, authority, record collection and FOI compliance and administrative support	2020 – 2021	-	Already funded

#	Initiative	Description	Year(s)	FTE impacts in 2021	Budget Impacts in 2021
15b-2	Financial Services Treasury Analyst	New position to enhance management of investment and debt portolio	2021	1.0	Included in Provisional Budget
15b-2	Financial Services Support	Financial Services support for Electoral Areas and Planning & Protective Services	2021	1.0 Term Conversion 1.0 Auxiliary Conversion	Included in Provisional Budget
15c-1.2	Facilities Management Worker Formalization	Facility maintenance and operations duties	2021	1.0 Ongoing	Included in Provisional Budget
15c-1.3	Diversity, Inclusion and Organizational Development and Alignment	Delivery of the multi-faceted Organizational Development Plan and related strategies	2021	1.0 Ongoing	Included in Provisional Budget
15d-1.2	Graphic Standards Update	Development of updated graphic standards package and alignment with the CRD's Statement of Reconciliation	2021	-	Included in Provisional Budget
15f-1.3	Facilities Management Centralization Strategy	Creation of new Project Coordinator position to support low and medium level complexity project for Facilities Management, primarily for VIHA projects	2021	1.0 Ongoing	Included in Provisional Budget
15f-1.4	Hartland Scales and PerfectMind Applications Support	Enhanced IT support for two key applications used by Landfill and Recreation services	2021	1.0 Ongoing	Included in Provisional Budget
15f-1.5	Mobile Maintenance Workorder Platform Support	IT ongoing support and development of mobile workorders for mobile workers	2021	1.0 Ongoing	Included in Provisional Budget

#	Initiative	Description	Year(s)	FTE impacts in 2021	Budget Impacts in 2021
15f-1.6	Electronic Signatures	Pilot the use of electronic signature software to approve, track and execute Real Estate licenses, leases and agreements	2021	-	Included in Provisional Budget
15f-1.7	Microsoft Office 365	Migration to Microsoft Office 365 Cloud	2021	-	Included in Provisional Budget
15f-1.9	IWS Infrastructure Resilience Support	Enhanced IT support for seven Integrated Water Services initiatives to address gap	2021	1.0 Ongoing	Included in Provisional Budget
15f-1.13	Staffing Initiative	Staffing Initiative for Financial Services, Information Technology & GIS and Human Resources and Corporate Safety	2021	5.7 Ongoing	Included in Provisional Budget

Blue highlighted areas are initiatives that directly address a Board Priority.

Initiatives

5b-5 – Corporate Asset Management Strategy (CAMS) Lifecycle Costing
Based on the context, decision-making tools come in different forms and utilize different sets of criteria. But, one universal criterion used is Lifecycle Costing Analysis, which belongs to a family of Lifecycle Assessments (LCA). There are four types of impact analysis under the LCA: Lifecycle Environment, Social, Economic and Costing. As an example, business cases are developed for all CRD capital projects. Lifecycle Costing Analysis, as an industry practice, assesses the whole lifecycle cost of an asset in order to support effective decision-making. The CRD Corporate Asset Management Strategy identified the need to facilitate such analysis along with analysing environmental, social and economic impacts as part of the CRD's business case development and decision-making.

Implementing a Lifecycle Assessment policy would advance the Advocacy, Governance & Accountability Board Priority by improving the transparency of CRD decision-making processes. This initiative entails chartering a team that includes a local University and a consultant for 2021-2022 to assist the Asset Management division in incorporating industry-based standards and best practice and implementation through a pilot project. Through this initiative, we will seek to develop a policy, procedures, templates and process workflows to embed lifecycle assessment in the CRD's decision-making towards a sustainable service delivery. The initiative will also provide internal training for divisions within the CRD as well as sharing the knowledge gained within the asset management community of practice groups regionally and provincially. The additional

workload will be absorbed within the existing Asset Management division staffing capacity, with support from colleagues across the organization.

15a-1 – Commission Review

The CRD has over 60 commissions and committees that assist in the governance and operational guidance of many services. Their structure, decision-making and governance models have evolved significantly over the last 50 years of operations due to changing bylaws and practices. Improving consistency across these decision-making tables will advance the Advocacy, Governance & Accountability Board priority by increasing coordination and transparency. This initiative will seek to review all of the commissions and committees in the areas of governance, authority, record collection and FOI compliance, administration and adherence to CRD policy. The objective is to identify and address inconsistencies and gaps by creating plans to move commissions and committees towards models of ideal governance and administration.

This one-time initiative was initially approved by the CRD Board for implementation in 2020 but was later deferred as a result of COVID-19. The funding has already been secured from the operating reserves and no additional resources are requested this year.

15b-1 – Financial Services Treasury Analyst

The Treasury function manages a growing investment and debt portfolio on behalf of the 200+ CRD services, the CRHD and the CRHC. The annual investment and debt portfolio are worth around $250M and $450m, respectively. An active portfolio management strategy has shown that value can be generated through the optimization of interest costs and income, internal interest framework and cashflow management.

To date, the work has been delivered by existing resources and within approved service levels. However, the increasing complexity of operations and largely manual nature of activities performed, there is a need for an increase in the staffing complement to address gaps in existing processes and continue to optimize value creation interest income and interest costs. This initiative seeks to increase the staffing complement in Financial Services by one ongoing position, the cost of which will be recovered through the CRD interest income on cash investments. This initiative advances the Advocacy, Governance and Accountability Board priority by promoting sustainable budgets through innovation, good governance and accountability.

15b-2 – Financial Services Support for Local Services/PPS

The Financial Services division supports three Electoral Areas, as well as Planning and Protective Services (PPS) by assisting and interacting with a range of stakeholders and local services committees and commissions. The role of the service has been to provide financial planning, reporting, controls and administration for the Electoral Areas. However, in recent years, the division has experienced increased demand for more responsive and dynamic financial advisory activities, including financial advice and insight on a greater range of policies, procedures, guidelines and processes.

This initiative seeks to increase the staffing capacity in the Financial Services team to ensure that the Electoral Areas Directors, operational managers, committee and commission volunteers and the community continue to have access to appropriate levels of financial due diligence and control. Doing so would contribute to the Advocacy, Governance & Accountability Board Priority by reflecting the unique needs and governance of each Electoral Area.

The current team complement is made up of a manager supported by two analysts (one ongoing and one auxiliary term position). This initiative seeks to convert the existing term position to ongoing and convert existing term auxiliary position to a permanent position (ongoing) bringing the total up to two analysts. Recruitment of the additional position is expected to be completed in Q1 2021.

15c-1.2 – Facilities Management Worker Formalization

The Facilities Management division manages around 12 locations, providing facilities management and maintenance support to all CRD departments, including locations in the Electoral Areas. This initiative seeks to convert an existing facilities and maintenance operations position into an ongoing position. This position has enabled the team to reduce the amount of deferred maintenance work, resulting in an overall betterment of the condition of CRD facilities, and reduce dependence on contracted services. The position charges-out labour cost for various maintenance services to other divisions.

15c-1.3 – Diversity, Inclusion and Organizational Development and Alignment

The CRD Organizational Development Plan (ODP) supports organizational capacity and resilience. This multi-faceted program of work is now in its fourth year of implementation. To move to the next phase, this initiative seeks to create a new position to lead a program to build internal understanding of and staff engagement with the CRD's organizational priorities, cultural traits and ODP goals. The resource, which will be added to the Human Resource & Corporate Safety division staffing complement, will manage, coordinate and execute this program with a focus on diversity and inclusion, performance management and strategic workforce planning.

15d-1.2 – Graphic Standards Update

The existing CRD graphic standards package was developed in 2007 and has been successfully used since across a range of digital and printed materials. In recent years, a shift from print to digital has significantly changed the way the CRD develops materials and how they are distributed and viewed. In addition, there is an opportunity to align our corporate materials with the CRD's Statement of Reconciliation by acknowledging the connection between Indigenous Peoples and these lands and waters.

The update to the corporate graphic standards guide will include updated information on the CRD brand, including new standards for typography and palette for digital use, as well as updated templates. The cost of the contract for this work in 2021 will be recovered from operating surplus.

15f-1.3 – Facilities Management Centralization Strategy

The Facilities Management & Engineering Services division provides project management services for low to medium complexity projects at four health units leased to the Vancouver Island Health Authority (VIHA) as part of an existing operating agreement. In order to maintain the facilities to industry standards and respond to new facility requests in a timely manner, additional staffing capacity is required in the division.

This initiative seeks to create a new ongoing position to provide project coordination and oversight support for the VIHA-leased facilities. The cost of this initiative will be recovered through VIHA.

15f-1.4 – Hartland Scales and PerfectMind Applications Support

Two automated scales have been implemented at Hartland depot (installed in 2004 and 2020 respectively) to facilitate operations. Separately in 2014, a new recreation management system

(PerfectMind) was deployed to all three recreation centres (Panorama, SEAPARC and Salt Spring Island) and Regional Parks. New technology solutions will often add new levels of sophistication and increased complexity.

The introduction of these new systems created a steady growth in demand for support from Information Technology & GIS (IT&GIS) specialists. While the division has been able to absorb the additional demand for a number of years, the volume of work hours is no longer sustainable, so this initiative seeks to increase the staffing complement in IT&GIS by creating one new position. The new position will ensure that the necessary level of support is maintained for these operationally critical systems.

15f-1.5 – Mobile Maintenance Workorder Platform Support

Mobile workorders were developed and implemented in 2002 to support Integrated Water Services. Since then, IT&GIS have continued to develop, implement, expand, and support the system. The total number of users has since increased threefold and the number of data retrievals performed by users has increased from 8,600 to almost 20,000 annually. The system is now also used by Regional Housing and the Core Area Wastewater Treatment Program to support their work.

While the division has been able to absorb the additional demand for a number of years, the volume of work required to support the system is no longer sustainable; this initiative seeks to increase the staffing complement in IT&GIS by creating one new position. The new position will focus on a range of functions to maintain and enhance the service levels provided.

15f-1.6 – Electronic Signatures

An opportunity has been identified to improve the efficiency and effectiveness of the approval, execution and tracking of documents in the organization by switching from paper-based to software-based processes. This would contribute towards the corporate objective of enhancing systems and policies to respond to evolving best practices, adhere to legislative requirements and provide efficient and accessible customer service.

This initiative proposes to pilot an e-signature software in the Real Estate division. Currently, the division circulates over 200 documents per year for review and signature. The pilot would test the use of e-signatures for licenses, leases and agreements and seek to assess impact on efficiency, effectiveness, tracking transparency and management of documents. If successful, the pilot would inform future CRD policy regarding the use of e-signature software for document approvals.

15f-1.7 – Microsoft Office 365

A number of Microsoft Office applications used by the CRD are nearing end of life with Microsoft discontinuing support and security updates. The latest version of the applications reside in the Microsoft Azure Cloud, requiring a migration and upgrade project. The CRD currently provides only one application through Azure (MS Teams). This application was deployed during the COVID-19 pandemic to facilitate remote collaboration.

This initiative seeks to increase the annual operating cost relating to data storage and back-up to enable the migration of the remaining Microsoft Office applications to the Microsoft Azure Cloud and upgrade to Microsoft Office 365. Doing so would deliver a number of benefits, including enhanced cyber security, reliability, and compliance with industry regulations. It will also improve the email system back-up performance and reduce reliance on servers in the CRD data centre,

which are now beyond their operational end of life. Any additional workload resulting from this will be absorbed by the IT&GIS division.

15f-1.9 – IWS Infrastructure Resilience Support

The complexity of the IT needs from the Integrated and Water Services department has grown significantly. A review of the workload has identified a support gap across seven key initiatives. A number of these initiatives are to replace and update aging infrastructure across the water distribution system including more than 20,000 bulk and in-ground water meters. To ensure the technical expertise is available to guide and support these significant, multi-year asset replacement programs, this initiative seeks to increase the IT&GIS staffing complement by creating one new ongoing position.

15f-1.13 – Staffing Initiative

The CRD is proposing to progress 35 delivery initiatives in 2021 to advance the Community Need target outcomes. The cumulative impact of these initiatives on support divisions will be significant. In order to address the pressure this additional workload will bring, and maintain an adequate service level, this initiative seeks to create new positions as follows:

- 2.2 regular positions in Financial Services divisions in support of transaction volumes in payroll, accounts payable, accounts receivable and to support revenue generating system interfaces.
- 2.5 regular positions in IT&GIS division
- 1.0 regular position in Human Resources & Corporate Safety division

The cost of these positions will be recovered through corporate allocations.

CONCLUSION

Staff have been progressing initiatives and actions identified in the Corporate Plan, including Board Priorities. The Board determines resourcing through its annual review and approval of financial plans. As per previous years, to support the Board's decision-making, staff are providing recommendations on funding, timing and service levels through the service and financial planning processes.

RECOMMENDATION

The Governance and Finance Committee recommends to the Capital Regional District Board:
That Appendix A Community Need Summary – Accountability be approved as presented and advanced to the October 28, 2020 provisional budget review process.

Submitted by:	Nelson Chan, MBA, CPA, CMA, Chief Financial Officer
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ATTACHMENT(S)

Appendix A: Community Need Summary – Accountability
Appendix B: Accountability – Initiatives Progress Report

Community Need

2021 Summary

Accountability

Strategy

Target Outcome

We envision being leaders in organizational performance, transparency and service delivery

Strategic Context

Strategies

- Organizational Development Plan
- Corporate Asset Management Strategy
- 2019-2022 Corporate Plan
- Advocacy Strategy
- Corporate Climate Action Strategy
- Regional Climate Action Strategy

Trends, risks and issues

COVID-19

- COVID-19 is impacting how the organization communicates, meets and collaborates. It is expected that these impacts will continue to be felt into the coming year.
- Consultation and engagement processes are adapting, meetings are migrating to an electronic format, and along with the growing demand for more diverse options to meet and engage with staff and elected/appointed officials (including with new participants, such as First Nations), COVID-19 has accelerated the move towards digital collaboration tools. This has increased demand for audio-visual support, collaboration solutions, staff training, etc. which have drawn from existing staffing capacity in the Legislative Services division and the Information Technology & GIS (IT&GIS) division.
- The pandemic has resulted in an increase in external grant programs. The CRD is being tactical in its approach to grant submissions to ensure equitable opportunities are made available across service areas and that the most critical projects are put forward for submission.

A modern organization

- The CRD continues its efforts to modernize its infrastructure, assets and processes/policies.
- The corporate records management program framework identifies measures to respond to increasingly complex information access requests, investigations, legal matters and disaster recovery events with increased investments over several years.

Community Need

2021 Summary

- The organization is subject to a stream of known and unknown threats which can impact IT systems and business operations. We have invested in a number of cyber security measures based on audit recommendations and continue to monitor risks.
- The CRD has over 70 commissions, committees and contribution services that assist in the governance and operational guidance of many CRD services. A comprehensive review of governance, mandate and adherence to policy and processes is needed to ensure consistency and improve service efficiency.
- We also continue to modernize our approach and materials to adapt to the shift from print to digital communication channels.
- The CRD is developing Sustainable Service Delivery Plans (SSDPs) for around 70 services in line with the Corporate Asset Management Strategy. These plans are becoming more commonplace in Canada, with grant funding providers increasingly making it a requirement to be considered for funding. Developing and maintaining SSDPs involves large amounts of effort and specialized expertise. Internal and external resources are being evaluated to ensure good progress is made.

Demand for Corporate Support Services

- Information Technology continues to experience high demand for technology services and solutions focused on the growth and complexity of the organization. Solutions for: workforce management, budgeting, reporting, analytics, dashboards, data modelling, application development and systems implementations such as systems to manage increased Mobile Information access, Asset Management, Maintenance Management and Asset Retirement functionality. Increased staff turnover creates an ongoing high demand for staff onboarding and training. These coupled with the pace of technological change is putting service delivery under pressure.
- There is also growing demand for services across financial functions, financial reporting, analytics, and application interface. Further investment in report modelling, application development and staffing capacity will be required in future in order to keep pace. The Financial Services division is also seeing higher demand in Electoral Areas for enhanced levels of service. More advisory services are required for financial management policies, procedures, guidelines and processes.
- The growth in corporate scale and complexity is also placing pressure on cashflow and treasury activities, requiring investment in more planning and analytics. Finally, the required implementation of PSAB3280 Asset Retirement Obligations has increased pressure on existing financial services staff in accounting, budgeting and reporting to meet existing ongoing service levels.
- Corporate growth in the Housing Department and the Regional Housing First program are increasing pressure on Legal Services staff to support contracting, procurement process, mortgage and housing agreements and tenant management issues. Additional legal staff may be required in 2022 to maintain core service levels.
- The number of information requests under FOIPPA, as well as the complexity of requests, continue to increase year over year driving more demand for Information Services support.

Community Need

2021 Summary

People

- Changing workplace and society demographics have significant impact on the nature of Human Resource programs. There are a number of trends impacting the CRD including: significant workplace retirements, more employee transitional/family needs, acceleration of workplace and technological change, shifting economic conditions, COVID-19, doing-more-with-less, and an increased reliance on employee goodwill. Enhanced efforts in organizational design, absence management, workforce and succession planning, recruitment and retention, and learning and development will be paramount to ensure the continued success of the organization. We are addressing these multifaceted impacts through the Organizational Development Plan and subsequent implementation strategies, which include diversity & inclusion, performance management and strategic workforce planning.
- The shortage and cost of skilled IT resources is directly impacting the division's ability to hire and retain skilled employees. Skilled workers are looking for higher pay while existing current employees leave the organization for higher pay and better benefits. These issues coupled with the aforementioned accelerated rate of technological change continues to place pressure on IT&GIS's ability to deliver solutions.

Services

Core Services Levels	
Service	**Levels**
Executive Services Includes the Office of the CAO and Executive Administration, Corporate Communications and Human Resources. Under the direction of the CAO, Executive Services	• Provide overall management of CRD departments and programs, foster relationships and submit recommendations and progress reporting to the Board
Corporate Communications Develops communications strategies and systems for effective communications with external and internal audiences. The division is responsible for developing and applying communication guidelines and tools, as well as strategy and advice in alignment with Board, corporate and service area priorities. Also responsible for developing tools and techniques to foster engagement, ensuring that the public has access to accurate, timely and consistent information.	• Board communication support (agendas, priorities, programs and overall information to support public understanding of organization) • Create and update corporate documents and website content (e.g. reports, dashboards, progress updates); provide guidance on survey approaches for service areas • Media strategy and relations. • Coordinate advertising buys and social media strategy • Internal communications framework and implementation; maintain CRD Central intranet

Community Need

2021 Summary

Core Services Levels	
Service	**Levels**
	• Establish communication protocols and training for the organization that lead to efficiency, alignment and best practise • Provide creative direction for print, online, video and event communications
Human Resources and Corporate Safety Provides professional in-house services to all departments and divisions for a multi-faceted inside and outside workforce. The Human Resource generalists and Corporate Occupational Health and Safety specialists support strong relationships between employees and managers, provide a one-stop HR shop with the information, tools, advice and support needed to align individual and organizational success and ensure a healthy and safe workplace and workforce.	• Employment relations, including over 300 job opportunities, labour relations for two unions, and HRIS management and reporting for over 1,100 employees and 1,400 volunteers • Occupational health and safety, corporate wellness and benefits, and disability management • Development and administration of over 80 personnel policies and corporate safe work practices. • Developing and delivering corporate learning and development programs (600+ participants annually) • Delivering impactful stay-at-work/return-to-work disability management activities, ensuring impactful and meaningful employee engagement and absenteeism below industry norms
Financial Services Financial Services provides guidance on the overall financial stability of the organisation and is responsible for the organisation's adherence to the legislated framework governing financial administration in local government. • Financial Planning • Financial Accounting and Reporting • Revenues (taxes and fees) • Disbursements (Inc. Payroll) • Corporate Finance Decision Support • Treasury and Banking • Financial Systems • Procurement (IWS)	• Annual budget processing for over 200 services (Q1) and annual financial statements approved and delivered (Q2); quarterly operating and capital variance monitoring • Daily transaction processing and monthly reports delivered for over 200 services with combined operating budget of $370M (2020 Budget) • Annual Requisitions, user fees, parcel taxes and payments in lieu of approx. $280M • Daily cash management review and investments ($190M in net working capital and $160M on reserve) • Manage semi-annual long term financing bylaws & debt issues (CRD & municipal debt of $350M and principal payments $65M)

Community Need

2021 Summary

Core Services Levels	
Service	**Levels**
• Corporate-wide administrative services, such as printing and internal interoffice mail	• Biweekly payroll processing, reporting for 1,250 employees totaling $76M in four employee groups • Weekly cheque and EFT runs produce 14,000 vendor payments a year • Process on average four periodic updates to the financial system for legislative and financial system upgrades • Monthly and quarterly billing and collections for 25,000 water billing customers. • Develop banking services for CRD (transactions flow through 35 bank accounts a year); monthly reconciliation of all bank accounts for 6,000 banking transactions and integration of over 130,000 transactions a year • Procurement of approx. 100 water services RFPs, RFQs, tenders & contracts annually • Print shop production of high volume of customer billings/other material and daily internal mail & courier service to 15 CRD offices
Information Technology and GIS Services (IT&GIS) Comprised of a team of IT professionals who provide a wide variety of technology services, systems, and tools to all CRD Departments, the public and the Board. • Corporate-wide communications systems (voice, data and radio) • Corporate Website • Board and Committee meeting management • Asset and Maintenance Management • Financial Systems, payroll, and HR • Corporate-wide Cyber Security Program • Equipment purchasing and maintenance • Project Management	• Manage the technology infrastructure for 30 sites across the CRD, including 1,000 computers, 600 smartphones, 300 servers and 24 phone systems • Annual hardware and software procurement • Manage procurement of GIS orthophotography and lidar imagery for 23 partners across the Capital Region • Produce and support processing 200,000 utility bills annually, generating approximately $22M • Support the Hartland Landfill automated scales, processing 140,000 tonnes of garbage generating $16M annually • Provide daily operational and technical support for Tempest system, providing for the management of bylaws, building inspection, planning, zoning, and dog licensing, generating approximately $1.25M annually

Community Need

2021 Summary

Core Services Levels	
Service	**Levels**
• Geographic Information Services • Orthophotography and lidar data • Reporting and data analytics • Application development • Utility billing (water and sewer)	• Provide daily operational and technical support for PerfectMind Recreation Management System for three Recreation Centres and Regional Parks generating approximately $14.5M annually • Produce and process approximately 30,000 maintenance workorders annually for Housing, Integrated Water, and Facilities Management • Management of Project System which processes annually $400M in capital projects • Provide project management and technology solutions for approx. 200 projects to address changing and emerging business needs • Develop, implement, and support a corporate Enterprise Asset Management system, providing management and planning capabilities for $1.5B in CRD assets
Asset & Grants Management Provides professional advice and expertise to having a sustainable service delivery. Manages the organization's grants portfolio.	• Develop and advise on corporate asset management strategies, plans, standards and procedures • Provide advice/expert guidance for developing SSDPs • Provide standard methodologies to define service levels, set goals and key performance indicators, develop asset registries, risk assessments, criticality assessments, capital project prioritization, asset management maturity assessments, capital planning, project management and reliability-centered design, operations, and maintenance • Manage the Community Works Fund and Grants-in-Aid Fund (internal CRD grant programs for the Electoral Areas) • Manage the organization's external grants portfolio by notifying CRD services of available grant programs, providing advice on grant application and producing monthly grant update staff reports to the Board. • Received over $500M in grant funding from senior levels of government since 2014.

Community Need

2021 Summary

Core Services Levels	
Service	**Levels**
Information Services Guides and supports the organization to effectively manage and use its valuable information resources to meet legislative and statutory requirements, legal obligations, business needs & strategic goals and for historical reference. Develops and administers the corporate records and privacy management programs. Administers information access requests and other legal matters under FOIPPA.	• Corporate records and privacy management program administration including: policies, systems, processes, procedures, advice & support for managing records, metadata and personal information according to legal, business/technical requirements and industry standards • Conduct records inventories & appraisals and develop lifecycle management plan for all records to ensure timely and effective management • Process more than 130 FOI requests annually and respond to complaints or matters involving the Office of the Privacy Commissioner, under FOIPPA • Conduct Privacy Impact Assessments reviews and provide advice & recommendation • Conduct mandatory corporate training for all staff
Legal Services Provides professional advice and expertise related to bylaws, contracts, agreements, procurement, legislative compliance and all legal matters.	• Bylaw drafting and review, including supervision of outside counsel when required • Manage governance changes and advise on legislative and statutory interpretation • Manage policy development to ensure compliance with policy framework and modern principles of policy development • Staff training in procurement, policy, and contract and bylaw drafting • Manage and litigate commercial, administrative, and public law claims relating to CRD, CRHD and CRHC • Advise on ticket enforcement, bylaw application, regulatory compliance, real estate matters, building inspection, and other areas • Report quarterly on contracts and procurement trends at the CRD • Draft, review and approve more than 600 agreements per year, and respond to more than 1,500 inquiries for legal advice

Community Need

2021 Summary

Core Services Levels	
Service	**Levels**
Legislative Services Provides professional advice and expertise related to meetings, parliamentary procedure, internal and external appointments, legislative requirements and processes, and elector approval processes.	• Administrative and legislative support to the three CRD Boards, eight standing committees, and more than 70 committees and commissions • Publish agendas and record minutes for approximately 150 open and closed meetings annually for the three CRD Boards and nine Standing Committees • Facilitate over 200 delegations from residents and organizations who wish to speak at CRD Board or Committee meetings • Conduct elections and assent processes • Process approximately 70 bylaws annually for adoption and manage the administration of bylaws including referrals for provincial approval • Coordinate over 120 appointments annually to CRD committees and commissions • Conduct training for commission members, meeting chairs, and staff on parliamentary procedure • Annually review and distribute over 1100 pieces of correspondence addressed to the CRD Board
Risk & Insurance Provides professional advice and expertise related to liability, risk management, business continuity and insurance procurement on behalf of the CRD.	• Manage risks and reporting out through the Corporate Risk Registry on a semi-annual basis • Binding insurance for property loss for $650M worth of assets, liability coverage for internal and external claims, and course of construction coverage for capital project • Oversee and maintain volunteer insurance program • Business Continuity Planning for all CRD services • Investigate and adjudicate minor claims submitted against the CRD, and manage litigated claims including instructing external counsel • Review contracts and agreements for risk and insurance considerations

Community Need

2021 Summary

Core Services Levels	
Service	**Levels**
Real Estate Services Provides professional advice and expertise related to the strategic management of the CRD's real estate portfolio including the acquisition and disposal of property, registering CRD rights on properties, and property management services.	• Manage the real estate portfolio and property management services across the organization • Manage and complete due diligence for acquisitions and dispositions of property for: Regional Parks, Housing (CRHC), Hospitals (CRHD), Hartland Landfill, Community Parks, Small Craft Harbours, Communications Towers and Integrated Water Services. • Co-ordinate the internal review and response to 3rd party referrals submitted to the CRD • Manage corporate land and land agreement data both tabular and spatial • Co-ordinate, complete and manage leases, licenses, permits, and land-use applications. • Oversee the completion and registration of approximately 150 new covenants and statutory right-of-way annually in favour of CRD. • Conduct land research and due diligence to support corporate initiatives and decisions.
Facilities Management (FM) Delivers comprehensive FM services to corporate facilities to all CRD departments. FM provides support for Facilities Master Planning, SSDPs, Energy Management, and Space Planning, and provides the following services: • Project Management • Condition Assessments • Security • Operations & Maintenance Planning Team of specialized maintenance technicians, project coordinators and tradespersons who ensure CRD facilities are performing optimally and are safe and comfortable for CRD staff and public.	• FM directly manages approx. 12 locations and provides FM support services to all CRD departments in 10 locations • Procure multi-year facility/building management service contracts for facilities; support other departments to ensure service contracts align with corporate standards (mange approx. 75 contracts of varying complexities) • Process approx. 3,500 work orders annually for preventative and corrective maintenance • Administer regulatory requirements for CRD facilities; this program includes fire safety, elevators, boilers, emergency generators, roof anchors and back flow preventers • Deliver 25 capital projects ($1.5M) annually as well as numerous maintenance projects; provide Project

Community Need

2021 Summary

Core Services Levels	
Service	**Levels**
FM's portfolio is continually growing. Managed assets consist of leased and owned facilities valued at approx. $80M.	Management services for facility projects to other CRD departments

Initiatives					
Ref	**Initiative**	**Description**	**Year(s)**	**Status**	**2021 impacts**
5b-5	CAMS Lifecycle Costing	Develop policy and procedure relating to the utilization of lifecycle assessment in options considered in business cases	2021 – 2022	**NEW** Not started	Included in provisional budget
15a-1	Commission Review	Review of CRD's 60+ Commissions and Committees in areas of governance, authority, record collection and FOI compliance and administrative support	2020 – 2021	NEW In progress	Included in provisional budget
15b-1	Financial Services Treasury Position	Create position responsible for growing investment and debt portfolio on behalf of 200+ CRD Services	2021	NEW Not started	1.0 Ongoing Included in provisional budget
15b-2	Financial Services Support for Local Services/PPS	Increase Financial Services staff complement to support growing Electoral Area requirements for responsive and dynamic financial advisory support	2021	NEW Not started	1.0 Term conversion 1.0 Ongoing
15c-1.2	Facilities Management Worker Formalization	Formalizing the status of an existing position to support facility maintenance and operations duties	2021	NEW Not started	1.0 Ongoing Included in provisional budget

Community Need

2021 Summary

Initiatives					
Ref	Initiative	Description	Year(s)	Status	2021 impacts
15c-1.3	Diversity, Inclusion and Organizational Development and Alignment	Create position to deliver integrated diversity and inclusion initiatives under the multi-faceted Organizational Development Plan	2021	NEW Not started	1.0 Ongoing Included in provisional budget
15d-1.2	Graphic Standards Update	Update to graphic standards package to reflect shift from print to digital and include First Nations elements in the CRD brand	2021	NEW Not started	Included in provisional budget
15f-1.0	Systems + Policies Bylaw Management System	Enhance systems & policies to respond to evolving best practices, adhere to legislative requirements & provide efficient & accessible customer service	2020 - 2021	In progress	Already funded
15f-1.1	Contract Database + E-Approvals	Create an agreement database and e-approvals process	2020	Development completed and system testing is underway.	Already funded
15f-1.3	Systems + Policies EDRMS	Modernize CRD records management program framework of policies, systems & practices to support electronic records management	2020 – 2025	In progress. Selection of EDRMS moved to 2021-2022	Funding earmarked through reserves
15f-1.3	Facilities Management Centralization Strategy	Creation of new Project Coordinator position to support low and medium level complexity project for Facilities Management, primarily for VIHA projects	2021	**NEW** Not started	1.0 Ongoing Included in provisional budget

Community Need

2021 Summary

Initiatives					
Ref	Initiative	Description	Year(s)	Status	2021 impacts
15f-1.4	Support for Hartland Scales and PerfectMind	Create new position to provide technical support for the Hartland Landfill scales, Recreation facilities and Regional Parks	2021	NEW Not started	1.0 Ongoing Included in provisional budget
15f-1.5	Mobile Maintenance Workorder Platform Support	Create new position to provide technical support for mobile workorders users, including Regional Housing and CAWTP	2021	NEW Not started	1.0 Ongoing Included in provisional budget
15f-1.6	Electronic Signatures	Pilot the use of electronic signature software to approve, track and execute Real Estate licenses, leases and agreements	2021	NEW Not started	Included in provisional budget
15f-1.7	Systems + Policies – Toolkits	Enhance systems & policies to respond to evolving best practices, adhere to legislative requirements & provide efficient & accessible customer service	2020 - 2021	In progress	Already funded
15f-1.7	Microsoft Office 365	Migration of a number of Microsoft Office applications to the Azure Cloud	2020	NEW Not started	Included in provisional budget
15f-1.8	Systems + Policies – Website Upgrade	Enhance systems & policies to respond to evolving best practices, adhere to legislative requirements & provide efficient & accessible customer service	2022	Postponed	Already funded

Community Need

2021 Summary

Initiatives					
Ref	Initiative	Description	Year(s)	Status	2021 impacts
15f-1.9	IWS Infrastructure Resilience Support	Create a new position to provide day-to-day technical support to Integrated Water Services and support for asset replacement programmes	2021	NEW Not started	1.0 Ongoing Included in provisional budget
15f-1.10	Systems + Policies – Mobile GIS *	Regional Parks Mobile GIS Program	2020 - 2021	In progress	
15f-1.13	Staffing Initiative	Staffing Initiative for Financial Services, Information Technology & GIS and Human Resources and Corporate Safety	2021	Not started	5.7 Ongoing Included in provisional budget

*New – Initiatives not in the 2019-2022 Corporate Plan

Initiative approved in prior years which have now been delivered or absorbed in Core Services:

- 15a-1 – EA Strategy and Operations
- 15b-1 – Triple-Bottom-Line (TBL) Budgeting
- 15b-2 – Asset Management and Risk Analysis
- 15c-2 – SGI-CRD Liaisons
- 15d-1 – Service Planning and KPIs
- 15e-1 – Partnership Directory

Systems + Policies initiatives:

- 15f-1.4 – HR + Corporate Safety Systems
- 15f-1.5 – Rise + Report Tracking System
- 15f-1.6 – Signage
- 15f-1.9 – IWS Record Management – SAP Development *
- 15f-1.11 – Information Security Program*

Business Model

Funding

Who contributes

- Varies per services

Funding Sources

- Allocations, Requisitions & Grants

Community Need

2021 Summary

Reporting Structure

- Governance & Finance Committee

Community Need Key Performance Indicator (KPI)

Definition and Source	2019 Actual	2020 Forecast	2021 Target
Metric 1: Organizational Transparency **Definition and source**: total annual number of unique visits to the crd.bc.ca site; data retrieved from Google Analytics	1.8M	2.3M	2.5M
Metric 2: Communication Campaigns Reach **Definition and source:** percentage of planned media outreach resulting in coverage by outlets (print/radio/television/web/social); data from CRD Corporate Communications	74%	76%	76%
Metric 3: Workforce Engagement **Definition and source**: (A) **Employee Turnover**: total number of CRD staff (regular) that have left their employment with us as a percentage of the regular staff pool; data retrieved from corporate enterprise resource planning system (B) **Unplanned Absenteeism**: percentage of working time missed as a result of CRD staff (regular) unplanned absence (e.g. sick leave, emergency leave, other); data retrieved from corporate enterprise resource planning system	A: 9.2% B: 2.6%	A: 8.5% B: 4.0%*	A: 7-9% B: 3.5%
Metric 4: Board decision-making **Definition and source**: total number of Staff Reports submitted to the three CRD Boards for direction (excludes information reports); data from CRD Legislative Services	223	237	230

Discussion

Link to Target Outcome

- Transparency and reach performance indicators measure the reach of our organizational information and how engaged our audiences are with the information disseminated.

Community Need

2021 Summary

- Workforce Engagement performance indicators measure the strength of the organization through the active engagement of employees, and assists in responding to changes in our external and internal environments through our Organizational Development Plan.
- The Board decision-making measure tracks the work of the three CRD boards.

Discussion

- **Metric 1**: The CRD website is our most important transparency tool through which we make significant amounts of information available for the communities we serve about the services and programs we deliver as well as the decisions that are made for the benefit of the region. Year-on-year increases in website visits indicates higher awareness of the CRD and its work among the region. The most frequently visited parts of the website are: recycling information & schedules, online maps & GIS data, current job opportunities, pets for adoption, landfill hours and rates and recreation programs.
- **Metric 2:** Ensuring that the information disseminated reaches its intended audience is important. A high percentage indicates that our planned campaigns are addressing the topics that matter most to the capital region communities.
- **Metric 3:** Workforce engagement can be attributed to a number of influences, and is tracked through regular employee turnover and absenteeism. Industry norms suggest healthy turnover of 7-9%, and unplanned absenteeism under 3.5%. *The current COVID-19 health pandemic is impacting absenteeism rates across the country and is being actively monitored to ensure essential service levels remain attained. In future, we will look to measure the total number of page views and employees using CRD Central to assess level of internal engagement.
- **Metric 4:** This measure is presented as an indicator of level of work undertaken by the three CRD Boards and engagement with services and initiatives delivery. Monitoring the level of work undertaken annually is useful, but setting a target would not be appropriate as the number of staff reports submitted is dependent upon many factors (e.g. progress made on existing projects and initiatives, new emerging strategic priorities and operating environment impacts, such as COVID-19). The metric excludes all staff reports submitted to Committees and any staff reports with a recommendation to receive for information.

Community Need

Initiative Progress Report

Accountability

Initiatives approved in 2020 Budget		
Ref	**Initiative**	**Progress to date**
15a-1	EA Strategy and Operations	**Planned for 2021** – develop a comprehensive strategy and operational review on the current rural regional district governance structure within the unique needs of Salt Spring Island.
15b-1	Triple-Bottom-Line (TBL) Budgeting	**Progressing –** Budgets are the result of the end-to-end planning business process which includes the Board Priorities, Community Needs, Corporate Plan and Service Plans. An overhaul of the business process was started in the 2019 planning cycle and continues through 2021. Staff will focus on prioritization and multi-criteria decision-making methodologies in the coming year. **Progressing -** Financial Services plans to complete a review of best practices in reserve balances for all services in 2021. This will include practices and policies from other local government and public sector organizations.
15b-2	Asset Management and Risk Analysis	**Progressing** – a corporate risk management framework has been established within the CRD. The processes involved around assessing risks have been embedded in the capital planning process to help service divisions in prioritizing resources. A robust capital planning and risk analysis process must have a good set of asset information where the asset is broken down and recorded to an appropriate level. An Asset Componentization Guide (ACG) has been developed to standardize how large infrastructure will be broken down into individual components. The infrastructure in the Core Area Wastewater Treatment Project applied the ACG and now has a robust set of asset information to enable a robust risk analysis process throughout the asset lifecycle (i.e. capital planning, operations and maintenance). Maintenance of assets is as critical as maintaining asset information and development of a centralized asset registry within our enterprise system is in progress.

Community Need

Initiative Progress Report

Initiatives approved in 2020 Budget		
Ref	**Initiative**	**Progress to date**
15c-2	SGI-CRD Liaisons *	**Part of core services** – SGI Liaison program continues to facilitate community support and coordination on behalf of the CRD.
15d-1	Service Planning and KPIs	**Part of core services** – the 2021 Service Planning process will be completed by October 28, 2020 confirming the funding, timing of new initiatives and service levels for the CRD's core services next year. This process is run annually in spring/summer and gathers the information necessary to assemble a provision budget.
15e-1	Partnership Directory	**Progressing** – Partnerships guidelines prepared, and existing formal partnerships captured in new directory. Next steps include developing standard templates for Letter of Understanding and Memorandum of Understanding which will be completed by 2021.
15f-1.0	Systems + Policies Bylaw Management System	**Progressing** – improvements have been made to identify repealed and withdrawn bylaws. Publishing to the website has been delayed pending sufficient staff capacity to undertake consolidation prior to publishing.
15f-1.1	Systems + Policies Contract Database + E-Approvals	**Progressing** – development completed and system testing is underway.
15f-1.3	Systems + Policies EDRMS	**Progressing** – Planning work is underway and recruitment of 1 FTE is complete. In 2021, the Records Classification Schedule (RCS) will be updated, EDRMS business requirements gathered and selection process started. 100k has been budgeted in 2021 from reserve funds. Implementation planned for 2022 onwards. Funding continues to be earmarked through reserves.
15f-1.4	Systems + Policies HR + Corporate Safety Systems	**Progressing** – This project has been expanded to include other HR required changes, these changes have been included in the proposal for a new HR Information System. HR will bring this request as a 2022 IBC budget item.
15f-1.5	Systems + Policies Rise + Report Tracking System	**Part of core services** – Rise and report webpage created and updated on a quarterly basis. Board highlights webpage created and updated following each Board meeting, includes an option to subscribe for emailed updates.
15f-1.6	Systems + Policies – Signage	**Progressing** – External consultant hired, and current inventory and analysis completed. Final comprehensive sign strategy – including font, colour, white space, size, common content, logo placement –

Community Need

Initiative Progress Report

Initiatives approved in 2020 Budget		
Ref	**Initiative**	**Progress to date**
		will be developed and completed by November 2020 to make the look and feel of CRD signage consistent across departments and posting locations.
15f-1.7	Systems + Policies – Toolkits	**Progressing** – improvements have been made to the legal services sharepoint site to include toolkits for contracting, procurement and bylaw drafting. Toolkits for Information Services to be advanced in 2021 pending available IT Sharepoint support.
15f-1.8	Systems + Policies – Website	**Progressing** – Advanced work will continue 2020 and 2021 towards a website refresh for launch 2022.
15f-1.9	Systems + Policies– SAP Development *	**Progressing** - SAP training program and system projects supporting expanded corporate application footprint are underway. While some delays in hiring resulted from COVID 19, overall, the work plan has progressed in 2020. SAP training outreach to begin in late 2020 and expand offering into 2021 and onwards. This program will continue to advance through 2021, making changes and improvements to the scheduling and resourcing of projects. Increased visibility into resource consumption and staff availability has improved our overall scheduling and management of project timing, scope and task alignment spread over multiple projects. These improvements will have a positive impact going forward.
15f-1.11	Systems + Policies – Information Security Program*	**Progressing** – this initiative is continuing to progress. We have made improvements

* New - Initiatives not in the 2019-2022 Corporate Plan

Making a difference...together

REPORT TO THE GOVERNANCE AND FINANCE COMMITTEE
MEETING OF WEDNESDAY, OCTOBER 07, 2020

SUBJECT 2019-2022 Arts & Culture Service Planning

ISSUE SUMMARY

To provide the Governance and Finance Committee with an overview of relevant initiatives undertaken by Arts & Culture to deliver on approved Board Priorities and the Corporate Plan. Services and initiatives will be delivered in 2021 using core funding only.

BACKGROUND

The CRD Board completed its strategic planning early in 2019 and approved the CRD Board Strategic Priorities 2019-2022.

The four priorities are:
1. Community Wellbeing – Transportation & Housing;
2. Climate Action & Environmental Stewardship;
3. First Nations Reconciliation; and
4. Advocacy, Governance & Accountability.

The priorities were confirmed at the annual check-in on May 13, 2020.

The 2019-2022 CRD Corporate Plan is aligned to the Board direction. It highlights the initiatives the CRD needs to deliver over the Board's four-year term to address the region's most important needs. The Corporate Plan identified one initiative under Arts & Culture that falls under the Governance and Finance Committee's mandate.

Through the Royal & McPherson Theatres Society Advisory Committee (RMTSAC) the Governance & Finance Committee also has oversight of the services that provide funding to the Royal Theatre and the McPherson Playhouse.

Appendix A *Community Need Summary - Arts & Culture 2021* is a summary of the planned activities for 2021. It contains details about core service levels, new initiatives proposed and performance metrics.

Appendix B *Arts & Culture - Initiatives Progress Report* provides insights into what has been delivered through the following initiative that was approved last year, for delivery in 2020:

- 12a-1 Art Facility Needs and Partnerships

The Service Planning process gathered information necessary to assemble a provisional budget for Committee and Board review. The purpose of this report is to explain how the Arts & Culture divisional program of work connects to the Board Priorities, Corporate Plan and provisional budget.

ALTERNATIVES

Alternative 1

The Governance and Finance Committee recommends to the Capital Regional District Board: That Appendix A Community Need Summary - Arts & Culture be approved as presented and advanced to the October 28, 2020 provisional budget review process.

Alternative 2

The Governance and Finance Committee recommends to the Capital Regional District Board: That Appendix A Community Need Summary - Arts & Culture be approved as amended and advanced to the October 28, 2020 provisional budget review process.

IMPLICATIONS

Financial Implications

Initiatives identified in the Corporate Plan (including Board Priorities) cannot be undertaken without resourcing. The Board determines resourcing through its annual review and approval of financial plans. To support the Board's decision-making, staff, through the service planning process, provide recommendations on funding, timing and service levels.

Service Delivery Implications

The Community Need Summary provides an overview of all work that needs to be undertaken in order to meet our regulatory requirements, satisfy Board direction and meet the needs of the communities we serve.

Staff are advancing a directive from the RMTSAC to examine the contribution agreements for the Royal Theatre and McPherson Playhouse to ensure that the venues are resourced at an appropriate level.

Alignment with Board & Corporate Priorities

Staff have not identified any new initiatives for 2021.

Initiative 12a-1 is expected to be complete in 2020.

CONCLUSION

Staff have been progressing initiatives and actions identified in the Corporate Plan, including Board Priorities. The Board determines resourcing through its annual review and approval of financial plans. As per previous years, to support the Board’s decision-making, staff are providing recommendations on funding, timing and service levels through the service and financial planning processes.

RECOMMENDATION

The Governance and Finance Committee recommends to the Capital Regional District Board:
That Appendix A Community Need Summary - Arts & Culture be approved as presented and advanced to the October 28, 2020 provisional budget review process.

Submitted by:	James Lam, Manager, Arts & Culture Support Service
Concurrence:	Nelson Chan, MBA, CPA, CMA, Chief Financial Officer
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT(S)

Appendix A: Community Need Summary - Arts & Culture
Appendix B: Arts & Culture - Initiatives Progress Report

Community Need

2021 Summary

Arts and Culture

Strategy

Target Outcome
We envision strategic investment to maximize the artistic, social and economic contributions that arts and culture make to the quality of life in the region.

Strategic Context

Strategies

- Arts Development Service Strategic Plan

Trends, risks and issues

- Municipal investment in the arts recognises the contribution that arts organizations make to the quality of life and the economic benefits that accrue to the region through the activities of funded organizations.
- Sustaining and increasing investment in the arts is strongly tied to local and global economic trends that affect municipalities' ability and desire to provide support. In 2019, the CRD Arts and Culture funding programs funded 94 organizations that provided programming that supported a wide range of artistic activity by local and regional artists. We expect to fund 92 organization in 2020.
- Restrictions on public gatherings due to COVID19 has created significant instability in the arts sector and adaptation to programming and operational support to funded organizations.

Community Need

2021 Summary

Services

Core Services Levels	
Service	**Levels**
Arts & Culture Support Service Supports, promotes and celebrates arts and cultural activities for the benefit of the community through funding programs and outreach activities.	• Provide support to organizations on not-for-profit structure, governance, and capacity development in general and as it relates to Arts Service programs. • Provide support to Arts Commission by maintaining accountable processes for allocation of program budgets. • Respond to inquiries on funding (CRD and other sources). • Liaise with arts funders at other levels of government. • Collect data for internal use and by outside agencies • Manage web-database of regional public art for the region.
The McPherson Playhouse Service Contribution agreement for the municipal support of the theatre.	• Provides capital and operational support for pleasure, recreation and community uses related to the McPherson Playhouse Theatre
The Royal Theatre Service Contribution agreement for the municipal support of the theatre.	• Provides capital and operating support for pleasure, recreation and community uses related to the Royal Theatre.
Support Services The core services listed rely on the support of several corporate and support divisions to effectively operate on a daily basis. These services are reported on in the Accountability Community Need Summary.	• Services include Human Resources & Corporate Safety, Corporate Communications, Asset Management, Financial Services, Information Technology & GIS, Information Services, Legislative Services, Facility Management, Fleet Management, Legal Services, Risk & Insurance and Real Estate Services.

Community Need

2021 Summary

Initiatives					
Ref	Initiative	Description	Year(s)	Status	2021 impacts
12a-1	Art Facility Needs and Partnerships	Facilitate a discussion of the region's art facility needs & explore partnerships to support 100% participation in the CRD arts function	2020-21	Estimated completion Dec. 2020	Already funded

*New – Initiatives not in the 2019-2022 Corporate Plan

Initiatives approved in prior years which are now part of Core Services:

- 12b-1 – Community Engagement in Arts
- 12b-2 – Arts and Culture Strategic Plan
- 12c-1 – Arts Grant Program Review

Business Model

Funding

Who contributes

- **Arts & Culture Support Service**: Saanich, Victoria, Oak Bay, Esquimalt, View Royal, Metchosin Highlands, Sooke, Southern Gulf Islands
- **The McPherson Playhouse Service**: Victoria
- **The Royal Theatre Service**: Saanich, Victoria, Oak Bay
- **Support Services**: varies per service

Funding Sources

- Requisitions

Reporting Structure

- Arts & Culture Support Service: Arts Commission
- Theatres: Royal and McPherson Theatres Services Advisory Committee

Community Need

2021 Summary

Community Need Key Performance Indicator (KPI)			
Definition and Source	**2019 Actual**	**2020 Forecast**	**2021 Target**
Metric 1: **Social contributions** (A) total number of events and workshops hosted by CRD (B) total attendees at CRD-funded arts events (C) total number of IDEA and Equity Grants distributed Data from 2019 Arts & Culture Progress Report	(A) 3,357 (B) 644K+ (C) 18	(A) see note (B) see note (C) 20	(A) see note (B) see note (C) 20
Metric 2: **Economic contributions** (D) total funding ($M) invested (via CRD grants) in operating grant recipients (E) total revenue ($M) generated Data from 2019 Arts & Culture Progress Report	(D) $2.4M (E) $27.5M	(D) $2.4M (E) see note	(D)$2.4M (E) see note

Discussion

Link to Target Outcome

Funding programs and other activities of the Arts & Culture Service recognise the contribution that arts organizations make to the economy and quality of life, the provincial and national visibility they bring to the region and their role in providing a wide range of activities for citizens and visitors.

Discussion

NOTE: all 2020 and 2021 metrics are expected to be adversely impacted by Covid19

- **Metric 1**: (A) 3,357 of events and workshops provided events and activities accessible to citizens and visitors and provided opportunities for 5,395 volunteers advancing social cohesion; (B & C) Events and attendance are normally measured in in-person attendance. With restrictions on public gatherings resulting in the closing of venues, the reporting and the structure for measuring online video, audio, pop-up, and other alternative programming replacements is in development. IDEA Grants is a flexible, small-awards program designed to respond to one-time opportunities and to encourage innovative or developmental arts projects and events. Equity grants support arts initiatives by applicants from the communities that are at risk of exclusion or have difficulty accessing support for systemic reasons.
- **Metric 2**: Operating grant recipients generated $27.5M in additional revenues of which 8% ($2.4 million) was provided by the CRD. For every $1 invested organizations generated an additional $11.55 (data from the 2019 Arts & Culture Progress Report). (E) It is expected that self-generated revenues by funded organization will be significantly reduced due to COVID19. However, at this point in the financial years there is insufficient information to provide estimates for the purposes of this report.

Community Need

Initiative Progress Report

Arts & Culture

Initiatives approved in 2020 Budget		
Ref	**Initiative**	**Progress to date**
12a-1	Art Facility Needs and Partnerships	Consultant-led community engagement process commenced July 2020. Final report due December 2020.

* New - Initiatives not in the 2019-2022 Corporate Plan

Making a difference...together

REPORT TO THE GOVERNANCE AND FINANCE COMMITTEE
MEETING OF WEDNESDAY, OCTOBER 07, 2020

SUBJECT **Investing in Canada Infrastructure Program (ICIP); Green Infrastructure – Climate Change Mitigation – CleanBC Communities Fund Stream**

ISSUE SUMMARY

A Capital Regional District (CRD) Board resolution is required for grant applications to the Investing in Canada Infrastructure Program (ICIP); CleanBC Communities Fund (CCF) stream.

BACKGROUND

On August 12, 2020, BC and Canada announced the second intake of the CCF Stream to support infrastructure projects across the province. For this intake, the program has $47M available in funding for eligible projects. The first intake was in 2019 and was oversubscribed with $63M allocated to projects under the CCF stream.

Regional districts are an eligible recipient under the grant program and permitted to submit one application for each community. For ICIP, a community refers to a settlement area within a regional district or an established/proposed service area.

Applications for CCF are due November 12, 2020, and must include a Board resolution. Below is a summary of proposals received from services.

PROGRAM	LOCATION	PROJECT	REQUEST ($)	CRD COST-SHARE	TOTAL PROJECT COST	APPENDIX
CCF	Sub-Regional	Panorama Recreation Energy Recovery Project	$2,071,573 (73.33%)	$753,427 (26.67%)	$2,825,000	A

The Panorama Recreation Energy Recovery Project was previously considered under ICIP's – Community, Culture, and Recreation stream; however, after review, staff determined it was better aligned with CCF's program outcomes.

ALTERNATIVES

Alternative 1
The Governance and Finance Committee recommends to the Capital Regional District Board:
That the Capital Regional District Board (the Board) authorize staff to submit an application for grant funding for the Sub-Regional Panorama Recreation Energy Recovery Project through the Investing in Canada Infrastructure Program – CleanBC Communities Fund Program; and that the Board supports the project and commits to its share ($753,427) of the project.

Alternative 2
The Governance and Finance Committee recommends to the Capital Regional District Board:
That this report be referred back to staff for additional information.

IMPLICATIONS

Financial Implications

This project has funds committed from Panorama's Capital Reserve Fund to provide the CRD's cost-share to the project. The project can expect to see natural gas savings of $80,000 annually.

Environmental & Climate Implications

This initiative is designed to reduce GHG emissions. The project focuses on utilizing waste heat to its maximum potential prior to consuming additional energy. Once completed, Panorama will see a reduction of over 363 tonnes of CO2e emissions annually. This represents over 80% of Panorama's emissions and over 15% of CRD CO2e emissions.

The CRD's current Corporate Climate Action Strategy targets a 33% reduction in corporate-wide greenhouse gas emissions by 2020, based on 2007 levels. In light of the recent climate emergency, reducing corporate greenhouse gas emissions remains a top priority. Panorama, as part of the CRD, has made a commitment to reduce GHG emissions to 33% below 2007 emissions. As part of the Board's climate emergency declaration, climate action and environmental stewardship were embedded in the 2019–2022 Board Priorities, committing the CRD to take a leadership role in pursuing regional carbon neutrality by 2030.

CONCLUSION

The Investing in Canada Infrastructure Program provides funding to infrastructure projects across BC. Previous intakes to the program for all streams have been oversubscribed. The CRD is committed to reducing greenhouse gas emissions. If supported by the Board, the CRD will submit an application to the CCF program for the Panorama Recreation Energy Recovery Project.

RECOMMENDATION

The Governance and Finance Committee recommends to the Capital Regional District Board:
That the Capital Regional District Board (the Board) authorize staff to submit an application for grant funding for the Sub-Regional Panorama Recreation Energy Recovery Project through the Investing in Canada Infrastructure Program – CleanBC Communities Fund Program; and that the Board supports the project and commits to its share ($753,427) of the project.

Submitted by:	Carlo Vijandre, PMP, FMP, AScT Manager, Asset Management
Concurrence:	Nelson Chan, MBA, CPA, CMA, Chief Financial Officer
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT(S)

Appendix A: Panorama Recreation Energy Recovery Project

CRD GRANT PROPOSAL REVIEW

Download this form and save it after filling in the first cell. **SAVE OFTEN** as a precautionary measure. Please email questions or suggestions for improvement to CRD Corporate Asset and Grant Management Analyst.

SECTION 1: APPLICANT AND GRANT INFORMATION

CRD DEPT.	SERVICE NAME: CONTACT YOUR FINANCIAL ADVISOR TO ENGAGE THEM IN YOUR PROPOSAL.	SERVICE NO.:
PES	Panorama Recreation	

WHAT SERVICE TYPE COULD BENEFIT?	WHICH ELECTORAL AREA?	IF THE PROJECT IS IN AN ELECTORAL AREA, LIST THE COMMUNITY(IES) THAT WILL BENEFIT.
Regional	Not Applicable	

GRANT PROGRAM NAME	APPLICATION DUE (MM/DD/YYYY)
Investing in Canada Infrastructure Program - Clean BC Communities Fund	11/12/2020

PROPOSED PROJECT TITLE	PROJECT TYPE
Panorama Recreation Energy Recovery Project	Climate Adaptation Infrastructure

DESCRIBE THE OUTCOME OF THE PROJECT:

- Reduce CO2e emissions created through the operation of Panorama Recreation Centre by 363 tonnes annually
- Reduce operating costs
- Providing some DHW reducing the demand on gas fired boilers
- Improve air quality (temperature and circulation) in arenas and tennis facility
- System would also provide the opportunity to provide some air conditioning in the arenas and tennis facilities in the summer making the spaces more usable and accessible in the community

SECTION 2: ALIGNMENT AND IMPACT – Is it a Good Fit for the CRD?

Grants can provide timely additional resources to advance organizational goals. The pursuit of a grant opportunity must, however, be carefully reviewed to check for potential impacts that can have unexpected and unintended consequences. Some grants are straightforward; others are more complex. The questions below help sort everything out for well-informed action.

ALIGNMENT WITH A CRD BOARD PRIORITY?	ALIGNMENT WITH A CORPORATE PRIORITY?	ALIGNMENT WITH THE REGIONAL GROWTH STRATEGY?
Climate Action & Environmental Stewardship	Fiscal Responsibility	Reduce community GHG emissions
ALIGNMENT WITH THE SERVICE PLAN?	**ALIGNMENT WITH THE CAPITAL PLAN?**	**ALIGNMENT WITH THE ASSET MANAGEMENT PLAN?**
Yes - for the current year	Yes-for current year	No-AMP being developed

IF THE PROJECT ALIGNS WITH A DEPARTMENTAL / DIVISIONAL STRATEGIC PLAN, PLEASE SPECIFY WHICH ONE:

Climate Action Plan

THE TIME-RELATED QUESTIONS BELOW ARE SEEKING APPROXIMATIONS. FOR AN EXPLANATION OF CONTEXT/METHODOLOGY, CLICK HERE.

HOW MANY HOURS, *APPROXIMATELY*, WILL PREPARING THE **GRANT APPLICATION** TAKE?	HOW MANY HOURS, *APPROXIMATELY*, WILL **GRANT ADMINISTRATION** TAKE IF AWARDED?
☐ 1-10 ☐ 11-30 ☐ 31-50 ☐ 51-70 ☐ 71-90 ☐ 91-110 ☐ 111-130 ☐ 131-170 ☐ 171+	☐ 1-10 ☐ 11-30 ☐ 31-50 ☐ 51-70 ☐ 71-90 ☑ 91-110 ☐ 111-130 ☐ 131-170 ☐ 171+

GRANT REQUEST:	CRD COSTS: ELIGIBLE AND INELIGIBLE	TOTAL PROJECT COST (EST.)	MAIN SOURCE OF CRD FUNDING SHARE	EVIDENCE OF SECURED FUNDS
$ 2,071,573	$ 753,427	$ 2,825,000	Capital Reserve Fund	Yes-funding evidence is available now

WHAT IMPACT WILL THE APPLICATION EFFORT HAVE ON THE YOUR SERVICE'S WORKPLAN?	WHAT IMPACT WOULD RECEIVING THIS GRANT HAVE ON YOUR SERVICE'S WORKPLAN?
1-Low: Applying is not disruptive to the Service's workplan	1-Low:This grant is not disruptive to the Service's workplan

IF APPLYING FOR THE GRANT HAS AN IMPACT RATING OF 2 OR 3, IDENTIFY YOUR SERVICE'S WORKPLAN ADJUSTMENTS NEEDED TO ACCOMMODATE THE GRANT APPLICATION EFFORT.

IF BEING AWARDED THE GRANT HAS AN IMPACT RATING OF 2 OR 3, IDENTIFY YOUR SERVICE'S WORKPLAN ADJUSTMENTS NEEDED TO ACCOMMODATE PROJECT IMPLEMENTATION.

WHAT TYPE OF OBLIGATIONS WOULD GETTING THE GRANT IMPOSE ON THE CRD:	1. TYPICAL-Executing/amending agreement, claims, project reports

IF THE CRD OBLIGATIONS ARE TYPE 2, DESCRIBE ADJUSTMENTS TO THE SERVICE'S WORKPLAN OR ANY OTHER MEASSURES NEEDED TO ACCOMMODATE THESE OBLIGATIONS.

WHAT SPILLOVER BENEFITS, **ABOVE AND BEYOND THE GRANT PROGRAM OBJECTIVES**, COULD RESULT FROM THIS GRANT EFFORT? SEE **INTANGIBLE BENEFIT** EXPLANATION HERE.

☑ INNOVATION ☐ PARTNERSHIP/COLLABORATION ☐ SUPPORT OF RURAL COMMUNITIES ☐ MITIGATION OF A SEVERE RISK

CRD GRANT PROPOSAL REVIEW

Download this form and save it after filling in the first cell. SAVE OFTEN as a precautionary measure. Please email questions or suggestions for improvement to CRD Corporate Asset and Grant Management Analyst.

SECTION 3: ASSET MANAGEMENT REVIEW: For projects that relate to new or renewed assets

This section is oriented to infrastructure assets and may not apply to a project relating to natural assets. To respond, type or choose 'Not applicable' as needed. Space is provided below for commentary related to natural assets and eco-system services.

FOR WHAT YEAR IS THE ASSET IN THE CAPITAL PLAN?	DOES THE ASSET HAVE AN ASSET MANAGEMENT PLAN?	WHAT IS THE ASSET'S REMAINING SERVICE LIFE?
2021	Not yet; an AMP is being developed	0-2 years

WHAT IS THE ASSET'S CONDITION RATING?	WHAT IS RISK OF ASSET FAILURE?
Poor-Beyond service life major deficiencies	HIgh

USE THIS SPACE, IF REQUIRED, TO ELABORATE ON ASSET MANAGEMENT CONSIDERATIONS YOU THINK NEED TO BE HIGHLIGHTED (E.G.: COMMENTS RELATING TO NATURAL ASSETS)

The dehumidifier that services both ice rinks at panorama is at the end of its service life. These typically have 20-25 year service lives. This energy recovery project would enable Panorama to replace with non-natural gas burning dehumidification units. If grant funding is not secured, new natural gas burning unit will need to be installed with a new 20-25 year life span.

SECTION 4: THINK LIKE A FUNDER: What makes the project a great fit for the grant program?

DESCRIBE FEATURES OF THE PROPOSED PROJECT THAT MAKE IT A GREAT FIT TO ACHIEVE THE GRANT PROGRAM'S OBJECTIVES AND EVALUATION CRITERIA.

This energy recovery project focuses on utilizing waste heat to its maximum potential prior to consuming additional energy. Once completed, Panorama will see a reduction of over 363 tonnes of CO_2e emissions annually. This represents over 80% of Panorama's emissions and over 15% of CRD CO_2e emissions. This system will harvest rejected heat from the arena refrigeration plant and redeliver it to other areas in the facility for use through heat loops. The remaining energy needed for specific processes such as arena dehumidification, space heat and domestic hot water are produced by high temperature heat pumps that are directly integrated into each system. These high temperature heat pumps are what sets this design apart from older heat recovery systems and is what allows us to achieve the high temperatures required for dehumidification of the arenas. This system and its design concept can be applied to any arena that is currently using natural gas for dehumidification and domestic hot water. Many rinks have older versions of energy/heat recovery that still require natural gas consumption to make up the difference for domestic hot water and space heating while none of the older systems can support dehumidification. Completion of the project will improve overall air quality and circulation to the arenas and indoor tennis facility. This will make gas heaters in spectator areas redundant while also making those spaces more comfortable in the summer months allowing more community use and programming during the times when those areas are typically too warm for regular usage.

SECTION 5: ATTESTATION AND APPROVALS

In this section, the Project Lead attests to the accuracy of the information submitted in this form and forwards it for review and approval according to Departmental practices. The form makes room to customize approval processes to suit Divisional / Departmental needs. Completed forms are sent to the CRD Corporate Asset and Grant Management Analyst.

PROJECT LEAD ATTESTATION

- ☑ I CERTIFY THAT THIS PROPOSAL PROVIDES A TRUTHFUL AND ACCURATE REPRESENTATION OF THE PROJECT;
- ☑ I HAVE REVIEWED THE GRANT PROGRAM GUIDE CAREFULLY AND ATTEST THAT AN APPLICATION FOR THIS PROJECT CAN MEET ALL THE GRANT PROGRAM REQUIREMENTS;
- ☑ I ATTEST THAT THE SERVICE CAN AMEND ITS WORKPLAN TO ALLOCATE THE RESOURCES NEEDED FOR OUTCOME ACHIEVEMENT WITHIN THE PROGRAM TIMELINE;
- ☑ I HAVE IDENTIFIED, IN CONSULTATION WITH MY MANAGER, ALL IMPACTS /OBLIGATIONS ENABLING SENIOR MANAGEMENT'S INFORMED CONSIDERATION OF THIS PROPOSAL.

NAME	TITLE	DATE (MM/DD/YYYY)
Matt Curtis	Manager of Facilities and Operations - Panorama Rec	09/10/2020

MANAGER AUTHORIZATION TO PROCEED WITH THE PROPOSED PROJECT

NAME	TITLE	DATE (MM/DD/YYYY)
Matt Curtis	Manager of Facilities and Operations - Panorama Rec	09/10/2020

SENIOR MANAGER AUTHORIZATION TO PROCEED WITH THE PROPOSED PROJECT

NAME	TITLE	DATE (MM/DD/YYYY)
Lorraine Brewster	Senior Manager - Panorama Recreation	09/11/2020

GENERAL MANAGER AUTHORIZATION TO PROCEED WITH THE PROPOSED PROJECT

NAME	TITLE	DATE (MM/DD/YYYY)
Larisa Hutcheson	General Manager - Parks & Environmental Services	09/11/2020

THANK YOU FOR YOUR TIME AND THOUGHTFUL ATTENTION TO THIS ASSESSMENT PROCESS.

ONCE THE REQUIRED APPROVALS FOR THIS PROPOSAL ARE SECURED, THE PROJECT LEAD SENDS THE APPLICATION TO CRD Corporate Asset and Grant Management Analyst

Making a difference...together

REPORT TO GOVERNANCE AND FINANCE COMMITTEE
MEETING OF WEDNESDAY, OCTOBER 07, 2020

SUBJECT **Review of the Victoria Family Court and Youth Justice Committee**

ISSUE SUMMARY

In October 2019, the CRD Board directed staff to conduct a review of the Victoria Family Court and Youth Justice Committee (the "Committee") to understand its mandate, governance, and finances, and present options for moving forward.

BACKGROUND

To appreciate the current mandate and governance structure of the Committee, it is important to review the history of how the Committee evolved.

In 1964, the Committee was formed by the City of Victoria, with representatives of Victoria, Oak Bay, Esquimalt, and Saanich. Its four members reported as an advisory committee to another advisory committee of the City of Victoria tasked with inter-municipal business.

In 1967, the CRD received supplemental letters patent requiring it to fund the construction of a new courthouse for family and youth, servicing Victoria, Oak Bay, Saanich, Esquimalt, and the electoral areas (provincial unorganized territory).

In 1984, the Committee became a youth justice committee under the then-*Young Offenders Act* (now the *Youth Criminal Justice Act*) by the provincial Attorney General.[1]

In 1987, the CRD received supplemental letters patent requiring it to operate, participate in, and fund a *Provincial Court Act* family court committee on behalf of Victoria, Saanich, Oak Bay, and Esquimalt, as well as the electoral areas of Colwood, Metchosin, Sooke, Langford, and View Royal. At the time, CRD was the authority tasked with construction of a family and youth court building. The maximum requisition was $5,000. The Committee ceased reporting to the City of Victoria and reported to the CRD as an advisory committee, having previously reported to the CRD on an ad hoc basis.

By the mid-1980s, its membership had expanded, with one CRD representative being added, and seven members-at-large appointed by CRD. As CRD's electoral areas became municipalities, additional members were added. School district members also became voting members at some point, having previously been non-voting members as late as the mid-1980s.

In 1998, an establishing bylaw was created for the service and the maximum requisition became $10,000. Participants were to "participate in and share the cost" of the funding and operation the

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[1] Hon. Brian Smith: "The establishment of a Youth Justice Committee, while not conferring any particular rights and privileges on the Committee and its members, recognizes that the Committee has a legitimate role, as representatives of your community, in making the youth justice process more effective. […] The specific programs and activities your Committee might wish to pursue would be discussed with local officials of the youth justice system."

Committee. Also that year, Central Saanich, Sidney, and North Saanich joined the service as the Sidney courthouse closed.

In 2000, CRD broadened the service authority to also allow funding of "board approved committees". This was to provide funding for the Capital Region Action Team for Sexually Exploited Youth (CRAT). At the time, the Committee did not use its full $10,000 requisition and consented to share an annual $1,500 with CRAT rather than have CRD create a new service. The CRD Board approved CRAT as a "board approved committee", and continues to fund it to this day by sending a cheque for $1,500 to Oak Bay annually.

In 2003, the requisition amount was lifted to $15,000. The then-chair of the Committee advocated for the increase due to expenses of office space, staffing support, and the value the committee provided to the community in giving local government officials and lens into how the justice system treated youth in custody and youth involved with the justice system. The Committee was identified as a select committee of the CRD Board, tasked with advising on operations of the court system and impacts on youth and family.

In 2004, the CRD Board ratified the Committee's Constitution and Terms of Reference, which included broad membership and multiple-sub-committees. They are substantially similar to what is in use today, and what has been used since the mid-1980s. No detailed discussion on the work of the Committee or its operations is demonstrated in the meeting minutes.

In 2014, such committees became optional.[2]

In 2019, it was brought to the attention of the CRD that the Committee was paying for an outside Canada professional development activity and was making grants with its budget. This review was commenced soon after at the request of the CRD Board.

A list of activities undertaken by staff as part of this review is attached at Appendix A. Staff reviewed areas of conflict that were raised by some members of the Committee about its work, role, expenses, and governance. Some Committee Members take the position that the Committee is not accountable to the CRD, is wholly independent, and is able to spend funds as it wishes, subject to its own policies. Other Committee Members take issue with a lack of defined outcomes; non-compliance with meeting requirements; frequent multi-hour catered meetings; complicated governance; lack of term limits; and an unwieldly annual report. Staff undertook a review of current Committee operations and, where appropriate, applied a comparative analysis to other CRD committees and commissions as set out below.

ALTERNATIVES

Alternative 1
The Governance and Finance Committee recommends to the Capital Regional District Board:

> That staff be directed to report back on the process to restructure the Committee in accordance with the recommendations set out in Appendix H.

[2] *Justice Statutes Amendment Act*, 2014. Hon. S. Anton: "This provision was put in some time ago. There never has been funding for these committees. There was "a municipality must." There was no way of enforcing compliance. So we have now made it permissive. Some municipalities have family court committees; others do not. […] There are 17 family court committees now. The exact amount of how many could, I don't know. But it's communities with a courthouse or around a courthouse."

Alternative 2
The Governance and Finance Committee recommends to the Capital Regional District Board:
That staff be directed to report back with the process for winding-up the service and appropriate bylaw amendments.

Alternative 3
That this report be referred back to staff for additional information.

DISCUSSION

Statutory Purpose of Committee

The Committee has a statutory grant of authority, summarized in Appendix B, with relevant legislative provisions set out in Appendix C. Family Court Youth Justice Committees are not part of the justice system, rather they discuss local issues. The Committee has never and will never receive court referrals.

As a result, the Committee undertakes the following activities:

- grants;
- court watch, where volunteers attend court and report observations;
- awareness raising, collective collaboration and group action, as well as reporting by local service providers (youth and vulnerable persons non-profits, police, school districts);
- lobbying on initiatives related to youth and family matters, including on barriers faced by youth and families in accessing services and navigating the court system; and
- acting as a resource for those doing civic events related to access to justice;

The Committee has also written papers, organized conferences, and assisted in coordinating presentations at schools and in the community. A list of projects funded or organized by the Committee post-2004 is Appendix D, while a summary of current works is Appendix E.

Meetings

The Committee meets nine times per year for at least two hours. Out-of-time agenda items are not typically rescheduled. Speakers do not have strictly enforced time limits. Votes are informal. Meetings are closed, except by advanced invitation or the annual meeting. The Committee's executive believes that without closure, certain members would be unable to attend and speak freely (e.g. child support workers, crime task forces).[3] Meeting minutes are not public. The Committee has confidentiality agreements, historically to protect the information of youth in the criminal and family court system if referrals were received. They are extremely broad.

Most CRD advisory bodies or commissions meet four to nine times per year. Meetings are open, speakers and delegations have limited times, and agendas and minutes are public, in accordance with the *Community Charter* and the CRD *Procedure Bylaw*. CRD's confidentiality agreements are more limited in scope than those currently used by the Committee.

[3] Were it acting under a referral from the Courts as a youth justice committee, the *Youth Criminal Justice Act* does have language prohibiting the publication of information on young offenders. The *Community Charter* allows closure per ss. 90(f), Law enforcement investigations; 90(j) and 90 (m) information that is prohibited from disclosure under freedom of information legislation or another enactment. Closure only applies to the portion of the meeting where such information is discussed.

Sub-Committees

The Committee uses sub-committees to champion initiatives. Currently operating are:

- a steering committee, which sets the agenda in advance of meetings and is often where discussions on business occur;
- a court watch committee, responsible for scheduling volunteers to attend youth and family court and report back with their findings and observations to the Committee;
- a priorities committee, who review applications for grant funding and community youth-related initiatives that the Committee can support;
- a youth matters committee, that raises awareness of issues for youth and youth at risk in the court system and in society, and raise awareness of youth services;
- CRAT, with the purpose of assisting youth who are in or may be at risk of entering the sex trade. It primarily organizes in-school presentations.

If additional work is to be performed by CRD committees or commission, and staff are not involved, committee members do this outside meetings. Public bodies such as CRD cannot hold meetings in an informal setting and fail to invite the public to attend, and cannot operate all meetings in closed without public access to minutes.

Membership, Appointment, Attendance

There are 23 voting members and a number of non-voting resource members. CRD appoints seven members-at-large, as well as Chair, Vice Chair, and Treasurer. There is no public process for soliciting interest in CRD positions. Typically, the Committee recruits and recommends new members and CRD formalizes the appointment. Similarly, the Committee holds an election for officers at its AGM and the CRD ratifies results. Municipalities directly appoint elected officials or members of the public.

CRD committees or commissions have a typical membership of three to seven persons, though some advisory committees are larger where the intent is to get a diverse range of views from the community. Most advisory committees only meet a few times per year to provide advice or adjudicate grant applications received. CRD committees and commissions are governed by bylaws and use a public application process for new members.

It is reported that some Committee Members do not attend regularly, or attend a few meetings each year then drop off. Reported reasons for non-attendance range from the length and frequency of meetings; the time of day of meetings; a need to travel for meetings; length of speakers on individual issues; and a lack of completion of agenda items.

Governance

The Committee operates through a constitution; a terms of reference, developed by the Committee; expense policies; and individual guidance documents for each sub-committee.

The constitution is similar to the terms of reference of informal CRD working groups or committees, but the reporting relationship and authority is not as clear as that set out in a bylaw or standard CRD terms of reference. The expense policy is similar to but does not match current CRD expense policies.

Records and CRD Services

The Committee has no permanent home for documents. Its annual report stores all records, resulting in an unwieldly document.[4]

It does not use and is not provided regular access to CRD facilities or services. Pre-2000, it relied more on CRD services, though maintained its own office space. It does not have a safety or privacy officer.

CRD committees and commissions store records in Legislative Services or have a specific division assigned to assist in record keeping. They access CRD resources, with varying levels of support depending upon the committee or commission, and may direct questions regarding risk and insurance, safety, records management, legislative procedure, or any other issues to the appropriate staff resource and receive advice.

Banking and Expenses

The Committee's bank account requires multiple signatures. An audit committee reviews receipts. CRAT's record keeping and funds are held by Oak Bay.

The Committee's day-to-day expenses consist of:

- a contracted minute taker and secretary for an amount of approximately $2,600 per year (or ~$300 per meeting). It has had a contracted secretary since the mid-1980s;
- catered self-serve meals in an amount of up to approximately $3,800 per year (roughly 25% of its budget); and
- Some reimbursement for parking, office supplies, and transit for members and guest speakers (less than $600).

Regarding lunches, there is concern of the Committee executive that if meetings were not catered, members may not arrive or attend in a regular or timely fashion. Others say that if meetings were less frequent, at different times, and stuck to a time-limited agenda, such catering would not be necessary or, if attendance increased, may be justified.

Larger CRD commissions that meet over the lunch-hour are catered; commission and committee meetings that commence early or meet in the evening often have light refreshments.

In 2019, the Committee approved a member attending a conference in Las Vegas, Nevada. Some members were concerned there was no debate or discussion on this expense and felt that it had already been decided at a sub-committee level or at a prior meeting.

Typically, CRD committees and commissions do not provide for member professional development, or if they do, have a reasonable cap on what is reimbursable. They would not normally fund such activities outside of Canada.

The Committee has built a new website (approximately $3,000 over two years), replacing its prior website which it was incapable of updating without significant technical assistance. It has password protected "members only" sections (for agendas and other materials that are difficult

[4] The Annual Report contains documents on the Committee's creation, finances, past work product, terms of reference, constitution, letters from government, and other materials that would not normally form part of an annual report.

and expensive to mail or e-mail) that were not yet accessible as of the spring of 2020. The website was not procured through CRD.

The 2019/2020 budget year, for the first time in about a decade, a budget has been requested for the Committee's $15,000 annual requisition. Other CRD services require detailed five-year budgets, updated each year, in advance of funding and have clear restrictions on purchasing authority (such as not using public funds to purchase capital items that do not belong to CRD). Most Board committees do not have an allocated budget amount, or if they do, it is much smaller (less than $1,500).

Grants

The Committee issues grants to youth justice initiatives, such as the Sidney Youth Mental Health Clinic (saved from closure by Committee funding); conferences, such as Reimagining Masculinities, an all-ages ticketed event featuring speakers on healthy male identity; sponsorship of a cultural safety exercise; and further funding to CRAT.

The grant function is problematic. CRD must delegate clearly to authorize granting.[5] CRD records from 2000 state the Committee is not authorized to provide grants, but records from 2004 state the Committee does and may provide grants. Going back as far as 1999, the Committee also provides small honorariums (less than $300 for a year) to guest speakers and individuals involved in justice work in the community. Despite some inconsistency in the CRD's past messaging as to whether grants are permitted, the Committee should not be issuing grants without proper authority delegated by bylaw.

IMPLICATIONS

Alternative 1: Regularize the Committee

If the work of the Committee is valued, the Committee must be restructured to avoid member disputes, clarify its mandate, and to ensure public accountability. Regularizing the Committee would give it clear access to CRD's privacy, legal, safety, risk and insurance, and other support services. Incorporating it may allow youth and family matters to be referred by the CRD Board.

Successful family court committees operate in Vancouver and Richmond:

- Vancouver's advisory committee has a terms of reference stating the local government's policies and procedures apply. It does not have a separate budget. It is supported by staff. It holds four to six meetings per year, has a diverse membership (including youth members), and its meetings are typically two hours long. Its broadened mandate encompass all children, family, and youth issues, with a focus on including youth in civic engagement. Its terms of reference are at Appendix F.
- Richmond's advisory committee has an annual budget of $2,500 that may be used for food, travel, attendance at conferences, and the like. It has a membership of 8 to 15. It is supported by staff. It operates in a similar fashion to the Committee, with a focus on court watching, advocacy on the concerns of youth and families, and presentations to participants to facilitate to communication across organizations. Unlike the Committee, it has fewer elected officials and more community members to focus on its work as a

[5] *Local Government Act*, section 263 (1)(c) Subject to the specific limitations and conditions established under this or another Act, the corporate powers of a board include the following … to provide assistance for the purpose of benefiting the community or any aspect of the community;

volunteer "working committee", with more of a focus on justice initiatives and lobbying. Its terms of reference are Appendix G.

This option will require staff time and would take several months given current staff capacity and the need to work with existing Committee members on the initiative. It would require bylaw changes and staff involvement to ensure the Committee is trained in *Community Charter* meeting requirements and CRD policies and procedures.

A list of recommendations is contained in Appendix H. If pursued, staff will consult and report back with bylaw amendments and specific feedback from the Committee.

Alternative 2: Dissolve the Family Court Committee

Winding-up the service would remove CRD involvement and allow those individuals who are passionate about the work of the Committee to lobby individual local governments for funding. Municipalities could establish their own committees or directly fund justice initiatives with municipal grants-in-aid. It would remove $15,000 per year from the CRD budget and not require any additional staff time.

Dissolution may have consequences for youth and family services providers in the Capital Region. The Committee is a place for justice-involved individuals to connect and collaborate. Without funding, this may not occur and may lead to a lack of a coordinated community focus on youth and family issues and a loss of opportunities. Long term members see the best value of the Committee as the coordination piece, to keep the issues facing families and youth continued in the attention of local government and service agencies. Unlike other communities, a number of initiatives have come out of the work of the Committee that continue (CRAT's programs in schools, the Mobile Youth Services Team, and other works).

Most other Family Court Youth Justice Committees in the province have been dissolved by other local governments in recent years.[6] Reasons include the following:

- mandates were unclear;
- participants did not share administrative support, or chose not to remit expenses;
- committees were not utilized, and as a result, expanded work beyond their intended purpose;
- terms of reference were revised without consultation. Some excluded qualified members and jurisdictions, while others referred to jurisdictions that did not exist;
- local governments were permitted limited influence over a committee's activities and operations. One committee, without documented reasons, excluded elected officials and refused to recognize the supervisory relationship between funding governments and the committee, resulting in its complete loss of funding; and
- local governments thought it not their role to facilitate this work.

Regarding the non-use of these Committees, since the 1960s, other tools have been developed that replace the non-local functions of a committee, such as:

- diversion of charges through alternative measures (by way of voluntary community work, letters of apology, restitution, anger management, skills courses, etc.);

[6] These committees have been a source of confusion for at least 20 years. In 1999, the Union of BC Municipalities wrote to the BC Attorney General requesting clarification on their purpose, but did not receive a response. In 2012, Port Moody requested clarification from the Province, who denied any knowledge, then on further inquiry confirmed there was no longer a provincial committee liaison nor a list of such committees.

- incorporation of restorative justice and community accountability programs into the youth criminal justice system;
- pre-sentencing reports focused on mental health, addictions, and cultural factors;
- incorporation of victim impact statements in sentencing;
- local and provincial victims services programs;
- the creation of youth and family justice centres, providing self-help and information services, dispute resolution options, limited legal advice, community resource listings, courses and publications;
- BC's Representative for Children and Youth, who advocates for youth across the foster and family justice systems;
- the use of collaborative family law, where lawyers attempt to negotiate resolution rather than traditional adversarial litigation, is more common; and
- issues facing families, women, children, youth, and trauma survivors are more readily understood by the judiciary and law enforcement.

Alternative 3: Refer back to staff

Should further information be necessary, the Committee could continue to operate as normal, with any grant issues arising being referred to the Board for ratification, until a decision is made by the Board on continued operation of the service.

CONCLUSION

Though well-intentioned, the Committee is not operating in accordance with CRD procedure and policy requirements. While the mandate and purpose of the committee has become less relevant in recent years with an increase in other family and youth justice support agencies that are better placed to undertake this specialized work, the Committee is valued by its long-term members and some community stakeholder organizations. Assistance in governance and its regularization would avoid confusion and disputes but would only be successful if Committee members recognized CRD's jurisdiction over its governance; alternatively, the service should be wound-up and consideration put to other uses for funding.

RECOMMENDATION

The Governance and Finance Committee recommends to the Capital Regional District Board:

That staff be directed to report back on the process to restructure the Committee in accordance with the recommendations set out in Appendix H.

Submitted by:	Steven Carey, B.Sc, J.D., Manager, Legal Services (Contract & Bylaws)
Concurrence:	Kristen Morley, J.D., General Manager, Corporate Services & Corporate Officer
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENTS

Appendix A: Review actions
Appendix B: Summary of legislative grant of authority
Appendix C: Relevant sections of the *Provincial Court Act*, *Youth Criminal Justice Act*
Appendix D: Projects 2000 to 2018
Appendix E: Projects to 2020
Appendix F: Vancouver's Children, Youth and Families Advisory Committee Terms of Reference
Appendix G: Richmond Family Court Committee Terms of Reference
Appendix H: Recommendations for Restructuring Committee

APPENDIX A

REVIEW ACTIONS

In conducting this review, the writer undertook the following:

- a thorough search of CRD records, through the Legislative Services, Finance Department, and Freedom of Information and Protection of Privacy Department;
- *Freedom of Information and Protection of Privacy Act* requests to the Province;
- *Access to Information Act* requests to the Federal Government; Interviews with Federal Government staff with knowledge of the use of Family Court Committees and Youth Justice Committees;
- Consultation with the City of Victoria Archives;
- Direct contacts with other local governments who have wound-up or maintained family court committees;
- Literature review of materials relating to these committees;
- Direct interviews with members of Committee and CRAT;
- Attendance at Annual General Meeting of Victoria Family Court Committee;
- consideration of CRD policies and procedures relating to committee and commission operation;
- review of materials provided by the Victoria Family Court Committee;
- survey of similar third party contribution, granting, or youth and family services functions; and
- other research as applicable.

APPENDIX B

SUMMARY OF LEGISLATIVE GRANT OF AUTHORITY

The *Provincial Court Act* and its predecessor establish the responsibility of a family court committee. It must:

- meet at least 4 times a year to review community resources for family and children's matters, assist the court if requested, and to make recommendations it considers advisable;
- assist the court, if requested, to provide a community resource or assistance in individual cases referred to the committee; and
- report annually to the municipalities involved and to the Attorney General respecting its activities.

Members must serve without remuneration, are appointed in January for one year terms, and must include those with experience in education, health, probation or welfare.

The *Youth Criminal Justice Act* states that the committee's functions may include:

- relating to a young offender:
    - giving advice on extrajudicial measures to be used;
    - providing victim support by soliciting concerns and facilitating the reconciliation of the victim and the young person;
    - ensuring that community support is available to the young person by arranging the use of services within the community, and enlisting members of the community to provide short-term mentoring and supervision;
    - if a child protection agency or community group is involved, assist in coordinating the interaction of that group with the justice system;
- advising the federal and provincial governments on policies and procedures related to the youth criminal justice system;
- providing information to the public respecting the *Youth Criminal Justice Act* and the youth criminal justice system;
- acting as a "conference", that is, taking referrals from the court; and
- such other functions as are assigned by the person who establishes the committee.

APPENDIX C

PROVINCIAL COURT ACT

Family court committee

5 (1) A municipality may have a family court committee appointed by the municipal council in January of each year.

(2) The members of a family court committee must include persons with experience in education, health, probation or welfare.

(3) The members of a family court committee serve without remuneration.

(4) If a court facility in which family matters are dealt with serves more than one municipality or area not in a municipality, the family court committee must be composed of representatives from each area served.

(5) The municipalities involved must appoint one member of the family court committee as chair, and another as vice chair.

(6) The family court committee must do the following:

(a) meet at least 4 times a year to consider and examine the resources of the community for family and children's matters, to assist the court when requested and generally, and to make the recommendations to the court, the Attorney General or others it considers advisable;

(b) assist the officers and judges of the court, if requested, to provide a community resource or assistance in individual cases referred to the committee;

(c) report annually to the municipalities involved and to the Attorney General respecting their activities during the past year.

YOUTH CRIMINAL JUSTICE ACT

Definitions

2 (1) The definitions in this subsection apply in this Act:

> **conference** means a group of persons who are convened to give advice in accordance with section 19.

Youth Justice Committees

18 (1) The Attorney General of Canada or a province or any other minister that the lieutenant governor in council of the province may designate may establish one or more committees of citizens, to be known as youth justice committees, to assist in any aspect of the administration of this Act or in any programs or services for young persons.

Role of committee

(2) The functions of a youth justice committee may include the following:

> (a) in the case of a young person alleged to have committed an offence,
>
> > (i) giving advice on the appropriate extrajudicial measure to be used in respect of the young person,
> >
> > (ii) supporting any victim of the alleged offence by soliciting his or her concerns and facilitating the reconciliation of the victim and the young person,
> >
> > (iii) ensuring that community support is available to the young person by arranging for the use of services from within the community, and enlisting members of the community to provide short-term mentoring and supervision, and
> >
> > (iv) when the young person is also being dealt with by a child protection agency or a community group, helping to coordinate the interaction of the agency or group with the youth criminal justice system;
>
> (b) advising the federal and provincial governments on whether the provisions of this Act that grant rights to young persons, or provide for the protection of young persons, are being complied with;
>
> (c) advising the federal and provincial governments on policies and procedures related to the youth criminal justice system;
>
> (d) providing information to the public in respect of this Act and the youth criminal justice system;
>
> (e) acting as a conference; and
>
> (f) any other functions assigned by the person who establishes the committee.

Conferences may be convened

19 (1) A youth justice court judge, the provincial director, a police officer, a justice of the peace, a prosecutor or a youth worker may convene or cause to be convened a conference for the purpose of making a decision required to be made under this Act.

Mandate of a conference

(2) The mandate of a conference may be, among other things, to give advice on appropriate extrajudicial measures, conditions for judicial interim release, sentences, including the review of sentences, and reintegration plans.

Rules for conferences

(3) The Attorney General or any other minister designated by the lieutenant governor in council of a province may establish rules for the convening and conducting of conferences other than conferences convened or caused to be convened by a youth justice court judge or a justice of the peace.

Rules to apply

(4) In provinces where rules are established under subsection (3), the conferences to which those rules apply must be convened and conducted in accordance with those rules.

APPENDIX D

COMMITTEE ACCOMPLISHMENTS 2004 TO 2018 (INCLUDES CRAT)

1. Clothing, computer and bus tickets for **Sanctuary Youth Drop In** to assist homeless youth
2. Funded Girls Circle training and sessions at **Rockheights Middle School** in Esquimalt
3. Furnishings for the **Victoria Sexual Assault Health Clinic** Family Comfort Room
4. Submission to the Children's Representative Five Year Review
5. Increased Indigenous Cultural Awareness: through promotion and acceptance of necessity for Cultural Sensitivity Training; attendance at First Nations Court in Duncan; education on Impacts of Colonization and TRC obligations
6. Advocacy for support of Federal Motion M-47, addressing health outcomes of youth exposure to pornography
7. Funded **Restorative Justice Resource Group** multi-media tools to educate the public and to assist in training the region's first case facilitators
8. Funded the development and implementation of the **Restorative Justice Resource Group** 'Trainer of Trainers' course to launch restorative justice in three communities across the CRD
9. **Funded Restorative Justice Resource Group** training for youth participating in Restorative Justice Victoria's Youth Theatre Outreach Project for schools in the CRD
10. Funded Advanced Training of Restorative Justice trainers and volunteers throughout the CRD to better equip programs for Crown and other complex cases
11. Funded **Restorative Justice Victoria** to develop, deliver and evaluate Mentor Training and to produce a manual for province-wide sharing on best practices and procedures
12. Advocated for improved provincial funding for Restorative Justice with the Minister of Justice and Attorney General
13. Brought **Children of the Street Society** to present Taking Care of Ourselves: Taking Care of Others annually in Schools for more than 10 consecutive years at no cost to the school districts
14. Advocated for Youth Mental Health with Resolutions to the Association of Vancouver Island and Coastal Communities and the Union of British Columbia Municipalities
15. Advocated for **School Based Mental Health Clinics**
16. Advocated for the first **Youth Medical Clinic** in a School Setting (Belmont), de- stigmatizing mental health issues and increasing ease of access
17. Advocated for a **Youth Medical Clinic** on the Peninsula along the lines of the Belmont Clinic, with special interest in cultural sensitivity for Indigenous participants and, contributed essential funding
18. Identified gaps in services for youth, youth in care and Youth Mental Health and Addictions Services.
19. Identified youth at risk situations that exist in less visible ways, e.g., couch surfers and the inadequately housed
20. Advocated for supportive youth housing
21. Hosted five years of networking workshops for service providers and youth through the **Bright Ideas Conferences**
22. Co-hosted Training for Regional Police Services with the Office to Combat Trafficking in Persons on several occasions with a huge uptake in training
23. Supported the **Mobile Youth Services Team** with letters of support for additional resources
24. Identified Resource Listings available to community members (CRAT website link)
25. Increased VFCYJC Profile through presentations of the Annual Report to Councils and Boards

APPENDIX E

PROJECTS IN 2019

Educational Opportunities Attended by Members

- Guns and Gangs in BC Workshop, Victoria
- Indigenous Perspectives Training, Victoria
- First Nations Court, Duncan
- Global Youth Justice Conference, Las Vegas

Guest Speakers

- Linda Amy, Executive Director, Victoria Sexual Assault Centre
- Jen Harrison, Youth and Family Engagement Coordinator, Foundry Victoria
- Erich Kelch, Community Engagement Coordinator, CRD First Nations Relations Committee
- Dr. Jennifer Charlesworth, Representative for Children and Youth

Correspondence Sent

- Letter of support to the Victoria & Esquimalt Police Board re: School Liaison Officers
- Letter of support to First Call–BC Child and Youth Advocacy Coalition in support of reforms to the BC Employment Standards Act to better protect youth from workplace injury

Communication

- Facebook page launched July 2019
- Website launched November 2019
- Collation of Local Government and School District responses to the TRC Calls to Action

Initiatives Supported Financially

- Reimagining Masculinities Conference ($3,000)
- RJ Victoria ($2,200)
- CRAT – Taking Care of Ourselves, Taking Care of Others ($1,000)
- Blanket Exercise Sponsorship ($2,503.46)
- Indigenous Cultural Training ($2,250)
- Start the Conversation Mental Health Awareness workshop ($1,000)

APPENDIX F

VANCOUVER CHILDREN, YOUTH, AND FAMILIES ADVISORY COMMITTEE TERMS OF REFERENCE

[*reproduced from City of Vancouver's website, Vancouver.ca*]

Terms of reference

Policy advice

The committee:

- Provides input to City Council and staff about issues of concern;
- Considers any matters which may be referred to the committee by Council or staff and take under consideration matters proposed by the Vancouver Board of Education;
- Reviews and advises Council and staff on the development, implementation and assessment of City policies and services related to children, youth and families;
- Identifies barriers to participation and engagement for children, youth and families;
- Advocates for the best interests of children, youth and families;
- Initiates and works on projects that enhance access, inclusion and engagement of children, youth and families;
- Identifies opportunities and empower children and youth to have a voice in civic decision making;
- Provides recommendations to staff and Council on issues affecting children, youth and families;
- May take positions on policy initiatives from other levels of government within the mandate of the committee; and
- Acts as a family court committee under the BC *Provincial Court Act*, Section 5 and/or a youth justice committee under the *Youth Criminal Justice Act*, Section 18.
    - Read the BC Provincial Court Act, Section 5
    - Read the Youth Criminal Justice Act, Section 18

Collaboration

The committee:

- Works co-operatively with other agencies whose activities affect constituent communities, including initiating and developing relevant projects
- Acts as a resource for staff doing public involvement processes and civic events

Awareness and outreach

The committee:

- Exchanges information with the constituent communities and the general public about relevant programs and issues of interest
- Engages in outreach to disseminate information and encourage participation from constituent communities

Planning and reporting

The committee:

- Produces an annual work plan with specific objectives by no later than April of each year, in consultation with Council and staff liaisons, for distribution to Council and civic departments for information;
- Presents accomplishments and progress to date at the annual Council of Councils event; and
- Submits an annual report to Council describing its accomplishments for the year, including reference to each objective set out in the work plan and any arising issues to which the committee has responded.

Time commitment

Regular meetings will last up to 2.5 hours. A minimum of 1 to 2 additional hours a month is spent on email and other correspondence, other meetings, networking, and promotion. Additional preparation time to review documents and participate in preparatory working sessions for all meetings is required.

Attendance requirement

A member who is absent from more than two consecutive formal meetings without a leave of absence is deemed to have resigned

Terms and Membership Composition

Persons appointed to an advisory body shall meet the following essential criteria:

Not be employed by the City of Vancouver;
Live or work in Vancouver, or have a significant body of experience with issues in Vancouver; and
Be able to demonstrate relevant experience or knowledge, abilities and skills related to the mandate of the advisory body.

Composition:

21 members of the public (11 is quorum) representing the following three age groups in equal thirds: 14 or younger; Between 15 and 21; and 22 or older.

- 2 non-voting Council liaisons; 1 non-voting Park Board Commissioner liaison; 1 non-voting School Board Trustee liaison; 2 non-voting staff liaisons

The appointment of civic members to each advisory committee shall meet the composition objectives set out in the Diversity on Advisory Bodies policy.

Length of term:

Committee members are appointed until December 31, 2020. No member of the public shall serve for more than four consecutive years on the same advisory body. A former member is eligible for reappointment after one year out of office.

Resources for advisory committee members

Accessible events checklist and resources

- Helps for planning events that are equally accessible and inclusive, including for people with disabilities, seniors, and people who identify as 2SLGBTQ+

Code of Conduct Policy

- Sets minimum expectations for the behaviour of Council officials, staff, and advisory body members in carrying out their functions

Guidelines for Advisory Bodies

- Explains the roles and responsibilities of members and liaisons and provides an overview of member procedures

Diversity on Advisory Bodies

- Establishes targets to achieve diverse demographic composition on advisory bodies.

Procedure Bylaw

- Regulates the procedures of Council and its committees and other bodies

APPENDIX G

RICHMOND TERMS OF REFERENCE

The Richmond Family Court Committee (RFCC) is community based and is accountable to the Mayor and City Council, and to the Attorney General of British Columbia. The aim of the RFCC is to examine resources available in the community for family and youth matters, to assist the Family and Youth Court when requested, and to make recommendations to the Attorney General and others as deemed advisable.

MANDATE

[reproduces the formerly mandatory s.5 of the *Provincial Court Act*]

FUNCTION

The RFCC functions as a link between the Court and City Council whereby:

- court personnel and clients may draw on the concern and support of the community;
- family and youth resources may be monitored; and
- community may become educated about the justice system and its effects on children, youth and families.

MEMBERSHIP AND PROCEDURE

The minimum number of members appointed to the RFCC shall be eight (8). The maximum number of members appointed to the RFCC is fifteen (15). Membership is based on a yearly renewable appointment. A quorum is a simple majority of all appointed members (50% plus one).

SELECTION CRITERIA

Prospective appointees will be selected on the basis of the following criteria:

- interest and commitment in promoting the objectives of the RFCC;
- representative of a broad cross-section of business, professional and community-minded individuals who are involved with family and youth law matters, including up to one senior secondary student;
- generally reflective of the communities served by the local Provincial Court hearing family and youth matters
- availability to attend regular monthly meetings;
- availability to attend minimum one session per month during working hours to observe youth and family-related court
- proceedings; and
- present employment does not place appointee in a conflict of interest situation.

DUTIES

Each member should:

- commit a minimum of four to six hours per month to perform court watch duties and attend regular monthly meetings (the Executive can expect to commit six more hours per month);
- be prepared to act on other committees in the community as a representative of the RFCC;
- be familiar with the minutes of the RFCC meeting;
- be knowledgeable of the aims of the RFCC and its mandate;
- be prepared to accept an executive position; and
- be prepared to attend provincial RFCC meetings.

APPENDIX H

RECOMMENDATIONS FOR COMMITTEE REORGANIZATION

- **Clearly define a mandate in a bylaw.**
  - State the purpose and function of the committee.
  - Clarify its delegation to make grants or, alternatively, advise on grants with CRD's Board making the final determination.
- **Institute term limits.**
  - Term limits should be to a maximum of six years, absent exceptional circumstances.
  - After a reasonable absence, a member can again become eligible for appointment for another six years in total.
- **Re-arrange agenda items.**
  - Resource member items should occur at a set time in the meeting, rather than occurring at the end after other agenda items. This will free-up the resource members to leave meetings while the work of the Committee is conducted that is not related to them. The Committee has already instituted this change on its own.
- **Reduce numbers and appoint family-and-youth involved individuals.**
  - The Committee is not required to include elected officials from each participant.
  - It is required to have individuals "with experience in education, health, probation or welfare".
  - It may be better served by a smaller group of elected officials and a larger portion of justice-involved individuals who may perform the work of the Committee.
- **Formalize meetings.**
  - Meetings must comply with the *Community Charter*.
  - Provisions exist allowing meetings to be closed and should be utilized appropriately.
  - Meetings should follow the CRD's Procedures Bylaw. They should be time limited.
- **Restrict speaking times.**
  - Speakers should be restricted to five minutes on an issue absent a vote. Time limits and alternating speaker's lists should be enforced.
  - Members should not have wide-ranging discussions outside the topic on the floor.
- **Set a grant-application intake procedure.**
  - Setting and following a transparent grants procedure with defined intake periods and criteria will allow more organizations to be aware of funding and bring a greater range of applications. It will also avoid any potential for allegations – which the writer considers without merit – of bias, overreaching authority, or any other potential impropriety that could be raised under the current model.
  - Grant restrictions and conditions are already used by the Committee.
- **Follow existing policies rather than create its own.**
  - Adopting existing CRD policies, with reasonable variations approved by the Board, will ensure compliance with privacy, safety, information management, and expenses.
- **Reduce meetings.**
  - Four to six meetings per year of two to three hours in duration would be ideal, if the purpose is to connect service providers and educate elected officials on justice issues. This will ensure more fulsome attendance.
- **Maintain a volunteer registry.**
  - If the Committee is to continue work, such as specific research projects, it should utilize volunteers where appropriate.
  - CRD is equipped to insure volunteers and to provide a corporate umbrella for recruiting volunteers.

- **Maintain records consistent with the obligations of a public authority.**
    - Records should be stored at CRD. This would avoid lengthy annual reports and a potential loss of critical historical documents and information.
    - Meeting meetings should be publicly available and accessible.
- **Consolidate finances in the CRD.**
    - CRD regularly operates funds for committee and commission use and provides limited float chequing accounts for small expenses. There is no need for the Committee or CRAT to have a separate bank account.
    - Approved grants can be issued directly from CRD, as can honorariums and reimbursement of Committee expenses.

Making a difference...together

REPORT TO GOVERNANCE AND FINANCE COMMITTEE
MEETING OF WEDNESDAY, OCTOBER 07, 2020

SUBJECT **Capital Regional District External Grants Update**

ISSUE SUMMARY

This report provides an update on external grants activity since August 12, 2020, through the submission deadline for this report of September 14, 2020.

BACKGROUND

The CRD External Grants Dashboard (Appendix A) summarizes grant applications and calls in progress, awards, and the status of projects still in progress. The report summarizes activities and outcomes since the External Grants Update was presented to the Board on September 9, 2020.

IMPLICATIONS

Financial Implications

Grants / Contributions Awarded

1. 2020 Emergency Operations Centres and Training Program- Community Emergency Preparedness Fund: Electoral Areas (JDF, SSI, SGI) EOC Supplies Procurement Project, approved for $25,000.

One grant remains under news embargo.

Applications Submitted

1. Disaster Mitigation and Adaptation Fund (DMAF): Construction of Regional and Sub-Regional Seismically Resilient Water Supply, for $36.9M.

2. Community Efficiency Financing – Federation of Canadian Municipalities, Expression of Interest submitted for Regional Accessible Energy Retrofit Financing Study.

Core Area Wastewater Treatment Project Update

The CAWTP project is partially funded by the Federal Government and the Province of BC. During the month of August, the CRD did not receive any grant payments for this project. Cumulatively, we have received $339M of the estimated $459M. The remaining (up to) $120M is expected to be received throughout 2020 and into 2021 based on timing of eligible expenditures and achievement of target milestones.

Service Delivery Implications

New Grant Opportunities

Eleven new grant calls were issued during the reporting period. Grant Calls in Progress for which the CRD is eligible to apply are featured in Appendix A (see page 7–8), and in the table below:

Grant	Deadline	Information
Municipal Natural Assets Initiative (MNAI) Call for Expressions of Interest	Not Specified	Provides funding to help develop natural asset inventories.
Community-Based Trauma-Informed Empowerment Projects	04-Sep-20	Provides funding for 2020-21 human trafficking prevention projects for trauma-informed and culturally relevant supports.
Pilot Projects for At-Risk Youth	04-Sep-20	Provides funding for projects that raise awareness of human trafficking among at-risk youth.
Municipal Asset Management Program – Federation of Canadian Municipalities	Phase 1 22-Sep-20 Phase 2 19-Jan-21	Phased deadline approach rather than continuous. Provides funding for a variety of asset management activities.
Natural Resources Canada ISO 50001 program	07-Oct-20	Provides funding for ISO 50001 projects.
Participatory Action Research Grants	16-Oct-20	Accepting applications for the Covene Stream and Investigate Stream for community led health-research projects.
Project Assistance: Arts Infrastructure Program - BC Arts Council	19-Oct-20	To support BC arts and cultural practitioners, for projects such as capital improvements and specialized equipment acquisition.
Active Transportation Planning program	30-Oct-20	Provides funding for new projects for research, consultation, engagement, policy development to incorporate/enhance active transportation.
Museums Assistance Program-Canadian Heritage	02-Nov-20	Provides operational funding to support heritage collections.
Investing in Canada Infrastructure Program – Green Infrastructure-Climate Change Mitigation – CleanBC Communities Fund.	12-Nov-20	Second intake to fund renewable energy, clean-energy transportation, energy efficiency, and clean energy projects.
Infrastructure Planning Grant Program	13-Jan-21	Funding for local governments to develop/improve long-term plans. New 2021 intake.

Forthcoming Funding Initiatives

1. Investing in Canada Infrastructure Program – COVID-19 Resilience Stream. Details to be released.

CONCLUSION

The CRD recognizes grants are a supplementary funding source to address the needs of services provided to the region. The External Grants Update outlines how the CRD continues to integrate and consider these grant opportunities relative to service needs, as well as informing local partners of these opportunities through the grants dashboard. The CRD will continue to provide a summary of activities and outcomes in the External Grants Update on a monthly basis.

RECOMMENDATION

The Governance and Finance Committee recommends to the Capital Regional District Board:
That the CRD External Grants Update be received for information.

Submitted by:	Carlo Vijandre, PMP, FMP, AScT Manager, Asset Management
Concurrence:	Nelson Chan, MBA, CPA, CMA, Chief Financial Officer
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT(S)

Appendix A: External Grants Dashboard

Grants Administration Dashboard — Externally Sourced Grant Funding

STATUS LEGEND: Intent to apply | Work in Progress (=delay) | ☑ Application Done - Outcome pending | Project Done (=payment pending) | ☒ Application Declined | Links to information

GRANT APPLICATIONS IN PROGRESS

Grant Program Links	Application Deadline	Project	Status	Board Resolution	Comments		Grant Ask	% of Total Project Cost
Disaster Mitigation and Adaptation Program	17-Jul-20	Construction of Regional and Sub-Regional Seismically Resilient Water Supply	☑	N/A	IWS - Infrastructure Operations is the lead	$	36,900,000	42%
BC Rural Dividend - Rural Community Development Grants	15-Aug-19	SGI Broadband Connectivity - Planning Project	☑	10-Jul-19	SGI Administration. Approved for $50,000	$	100,000	84%
CleanBC - BC Hydro Commercial Custom Program	N/A	Panorama Energy Recovery Project	☑	N/A	PES - Panorama is the lead	$	200,000	7%
New Horizons for Seniors	21-Jun-19	SSI Library - Air Conditioning Upgrade (Comfort for Seniors)	☒	N/A	PES - Facilities Management is the lead	$	25,000	TBD
Swim to Survive - Lifesaving Society	07-Jun-19	Swim to Survive Day Community Grant for SEAPARC	☑	N/A	PES - SEAPARC is the lead		TBD	TBD
Investing in Canada Infrastructure-CleanBC Communities Fund	27-Mar-19	RNG Initiative at Hartland	☒	13-Mar-19	PES- Environmental Resource Management is the lead	$	17,311,790	73%
FCM - Green Municipal Fund - Water Capital Projects	01-Mar-19	Core Area Wastewater Treatment Project	☑	N/A	Ask for a $3M grant in combination with a $20M loan	$	3,000,000	0.4%
Investing in Canada - Rural and Northern Communities	23-Jan-19	Miners Bay Dock - Mayne Island	☒	12-Dec-18	IWS - Infrastructure Operations is the lead	$	247,423	89%
Investing in Canada - Rural and Northern Communities	23-Jan-19	Wilderness Mountain Supply Improvements	☒	12-Dec-18	IWS - Infrastructure Operations is the lead	$	4,566,673	95%
Investing in Canada - Community, Culture, Recreation	23-Jan-19	SSI-Fernwood Playing Field	☒	12-Dec-18	SSI Administration is the lead	$	584,850	70%
Investing in Canada - Community, Culture, Recreation	23-Jan-19	Mayne Island Regional Trail - Phase One Development	☑	12-Dec-18	PES - Regional Parks is the lead. Approved for $2.7M	$	2,778,393	70%
Canada Nature Fund	15-Aug-18	Acquisition of land for preservation/park use	☑	N/A	EOI submitted; details remain undisclosed		TBA	TBA
Jumpstart Community Development Program	01-Feb-20	Swim Program for Indigenous Children and Youth	☑	N/A	PES - Panorama is the lead	$	2,692	TBC
Island Health Community Wellness Grant	26-Feb-20	Lifeguard Academy for Indigenous Youth	☑	N/A	PES - Panorama is the lead	$	13,264	TBC
Investing in Canada Infrastructure Program – Green Infrastructure – Environmental Quality Program	26-Feb-20	Juan de Fuca Water Distribution Service for Anderson Cove	☑	12-Feb-20	IWS - Infrastructure Operations is the lead	$	1,460,000	71%
Investing in Canada Infrastructure Program – Green Infrastructure – Environmental Quality Program	26-Feb-20	Magic Lake Estates Wastewater System Renewal	☑	12-Feb-20	IWS - Infrastructure Operations is the lead	$	5,390,000	44%
Connecting British Columbia (Network BC and Northern Development Initiative Trust)	15-Feb-20	TELUS applied to extend fibre optic connectivity in JDF	☑	12-Feb-20	TELUS-CRD porovided a letter of support/resolution		TBC	TBC
Broadband Fund-Canadian Radio Television and Telecommunications Commission	30-Apr-20	TELUS applied to extend fibre optic connectivity in JDF	☑	12-Feb-20	TELUS-CRD porovided a letter of support/resolution		TBC	TBC
BC Hydro Sustainable Communities Implementation Fund	12-Feb-20	Capital Region Electric Vehicle Infrastructure Road Map	☑	N/A	PES - Environmental Protection - Climate Action	$	50,000.00	TBC

Grants Administration Dashboard — Externally Sourced Grant Funding

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GRANT APPLICATIONS IN PROGRESS

BC Active Transportation Infrastructure Grants Program: Active Transportation Network Planning Grant and Active Transportation	20-Feb-20	Lower Ganges Road Pathways Phase 2: Booth Canal to Baker Road	☑	12-Feb-20	SSI Administration is the lead. Approved for $490,000.	$ 490,000.00	70.00%
2020 Emergency Operations Centres and Training Program-Community Emergency Preparedness Fund	13-Mar-20	Electoral Areas (JDF, SSI, SGI) EOC Supplies Procurement Project	☑	8-Jul-20	Protective Services is the lead. Approved for $25,000	$ 25,000.00	100.00%
Canada Summer Jobs	24-Feb-20	Summer student funding	☑	N/A	Human Resources is the lead	$ 110,376.00	TBC
Municipal Asset Management Program-FCM	Continuous	Asset Life-Cycle Assessment Policy and Procedures	☑	Required	Asset Management is the lead	$ 50,000.00	80.00%
Government of Canada - Reaching Home Program	22-May-20	Additional Reaching Home COVID-19 Economic Response Plan Funding for Designated Communities and Indigenous Homelessness funding streams	☑	Required	Regional Housing is the lead	$ 710,000.00	TBC
Enabling Accessibility Fund-Small Projects	13-Jul-20	Improving Accessibility - Panorama Recreation & SEAPARC	☑	N/A	Panorama and SEAPARC	$ 100,000.00	86.96%
PlanH Healthy Communities Grant Program	15-Jul-20	Elevating the Conversation around Climate Change and Health in the CRD	☑	N/A	Community Health Network and Planning	$ 15,000.00	84.75%
PlanH Healthy Communities Grant Program	15-Jul-20	Panorama Strategic Planning Process 2021-2025	☑	N/A	PES - Panorama is the lead	$ 15,000.00	60.98%
Community Energy Financing - FCM	13-Aug-20	EOI: Regional Accessible Energy Retrofit Financing Study	☑	Required	PES - Environmetal Protection - Climate Action is the lead.	TBC	TBC
Investing in Canada Infrastructure Program-Community, Culture, and Recreation Stream	01-Oct-20	Elk/Beaver Lake Oxygenation System ($700,000) and Fernwood Elementary School Athletic Field Upgrades ($585,500)	Work in Progress	9-Sep-20	Regional Parks and SSI Administration	$ 1,285,500.00	TBC
Investing in Canada Infrastructure Program-Rural and Northern Communities Stream	22-Oct-20	Wilderness Mountain Water Service ($800,000), Maliview WWTP Upgrading ($2M), and Lyall Harbour Boot Cove Water System Upgrades ($600,000).	Work in Progress	9-Sep-20	IWS and SSI Administration	$ 3,400,000.00	TBC
Investing in Canada Infrastructure Program-CleanBC Communities Fund	12-Nov-20	Panorama Recreation Energy Recovery project	Intent to apply	Required	PES - Panorama is the lead	TBC	TBC
Active Transportation Planning Program	30-Oct-20	SGI Integrated Transportation Mapping project	Intent to apply	Required	SGI Administration is the lead	TBC	TBC
					TOTAL GRANT ASKS IN PROGRESS (EXCLUDING CORE AREA LIQUID WASTE MANAGEMENT)	$ 86,867,436	

Grants Administration Dashboard — Externally Sourced Grant Funding

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CORE AREA LIQUID WASTE MANAGEMENT - GRANT FUNDING STATUS

	Grant Program Links	Contribution Terms and Purpose	Status	Board Resolution	Comments	Grant Award Maximum	Redeemed to Date
CORE AREA GRANTS	Infrastructure Canada - 3P Funding Agreement (Federal funding)	Lesser of 25% of eligible costs or $83.4M for a bio-solids energy centre treatment facility for wastewater sludge.				$ 41,000,000	$ -
	Infrastructure Canada - Building Canada Fund (Federal funding)	Up to 50% of eligible costs to a maximum of $120M for construction of the McLoughlin Point Wastewater Treatment Plant, marine outfall pipe, and completion of the Victoria Harbour crossing.			Funding agreements executed. Construction to start in April 2017 as per March 16, 2017 joint media release (Canada, BC, CRD)	$ 120,000,000	$ 108,000,001
	Infrastructure Canada - Green Infrastructure Fund (Federal funding	Up to 50% of eligible costs to a maximum of $50 M to upgrade Clover Point and Macaulay Point pump stations, implement attenuation tanks, and upgrade existing pump stations and piping systems.				$ 50,000,000	$ 45,000,001
	Provincial Funding	The lesser of 1/3 total cost (excluding land acquisition cost) or $248M for construction of the wastewater treatment plant, the energy centre for sludge treatment, and conveyance system upgrades - all serving the Core Area.		08-Mar-17	CRD Board approved execution of the Provincial Agreement	$ 248,000,000	$ 186,000,000
	TOTALS					$ 459,000,000	$ 339,000,002

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	Grant Program Links	Dept.	Project Deadline	Project	Status	Lead	Project Cost (Estimate)	Grant Award
PROJECTS IN PROGRESS	Bike BC Cycling Infrastructure Program	PES	30-Jun-21	E&N Rail Trail Phase 3: Atkins Ave. to Savory School		PES: Infrastructure Engineering and Facility Management	$ 4,157,536	$ 1,000,000
	Community Resilience Through Arts and Culture Program	CS	31-Jul-20	WASANEC Community Resilience Project		First Nations Relations	$ 15,000	$ 12,000
	Building BC - Community Housing Fund	PPS	2023	Caledonia Housing Project		CRD Housing is the lead. Application is also seeking mortgage subsidy of $666,500 per year. Supported by CRHC resolution 24-Jul-2018.	$ 50,225,725	$ 15,500,000
	Clean Water Wastewater Fund	IWS	31-Mar-18	Port Renfrew Water Main Replacement Project		IWS - Infrastructure Engineering	$ 628,634	$ 488,103
	Urban Deer Cost-Share Program	PPS	15-Mar-19	Mayne Island Fallow Deer Management		PPS - Regional and Strategic Planning is the Lead	$ 52,930	$ 18,500
	Abandoned Boats Program (Assessment)	PES	31-May-20	Abandoned Boats Assessment: Sooke Harbour		Environmental Protection Division	$ 16,175	$ 16,175
	Abandoned Boats Program (Assessment)	PES	31-Mar-20	Capital Region Abandoned Boats Stewardship		Environmental Protection Division	$ 10,400	$ 10,400
	UBCM Community to Community Forum	CS	31-Mar-19	WSANEC Leadership Committee		First Nations Relations-project not completed.	$ 5,750	$ 2,760
	UBCM Community to Community Forum	CS	31-Mar-19	CAO - Band Administrators Lunch		First Nations Relations-project not completed.	$ 2,167	$ 520
	Strategic Wildfire Prevention Initiative - FireSmart	PPS	31-May-19	Saturna - FireSmart Planning & Activities Grant		Protective Services	$ 10,000	$ 10,000
	SSI Community Foundation	SSI	01-Jun-19	For play equipment at Rainbow Pool		SSI Administration	$ 24,425	$ 18,563
	Climate Action Revenue Incentive Program (CARIP)	PES	01-Jun-20	Conditional grant report		PES - Climate Action	$ 69,928	$ 69,928
	Regional District Grant 2019	F&T	15-Jul-19	Regional District Grant - Unconditional		The Province announced the unconditional grants on 2019-06-26	$ 60,000	$ 60,000
	National Disaster Mitigation Program (NDMP)	PES	28-Oct-19	Gardom Pond Decommissioning		Facilities Management and Engineering Services	$ 490,850	$ 460,000
	Island Pathways (SSI) grant from SSI Foundation	PES	31-Dec-19	Development of the Booth to Baker Pathway		SSI Administration. Island Pathways obtained this grant from SSI Foundation to support CRD's work. Total cost to be confirmed.	$ 140,000	$ 100,000

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PROJECTS IN PROGRESS (con't)

Investment in Housing Innovation	PPS	31-May-20	3816 Carey Road Affordable Housing Project		Regional Housing	$ 15,249,662	$ 7,156,662
BC Hydro - Business Energy Saving Incentives Program	PES	31-Mar-20	Panorama LED lighting upgrade		PES - Panorama is the Lead	$ 60,000	$ 21,600
Community Emergency Preparedness Fund	PPS	27-Mar-20	Evaculation Route Planning for Electoral Areas		Protective Services	$ 25,000	$ 25,000
FCM Green Municipal Fund - Brownfield Renewal	WWTP	31-Mar-20	McLoughlin Point: Delineation of Groundwater, Bedrock and Soil Contamination		Core Area WWTP	$ 379,200	$ 175,000
FCM Green Municipal Fund - Brownfield Renewal	WWTP	31-Mar-20	McLoughlin Point: Remediation and Risk Assessment		Core Area WWTP	$ 343,800	$ 171,200
Infrastructure Planning Grant (2017)	PES	31-Mar-20	Bowker Creek Daylighting Feasibility Study		Stormwater-Harbours & Watershed: 10k each for CRD, Oak Bay, Saanich, Victoria)	$ 80,000	$ 40,000
Victoria Foundation Community Grants	PPS	1-Apr-20	Connect & Prepare- Housing Tenant Support		PPS - Regional Housing is the Lead	$ 167,669	$ 20,000
Community Resiliency Investment	PPS	30-Apr-20	FireSmart training in the Electoral Areas: Saturna, Pender, Juan de Fuca, SSI FireSmart Cross-Training		Protective Services	$ 100,000	$ 100,000
SSI Community Foundation	SSI	1-Jun-20	SSI Portlock Park Soccer Goals		SSI Administration	$ 7,147	$ 6,146
UBCM Federal Gas Tax - Strategic Priorities Fund	PES	30-Jun-20	SEAPARC Leisure Complex Expansion		SEAPARC	$ 3,410,406	$ 1,240,000
FCM Green Municipal Fund - Pilot Project	F&T	31-Oct-21	Zero Emissions Fleet Initiative		Risk Management - Climate Action	$ 1,087,000	$ 350,000
BC Rural Dividend	PES	22-Mar-21	Engineering Design for SGI Regional Trails		Regional Parks	$ 200,000	$ 100,000
BC Rural Dividend	SSI	22-Mar-21	Shared Service Business Model		SSI Administration	$ 100,000	$ 90,750
Invasive Plant Management	PES	31-Mar-21	Invasive Plant Management Project		Environmental Protection Division	$ 32,000	$ 32,000
Abandoned Boats Program (Education and Awareness)	PES	31-Mar-20	Capital Region Abandoned Boats Stewardship		Environmental Protection Division. Received $36,700.	$ 66,700	$ 50,000
Infrastructure Planning Grant	SSI	31-Mar-21	North Salt Spring Waterworks Infrastructure Assessment		SSI Administration	$ 10,000	$ 10,000
Child Care Space Creation Program	SSI	15-Apr-21	SSI PARC Licensed Preschool Child Care Space		SSI Administration	$ 296,460	$ 214,600
Affordable Rental Innovation - CMHC	PPS	31-Dec-21	Regional Housing First Program		Regional Housing: Partners include CRD, BC Housing, CMHC at $40M each.	$ 120,000,000	$ 120,000,000
Reaching Home-Designated Communities	PPS	31-Mar-24	For community homelessness service projects		PPS: Regional Housing	$ 4,772,699	$ 4,772,699

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PROJECTS IN PROGRESS (con't)	Reaching Home-Indigenous Homelessness	PPS	31-Mar-21	For community homelessness service projects		PPS: Regional Housing		TBC	$ 674,512
	Reaching Home-COVID-19 Response	PPS	31-Mar-21	For community homelessness service projects		PPS: Regional Housing		TBC	$ 1,312,852
	National Disaster Mitigation Program	PES	30-Jun-20	Capital Region Coastal Flood Inundation Mapping		PES - Environmetal Protection -Climate Action is the lead.	$ 750,000	$	705,000
	Island Health Community Wellness	PPS	1-Mar-20	Monitoring the Determinants of Health and Wellness in the Capital Regional		Community Social Planning Council	$ 50,000	$	50,000
	BC Hydro Sustainable Communities Program	PES	30-Sep-21	BC Hydro Community Energy Manager staff support		PES - Environmental Protection - Climate Action is the lead		TBC	$ 100,000
	City of Victoria Housing Reserve Fund	PPS	2023	Michigan Housing Project		PPS-Regional Housing-CRHC	$ 1,395,000	$	1,020,000
	Rick Hansen Foundation BC Accessibility Grants	PES	30-Sep-20	Panorama Accessibility Improvements		PES - Panorama is the Lead		TBC	$ 20,000
	Provincial Urban Deer Cost - Sharing Program	SGI	Summer 2020	Program to reduce fallow deer populations on Mayne Island		SGI Administration		TBC	TBC
	Pacific Institute for Climate Solutions Internship Program	PES	31-Dec-20	Climate action student intern		PES - Environmental Protection - Climate Action is the lead		TBC	$ 12,000
	UBCM-Community Emergency Preparedness Fund-Volunteer & Composite Fire Departments Equipment & Training	PPS	TBD	Joint CRD Volunteer Fire Department Equiptment and Training Project		PPS	$ 128,372	$	117,966
	UBCM-Community Resiliency Investment Program-FireSmart Community Funding & Supports	PPS	TBD	CRD Firesmart Project 2020		Parks and PPS	$ 50,900	$	49,900
	Community to Community Forum	PES	31-Mar-20	Watershed Management Engagement: Elk/ Beaver Lake		PES-Environmental Protection		TBC	$ 4,125
	UBCM Housing Needs Reports Program Grant	PPS	2021	Regional Housing Needs Report-Capital Region		CRD Development and Planning Advisory Committee	$ 150,000	$	150,000
	Community Child Care Space Creation Program	SSI	TBD	Multipurpose room for licensed child care and recreation programs		SSI Administration		TBC	$ 832,725
	Community Emergency Preparedness Fund - Emergency Support Services	PPS	2021	Electoral Area Equipment and Training for Emergency Support Services Modernization		Protective Services		TBC	$ 24,983
GRANTS AWARDED as of September 14, 2020							**$ 218,114,805**	**$**	**165,750,434**

Grants Administration Dashboard — Externally Sourced Grant Funding

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	Grant Program Links	Launch Date	Application Deadline	Resolution Needed	Departments Alerted		Status
GRANT CALLS IN PROGRESS	Community Gaming Grant	Ongoing					
	Public Safety Programs		31-Aug-20	Not applicable; CRD's role can be to support a not-for-profit in pursuing these grants.	All		Grant alert sent. Featured in CRD Grants Weekly 2019-06-24
	Human and Social Programs		30-Nov-20				
	Green Municipal Fund - Plans, Feasibility Studies, Pilot Projects Capital Projects	Ongoing	Ongoing	Depends on $ value	Standing Item		
	Community Emergency Preparedness Fund - CEPF Evacuation Route Planning	29-May-19	06-Nov-20	Yes	All		Grant alert sent. Featured in CRD Grants Weekly 2019-05-31
	Address Improvement Grant	Ongoing	Ongoing	Not Specified	IT		Grant alert sent. Featured in CRD Grants Weekly 2019-07-12
	BC Hydro Sustainable Communities Program	Ongoing	Ongoing	N/A	Standing Item		
	Efficiency BC - Online hub of energy efficiency initiatives	Ongoing	Ongoing	N/A	Standing Item		
	Federal Gas Tax - Community Works Fund Update	Ongoing	Ongoing	N/A	Standing Item		Comprehensive CRD process in place for assignment of funds to Electoral Area Projects. Featured in CRD Grants Weekly 2019-04-05
	Ship-source Oil Pollution Fund	Ongoing	Ongoing	TBD	Standing Item		Grant alert sent; featured in CRD Grants Weekly 2019-05-03
	Ecological Gifts Program	N/A	Ongoing	Not Specified	All		Grant alert sent
	Family Violence Initiative	N/A	Ongoing	Not Specified	All		Grant alert sent
	Multi-sectoral Partnerships to Promote Healthy living and Prevent Chronic Disease – Canada's Tobacco Strategy	N/A	Ongoing	Not Specified	All		Grant alert sent
	Federal Lands Initiative	N/A	Ongoing	Not Specified	All		Grant alert sent
	National Housing Co-Investment Fund (New Construction, Housing Repair and Renewal, and Rental Construction Financing)	N/A	Ongoing	Not Specified	All		Grant alert sent
	Sustainable Affordable Housing-Green Municipal Fund-FCM	N/A	Continuous	Required	All		Grant alert sent

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GRANT CALLS IN PROGRESS

Museum Assistance Program - Special COVID 19 Emergency Support Fund for Heritage Organizations	N/A	01-Sep-20	No	All	Grant alert sent
National Strategy to Combat Human Trafficking	N/A	04-Sep-20	Not Specified	All	Grant alert sent
Community-Based Trauma-Informed Empowerment Projects	N/A	04-Sep-20	Not Specified	All	Grant alert sent
Pilot Projects for At-Risk Youth	N/A	04-Sep-20	Not Specified	All	Grant alert sent
Community to Community Forum-UBCM	N/A	04-Sep-20	No	All	Grant alert sent
Zero Emissions Vehicle Awareness Initiative	N/A	08-Sep-20	Not Specified	All	Grant alert sent
Asset Management Planning Program-UBCM	N/A	11-Sep-20	Required	All	Grant alert sent
Public Legal Education and Information – Workplace Sexual Harassment Component – Family Violence	N/A	14-Sep-20	TBC	All	Grant alert sent
Connecting British Columbia Program (Phase 3)	N/A	15-Sep-20	Not Specified	All	Grant alert sent
AgriCompetitiveness Program	01-Jul-20	15-Sep-20	No	All	Grant alert sent
Municipal Asset Management Program - FCM	N/A	22-Sep-20	Required	All	Grant alert sent
Community Anniversaries-Building Communities Through Arts and Heritage	N/A	30-Sep-20	Not Specified	All	Grant alert sent
Investing in Canada Infrastructure Program-Community, Culture and Recreation	25-Jun-20	01-Oct-20	Required	All	Grant alert sent
Natural Resources Canada ISO 50001 Program	N/A	07-Oct-20	Not Specified	All	Grant alert sent

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GRANT CALLS IN PROGRESS	Community Resiliency Investment Program	N/A	09-Oct-20	Required	All	Grant alert sent
	UBCM-Housing Needs Report Program	N/A	16-Oct-20	Required	All	Grant alert sent
	Participatory Action Research Grants	Ongoing	16-Oct-20	No	Standing Item	Convene Grants and Investigate Grants upcoming deadlines of October 16, 2020
	Project Assistance: Arts Infrastructure Program-BC Arts Council	N/A	19-Oct-20	Not Specified	All	Grant alert sent
	Investing in Canada Infrastructure Program-Rural and Northern Communities	25-Jun-20	22-Oct-20	Required	All	Grant alert sent
	Community Emergency Preparedness Fund - Structural Flood Mitigation Program-UBCM	N/A	23-Oct-20	Required	All	Grant alert sent
	Green Municipal Fund - Community Energy Financing Program - Home Energy upgrades	30-Jun-20	30-Oct-20	Required	All	Grant alert sent
	Active Transportation Planning Program	N/A	30-Oct-20	Required	All	Grant alert sent
	Childcare BC New Spaces Fund	02-Jul-20	01-Nov-20	Required	All	Grant alert sent
	Museums Assistance Program-Canadian Heritage	Ongoing	02-Nov-20	No	All	Grant alert sent
	Investing in Canada Infrastructure Program-CleanBC Communities Fund	12-Aug-20	12-Nov-20	Required	All	Grant alert sent
	Infrastructure Planning Grant Program	25-Jun-20	13-Jan-21	Required	All	Grant alert sent
	Local Food Infrastructure Fund	N/A	31-Dec-23	Required	All	Grant alert sent
	Municipal Natural Assets Initiative-Expressions of Interest	08-Oct-19	TBD	Not Specified	All	Grant alert sent

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	Funding Sources / Plans	Description	Possible Timing	Links
FUNDING INITIATIVES: ONGOING SCAN	UBCM Funding and Resource updates 2020	List of Local Government Programs and Services		
	GRANTS FORECAST	See website links (*if available*) in the right-most column for program information available to date. Note that typically, infrastructure grants will require SHOVEL READY projects (e.g: Asset plan is current; design drawings and environmental assessments are complete; matching funding - usually 50%- is assigned.)		UBCM Grants: Age-Friendly Communities, anticipated 2021 Community Energy Leadership Program (CELP) 2019 launched; Next round unknown Celebrate Canada-Canadian Heritage Grants Investing in Canada Infrastructure Program: COVID-19 Resilience Stream BC'S Restart Plan

Making a difference...together

REPORT TO HOSPITALS AND HOUSING COMMITTEE
MEETING OF WEDNESDAY, OCTOBER 07, 2020

SUBJECT **1224 Richardson Housing Agreement and Bylaw**

ISSUE SUMMARY

The *Local Government Act* requires a bylaw to enable the Capital Regional District (CRD) to enter into a developer-initiated housing agreement to administer four below-market home ownership units at a housing development proposed for 1224 Richardson Street in Victoria.

BACKGROUND

The CRD currently administers the resale control agreements on a number of below-market home ownership units within existing and proposed housing developments throughout the region.

The CRD's Regional Housing Division has been in discussions with the City of Victoria and 1224 Richardson Property Corp (the Developer) regarding a proposed housing development that will include three price-restricted, below-market one-bedroom and one price restricted, below-market two-bedroom housing units as part of the project. The City of Victoria and the Developer have requested the CRD administer resales of the below-market units.

The units are part of a proposed 24 unit development located at 1224 Richardson Street in the City of Victoria. The terms of the Bylaw and Housing Agreement (Appendix A) require all sales of below-market units be restricted to a sale price no higher than 90% of market value, as determined by an appraisal. Initial and subsequent sales will require a qualifying income level, which can be responsive to market conditions as they relate to increases in cost of living as determined by Statistics Canada.

A resale control and administrative procedure based on best practice has been prepared within the Agreement to ensure the units may only be sold as described, and, in cases of hardship, may be rented at a below-market rate for up to two years at which time they must be re-occupied with an approved occupant or relisted for sale. The Agreement provides for cost-recovery measures to pay for the CRD's administrative services. Staff are taking the same resale control approach consistent with projects previously approved by the CRD Board whereby the CRD may take control in its own name in order to most effectively administer the provisions for any below market unit.

The City of Victoria and the Developer have requested the CRD adopt this Agreement as a covenant and housing agreement within Section 483 of the *Local Government Act*, which further requires the CRD do so by way of bylaw.

ALTERNATIVES

Alternative 1
That the Hospitals and Housing Committee recommends to the Capital Regional District Board:
a) That Bylaw No. 4369, "Resale Control and Housing Agreement Bylaw (1224 Richardson Street), 2020" be introduced and read a first, second and third time; and
b) That Bylaw No. 4369 be adopted.

Alternative 2
That the 1224 Richardson Housing Agreement and Bylaw report be referred back to staff with alternative direction from the Hospitals and Housing Committee.

IMPLICATIONS

Financial Implications
The CRD is assessing a one-time $3,500 fee to the developer to cover CRD costs associated with setting up the Housing Agreement and facilitating the approval of the bylaw. Administration of the resale control function and ensuring compliance with the terms of use of the affordable units has a cost associated with it, which is factored into the program by charging the buyer a fee of 0.5% of the gross selling price of the unit at time of completion (e.g., $1,500 on a $300,000 sale). Staff review and monitor the administration of previously approved projects on the basis of the amount of staff time and other resources in order to ensure full cost recovery for the provided service. It should be noted that the administration fee will change with market fluctuations, where required.

Social Implications
For the households who become able to purchase and occupy these units through a discounted price, the economic implications of home ownership will be significant. The measure of resale control allows the homeowner the opportunity to build a modest level of equity while also providing them with security of tenure.

CONCLUSION

The CRD has experience unique in the region, and the potential to enter into agreements with developers to administer the sale of affordable home ownership units aligns with the goals and objectives of the Regional Housing Affordability Strategy. The Developer and CRD staff have negotiated the Agreement and the Developer has recommended a household income limit that has been identified as acceptable and will be presented to City of Victoria Council within the rezoning application. The Agreement includes the terms of use and matters related to the resale of units, and the Developer has executed the Agreement. The CRD has developed administrative procedures that ensure unit use conforms to the Agreement terms, provides reasonable authority for the CRD to act when use is non-conforming and provides the CRD adequate cost recovery for the administration of the program.

RECOMMENDATION

That the Hospitals and Housing Committee recommends to the Capital Regional District Board:
a) That Bylaw No. 4369, "Resale Control and Housing Agreement Bylaw (1224 Richardson Street), 2020" be introduced and read a first, second and third time; and
b) That Bylaw No. 4369 be adopted.

Submitted by:	John Reilly, MSW RSW, Manager Housing Planning and Programs
Concurrence:	Kevin Lorette, P. Eng., MBA, General Manager, Planning & Protective Services
Concurrence:	Kristen Morley, J.D., General Manager, Corporate Services & Corporate Officer
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT(S)

Attachment: Appendix A – Bylaw No. 4369 "Resale Control and Housing Agreement Bylaw (1224 Richardson), 2020"

CAPITAL REGIONAL DISTRICT
BYLAW NO. 4369

****

A BYLAW TO AUTHORIZE A HOUSING AGREEMENT (BYLAW NO. 4369)

****

WHEREAS:

A. The owner of land legally described as Parcel C (DD 38188I) of section 26, Fairfield Farm Estate, Victoria City, Plan 13, PID: 009-343-211 wishes to develop it in the City of Victoria to provide, among a strata development of market housing, four (4) units of affordable housing;

B. Under the *Local Government Act*, RSBC 2015, c 1, section 483, the Capital Regional District may enter into an agreement, by bylaw, to ensure the availability of the housing units to certain classes of persons identified in the agreement, the administration and management of the units, rents, leases, and sale prices that may be charged, and the rates at which these may be increased over time as specified in the agreement or as determined by a formula; and under the *Land Title Act*, RSBC 1996, c 250, section 219, it may place a covenant on property to restrict its use and alienation; and

C. Whereas the Capital Regional District Board wishes to enter into such a housing agreement and covenant to secure the affordable housing;

NOW THEREFORE, the Capital Regional District Board in open meeting enacts as follows:

1 The Capital Regional District is authorized to enter into the *Local Government Act* section 483 housing agreement and *Land Title Act* section 219 covenant attached to this Bylaw as Appendix 1 (the “Housing Agreement”).

2 The Chair of the Capital Regional District is authorized to execute the Housing Agreement and the Corporate Officer or designate is authorized to sign and file in the Land Title Office a notice of the Housing Agreement, as required by the *Local Government Act*.

3 This bylaw may be cited for all purposes as “Resale Control and Housing Agreement Bylaw (1224 Richardson Road), 2020".

READ A FIRST TIME THIS	__	day of	2020
READ A SECOND TIME THIS	__	day of	2020
READ A THIRD TIME THIS	__	day of	2020
ADOPTED THIS	__	day of	2020

CHAIR

CORPORATE OFFICER

LAND TITLE ACT
FORM C (Section 233) CHARGE
GENERAL INSTRUMENT - PART 1 Province of British Columbia

Your electronic signature is a representation that you are a designate authorized to certify this document under section 168.4 of the *Land Title Act*, RSBC 1996 c.250, that you certify this document under section 168.41(4) of the act, and that an execution copy, or a true copy of that execution copy, is in your possession.

1. APPLICATION: (Name, address, phone number of applicant, applicant's solicitor or agent)

Cook Roberts LLP
Barristers and Solicitors
7th Floor, 1175 Douglas Street
Victoria BC V8W 2E1

Telephone: (250) 385-1411
File No.: 114760/JVC/dh

Deduct LTSA Fees? Yes ☑

2. PARCEL IDENTIFIER AND LEGAL DESCRIPTION OF LAND:

[PID] [LEGAL DESCRIPTION]

009-343-211 PARCEL C (DD 38188I) OF SECTION 26, FAIRFIELD FARM ESTATE, VICTORIA CITY, PLAN 13

STC? YES ☐

3. NATURE OF INTEREST CHARGE NO. ADDITIONAL INFORMATION

SEE SCHEDULE

4. TERMS: Part 2 of this instrument consists of (select one only)
(a) ☐ Filed Standard Charge Terms D.F. No. (b) ☑ Express Charge Terms Annexed as Part 2
A selection of (a) includes any additional or modified terms referred to in Item 7 or in a schedule annexed to this instrument.

5. TRANSFEROR(S):

1224 RICHARDSON PROPERTY CORP. (INC. NO. BC1192230)
COASTAL COMMUNITY CREDIT UNION (INC. NO. FI 114)

6. TRANSFEREE(S): (including postal address(es) and postal code(s))

CAPITAL REGIONAL DISTRICT

625 FISGARD STREET
VICTORIA BRITISH COLUMBIA
V8W 1R7 CANADA

Incorporation No
0

7. ADDITIONAL OR MODIFIED TERMS:
N/A

8. EXECUTION(S): This instrument creates, assigns, modifies, enlarges, discharges or governs the priority of the interest(s) described in Item 3 and the Transferor(s) and every other signatory agree to be bound by this instrument, and acknowledge(s) receipt of a true copy of the filed standard charge terms, if any.

Officer Signature(s)

JOHN VAN CUYLENBORG
Solicitor
7th Floor, 1175 Douglas Street
Victoria, B.C. V8W 2E1
Phone: 250-385-1411 Fax 250-413-3300
E-mail: johnvc@cookroberts.bc.ca

Execution Date		
Y	M	D
20	09	22

Transferor(s) Signature(s)

1224 RICHARDSON PROPERTY CORP. by its Authorized Signatory (ies):

Tim Stemp

Gene Miller

OFFICER CERTIFICATION:
Your signature constitutes a representation that you are a solicitor, notary public or other person authorized by the *Evidence Act*, R.S.B.C. 1996, c.124, to take affidavits for use in British Columbia and certifies the matters set out in Part 5 of the *Land Title Act* as they pertain to the execution of this instrument.

LAND TITLE ACT
FORM D

EXECUTIONS CONTINUED

Officer Signature(s)

Execution Date		
Y	M	D
20	09	25

CHARLES BLANARU
Barrister & Solicitor
#200 - 1808 Bowen Road
Nanaimo, B.C. V9S 5W4
Ph. (250) 753 2202 Fax: (250) 753 3949

Transferor / Borrower / Party Signature(s)

COASTAL COMMUNITY CREDIT UNION by its Authorized Signatory(ies):

Print Name: Alana Halaliku, FCUIC, BBA
Senior Business Relationship Manager
Nanaimo Business Centre

Print Name: DAVE BOEHM

CAPITAL REGIONAL DISTRICT by its Authorized Signatory(ies):

Print Name:

Print Name:

OFFICER CERTIFICATION:
Your signature constitutes a representation that you are a solicitor, notary public or other person authorized by the *Evidence Act*, R.S.B.C. 1996, c.124, to take affidavits for use in British Columbia and certifies the matters set out in Part 5 of the *Land Title Act* as they pertain to the execution of this instrument.

LAND TITLE ACT
FORM E

SCHEDULE

NATURE OF INTEREST	CHARGE NO.	ADDITIONAL INFORMATION
Covenant		Section 219 page 8 Paragraph 2.1
NATURE OF INTEREST	CHARGE NO.	ADDITIONAL INFORMATION
Rent Charge		Page 12 Paragraph 2.4
NATURE OF INTEREST	CHARGE NO.	ADDITIONAL INFORMATION
Option to Purchase		Page 14 Paragraph 3.1
NATURE OF INTEREST	CHARGE NO.	ADDITIONAL INFORMATION
Priority Agreement		Granting the Section 219 Covenant with 3 registration numbers less than this priority agreement priority over Mortgage CA7295489 and Assignment of Rents CA7295490 Page 19
NATURE OF INTEREST	CHARGE NO.	ADDITIONAL INFORMATION
Priority Agreement		Granting the Rent Charge with 3 registration numbers less than this priority agreement priority over Mortgage CA7295489 and Assignment of Rents CA7295490 Page 19
NATURE OF INTEREST	CHARGE NO.	ADDITIONAL INFORMATION
Priority Agreement		Granting the Option to Purchase with 3 registration numbers less than this priority agreement priority over Mortgage CA7295489 and Assignment of Rents CA7295490 Page 19

TERMS OF INSTRUMENT – PART 2

SECTION 219 COVENANT AND HOUSING AGREEMENT

WHEREAS:

A. 1224 Richardson Property Corp. (the "**Developer**") is the registered owner of the Lands described in Item 2 of General Instrument – Part 1 and the Developer intends to complete a multi-unit residential development on the Lands (the "**Strata Development**") and shall designate four (4) affordable in perpetuity units, comprising three (3) one-bedroom and one (1) two-bedroom units, of the strata lots to be created by the strata plan for the Strata Development as the Affordable Units to which strata lots this Agreement will apply.

B. The Developer intends to build the Affordable Units to ensure the availability of affordable housing in Victoria, British Columbia.

C. To ensure that each Affordable Unit continues to be available as affordable housing, the Developer has agreed to grant the Capital Regional District ("**CRD**"):

(a) a covenant under Section 219 of the *Land Title Act* (the "**Covenant**") and a housing agreement under Section 483 of the Local Government Act setting out, amongst other things, the procedure to be followed in connection with any sale of an Affordable Unit as well as restrictions on the sale price on use and rental of an Affordable Unit;

(b) an option to purchase an Affordable Unit if it is sold, rented or used in breach of the Covenant; and

D. For clarity, the Owner acknowledges and agrees that:

(a) this Agreement constitutes both a covenant under Section 219 of the Land Title Act and a housing agreement entered into under Section 483 of the Local Government Act;

(b) the CRD is required to file a notice of housing agreement in the Land Title Office against title to the Land; and

(c) once such notice is filed, this Agreement binds all persons who acquire an interest in the Land as a housing agreement under Section 483 of the Local Government Act.

NOW THEREFORE in consideration of the mutual covenants set out below and other good and valuable consideration (the receipt and sufficiency of which are acknowledged by each of the parties), the parties agree as follows:

SECTION 1.
INTERPRETATION

1.1 **Definitions**. In this Agreement:

1.1.1 "Affordable Unit" or "Affordable Units" shall mean the four (4) strata lots to be designated by the Developer within the Strata Development as the strata lots to which this Agreement shall apply, and shall be comprised of three (3) one-bedroom and one (1) two-bedroom units;

1.1.2 "Affordable Rate" means a rate determined from time-to-time by the NPO in its sole discretion with reference to BC Government guidelines, if any;

1.1.3 "Agreement" means Parts 1 and 2 of this General Instrument;

1.1.4 "Appraisal" has the meaning stated in Section 2.2;

1.1.5 "Appraisal Review Period" has the meaning stated in Section 2.2.4.1;

1.1.6 "Appraiser" means an appraiser accredited by the Appraisal Institute of Canada and duly qualified to appraise an Affordable Unit and on an approved list maintained by the NPO, if any;

1.1.7 "Approved Lender" means an "approved lender" (as defined in the *National Housing Act*, R.S.C. 1985, c. N-11) which holds an Insured Mortgage of an Affordable Unit;

1.1.8 "Below Market Value" means 90% of the Fair Market Value of the Affordable Unit from time to time;

1.1.9 "Business Day" means any day other than Saturday, Sunday or a statutory holiday in the Province of British Columbia;

1.1.10 "Closing Date" means the 30th day after the Notice Date, or the first Business Day thereafter that the LTO is open for business to the public;

1.1.11 "CMHC" means Canada Mortgage and Housing Corporation or any successor thereto;

1.1.12 "Covenant" has the meaning stated in Recital C and is the covenant set out in Section 2.1;

1.1.13 "CRD" has the meaning stated in Recital C;

1.1.14 "Developer" has the meaning stated in Recital A;

1.1.15 "Environmental Law" means any applicable federal, provincial or municipal laws pertaining to the presence, handling, release or removal of Hazardous Substances;

1.1.16 "Fair Market Value" of an Affordable Unit means the purchase price from time to time which a willing purchaser would pay to a willing vendor, dealing at arm's length from each other, for an Affordable Unit, unencumbered with the exception of Permitted Encumbrances and without the benefit of a parking stall or other parking entitlement;

1.1.17 "General Instrument - Part 1" means the General Instrument - Part 1 to which this Terms of Instrument - Part 2 is attached;

1.1.18 "Hazardous Substances" collectively means contaminants, pollutants or other substances which are hazardous or dangerous to the health of humans, animals or plants or to the environment and includes substances defined as hazardous substances or special waste under any law, regulation or order of a Statutory Authority;

1.1.19 "Immediate Family" means grandparent, parent, sibling, spouse, common-law partner, son or daughter;

1.1.20 "Insured Mortgage" means a mortgage insured pursuant to the *National Housing Act*, R.S.C. 1985, c. N-11;

1.1.21 "LTO" means the Land Title Office for the jurisdiction in which an Affordable Unit is located;

1.1.22 "Notice" means any written notice which CRD may deliver to the Owner under Section 3.3, exercising the Option;

1.1.23 "Notice Date" means the day on which the Owner is deemed by Section 6.2 to have received the Notice;

1.1.24 "NPO" means the Capital Region Housing Corporation or other non-profit housing organization or Person retained by CRD from time to time to administer the sale of the Affordable Units and to manage the rental of the Affordable Units;

1.1.25 "NPO Appraisal" has the meaning stated in Section 2.2.4.1;

1.1.26 "Offer" has the meaning stated in Section 2.2;

1.1.27 "Option" means the option to purchase granted by the Developer and the Owner to CRD under Section 3.1;

1.1.28 "Option Purchase Price" means:

(1) 95% of the Below Market Value; or

(2) if the Owner has granted a bona fide arm's length mortgage or mortgages of the Affordable Unit to an Approved Lender which, as at the Closing Date, secures in aggregate an amount which exceeds 95% of the Below Market Value, the amount owing under and required to discharge the mortgage or mortgages to the Approved Lender as at the Closing Date;

1.1.29 "Owner" means the registered owner of an Affordable Unit from time to time and includes the Developer in its capacity as developer of the Affordable Units until the first conveyance to a Qualified Buyer, and their respective heirs, legal representatives, successors and assigns;

1.1.30 "Permitted Encumbrances" means those charges or encumbrances stated in Schedule "A" and any other encumbrances approved as required by the City of Victoria or Developer from time to time to complete the Strata Development or as in writing by CRD but shall not include any mortgage or other financial encumbrance and shall not include this Agreement;

1.1.31 "Person" means any individual, society, corporation, partnership, trustee, administrator, legal representative, Statutory Authority or other legal entity;

1.1.32 "Personal Property" means all lighting fixtures, appliances, equipment, cabinetry, affixed carpeting, drapes and blinds located within an Affordable Unit (except to the extent otherwise agreed in writing by CRD) but does not include an Owner's personal effects;

1.1.33 "Proceeding" has the meaning stated in Section 2.3.1;

1.1.34 "Project" means the Strata Development of which the Affordable Units will be a part and comprises all of the Lands referred to in Item 2 of the General Instrument - Part 1;

1.1.35 "Property" means the Affordable Unit and all Personal Property within the Affordable Unit;

1.1.36 "Qualified Buyer" means an individual who meets the criteria stated in Schedule "B";

1.1.37 "Statutory Authority" means any federal, provincial or municipal governmental authority which has jurisdiction over any matter referred to in this Agreement;

1.1.38 "Term" means the period commencing on the date of registration of this Agreement in the LTO and ending on the earlier of (a) the date which is ninety- nine (99) years thereafter, and (b) the date of any destruction or statutorily deemed destruction of the Project;

1.1.39 "Transaction" means the transfer of an Affordable Unit from the Owner to CRD;

1.1.40 "Transfer" means an instrument in a statutorily prescribed form by which the Owner transfers title to the Affordable Unit to CRD.

1.2 **Time**. Time will be of the essence of this Agreement. If any party expressly or impliedly waives this requirement, that party may reinstate it by delivering notice to the other party. If a time is specified in this Agreement for observing or performing any obligation, such time will be local time in Victoria, British Columbia.

1.3 **Governing Law**. This Agreement will be governed by and construed and enforced in accordance with the laws of British Columbia and the laws of Canada applicable in British Columbia.

1.4 **References**. In this Agreement, words importing the singular include the plural and vice versa, and words importing gender include all genders.

1.5 **Construction**. The division of this Agreement into sections and the use of headings are for convenience of reference only and are not intended to govern, limit or aid in the interpretation of this Agreement. The wording of this Agreement will be construed simply, according to its fair meaning, and not strictly for or against any party.

1.6 **Validity of Provisions**. If a Court of competent jurisdiction finds that any provision contained in this Agreement is invalid, illegal or unenforceable, such invalidity, illegality or unenforceability will not affect any other provision of this Agreement which will be construed as if such invalid, illegal or unenforceable provision had never existed and such other provisions will be enforceable to the fullest extent permitted at law.

1.7 **No Waiver**. Failure by either party to exercise any of its rights, powers or remedies hereunder or its delay to do so, will not be interpreted as a waiver of those rights, powers or remedies except in the case of a written waiver. No waiver of a particular right will be deemed to be a waiver of that right in any other instance or a waiver of any other right.

1.8 **Statutes**. Any reference to a statute and to any regulations under that statute means the statute and regulations as amended or replaced from time to time.

1.9 **Remedies**. Any party to this Agreement, in addition to its rights under this Agreement or at law, will be entitled to all equitable remedies including specific performance, injunction and/or declaratory relief, to enforce its rights under this Agreement. No reference to or exercise of any specific right or remedy under this Agreement or at law or in equity by any party will prejudice or preclude that party from exercising any other such right or remedy. No such right or remedy will be exclusive or dependent upon any other such right or remedy, but any party, from time to time, may exercise any one or more of such rights or remedies independently, successively or in combination. The Owner acknowledges that specific performance, injunctive relief (mandatory or otherwise) or other equitable relief may be the only adequate remedy for a default by the Owner under this Agreement.

1.10 **Schedules**. The following Schedules are attached to and form integral parts of this Agreement:

Schedule "A" Permitted Encumbrances
Schedule "B" Qualified Buyer Criteria

SECTION 2.
SECTION 219 COVENANT

2.1 **Covenant.** The Owner hereby covenants with CRD that:

(a) the Affordable Unit will not be sold, assigned or otherwise transferred otherwise than:

(i) to a Qualified Buyer;

(ii) for a selling price not greater than the Below Market Value;

(iii) subject to the Covenant and the Option; and

(iv) in a way which complies with Section 2.2, or to CRD under Section 3;

(b) the Affordable Unit will not at any time be subject to a conventional high ratio mortgage or mortgages which, in total, secure an amount which exceeds 95% of the Below Market Value; and

(c) the Owner shall not permit (whether by renting or otherwise) any person other than the Owner and members of the owner's Immediate Family to occupy the Affordable Unit, and shall not use or permit the premises to be used solely for conducting a business or profession,

and the Owner and CRD agree that, subject to Section 2.3 the covenant set out above will be registered as a charge against the Affordable Unit and run with the Affordable Unit for the Term.

2.2 **Procedure for Sale of Affordable Unit.**

2.2.1 **Owner Notifies NPO of Intention to Sell.**

If at any time after the first conveyance of an Affordable Unit by the Developer, the Owner wishes to sell, assign or otherwise transfer the Affordable Unit, the Owner will do so in accordance with a bona fide arm's length agreement of purchase and sale (or as a court may order in a proceeding to enforce a mortgage of the Affordable Unit) and the Owner will, prior to:

(a) listing or offering the Affordable Unit for sale; or

(b) accepting an offer to purchase the Affordable Unit,

deliver to the NPO written notice of their intention to sell an Affordable Unit, such notice to be in the form required by the NPO.

2.2.2 **Owner Retains Appraiser.**

Within 7 days after the Owner notifies the NPO of their intention to sell an Affordable Unit, the Owner will select an Appraiser to be retained by the Owner to undertake an appraisal (the "Owner Appraisal") of the Fair Market Value of the Affordable Unit. The Owner will deliver a copy of the Owner Appraisal to the NPO within 7 days after the Owner receives the Owner Appraisal.

2.2.3 **Owner and NPO Agree on Maximum Selling Price.**

If the Owner and the NPO agree within 7 days after the Owner Appraisal is delivered to the NPO that the Fair Market Value of the Affordable Unit is as stated in the Owner Appraisal, the Fair Market Value stated in the Owner Appraisal, less 10%, will be the maximum price at which the Owner will be permitted to sell the Affordable Unit during a period of 6 months commencing on the effective date of the Owner Appraisal.

2.2.4 **Owner and NPO Do Not Agree on Maximum Selling Price.**

2.2.4.1 If the Owner and the NPO do not agree within 7 days (the "Appraisal Review Period") after the Owner Appraisal is delivered to the NPO that the Fair Market Value of the Affordable Unit is as stated in the Owner Appraisal, the NPO will retain its own Appraiser to undertake an appraisal (the "NPO Appraisal") of the Fair Market Value of the Affordable Unit in which case the average of the Fair Market Value stated in the Owner Appraisal and the NPO Appraisal, less 10%, will be the maximum price at which the Owner will be permitted to sell the Affordable Unit during a period of 6 months commencing on the effective date of the NPO Appraisal.

2.2.4.2 The NPO will deliver a copy of the NPO Appraisal to the Owner within 7 days after the NPO receives the NPO Appraisal.

2.2.4.3 If the NPO Appraisal is not delivered to the Owner within 30 days after the end of the Appraisal Review Period, the Fair Market Value stated in the Owner Appraisal, less 10%, will be the maximum price at which the Owner will be permitted to sell the Affordable Unit during a period of 6 months commencing on the effective date of the Owner Appraisal.

2.2.5 **Owner Responsible for Appraisal Costs.**

The Owner will be responsible for the cost of both the Owner Appraisal and the NPO Appraisal. If the cost of the NPO Appraisal is initially paid by the NPO, the Owner will reimburse the NPO for the cost of the NPO Appraisal within 30 days after demand by the NPO. If any amount owed by the Owner to the NPO with respect to the NPO Appraisal is not paid prior to the completion of the sale of the Affordable Unit by the Owner, a portion of the sale proceeds equal to the amount owing to the NPO will be deemed to have been irrevocably assigned by the Owner to the NPO.

2.2.6 **NPO Notifies Owner of Maximum Selling Price.**

Within 7 days after the Fair Market Value of the Affordable Unit has been determined under Section 2.2.3 or 2.2.4, the NPO will notify the Owner of the maximum price, determined under Section 2.2.3 or 2.2.4, at which time the Owner will be permitted to offer to sell the Affordable Unit, which price shall be deemed to be its Below Market Value.

2.2.7 **Owner to Deliver True Copy of Sale Contract to NPO.**

The Owner will immediately deliver a true copy of any contract of purchase and sale which the Owner may enter into with respect to the sale of the Affordable Unit or any interest therein (the "Sale Contract"). The Owner will deliver to the NPO with the Sale Contract, or upon the request of the NPO, such information with respect to the buyer named in the Sale Contract as the NPO may reasonably require to determine whether the buyer is a Qualified Buyer.

2.2.8 **Terms to be Included in Sale Contract**.

The Sale Contract will be in writing and will:

(a) be for a selling price not greater than the Below Market Value of the Affordable Unit;

(b) be subject to the NPO determining and notifying the Owner in writing (within a period of 10 Business Days after the NPO receives a true copy of the Sale Contract) that (1) the Owner has complied with the requirements of this Section 2.2, and (2) the buyer is a Qualified Buyer, failing which the Sale Contract will be null and void; and

(c) include a statement that the buyer agrees to purchase the Affordable Unit subject to the Covenant, the Option and all other terms of this Agreement.

2.2.9 **No Sale after 6 Months Without New Appraisal**.

The NPO will not be obligated to review or make any determination with respect to a Sale Contract as stated in subsection 2.2.8(b) above if the date of receipt by the NPO of a true copy of the Sale Contract and any other information required by the NPO under Section 2.2.7 is after the expiry of the 6 month period during which the Owner is permitted to sell the Affordable Unit. If the 6 month period has expired, the process under Section 2.2 will begin again, with the Owner giving fresh notice to the NPO of their intention to sell the Affordable Unit.

2.2.10 **CRD Will Notify Owner of Change in NPO**.

CRD will notify the Owner in writing of any appointment or replacement of an NPO and of the address to which notices to the NPO will be sent.

2.2.11 **Fee to NPO**

The NPO will be entitled to payment of a fee equal to 0.5% of the gross selling price of an Affordable Unit, such fee to be paid on closing of the sale of such Affordable Unit by the Owner and a portion of the sale proceeds equal to the amount owing to the NPO will be deemed to have been irrevocably assigned by the Owner to the NPO.

2.3 **Procedure for Foreclosure**.

2.3.1 **CRD Right to Market and Sell**.

If the Approved Lender or CMHC commences a foreclosure proceeding (the "Proceeding") under an Insured Mortgage of the Affordable Unit the Owner covenants and agrees with CRD that:

(a) the Owner shall notify CRD of the Proceeding;

(b) at the time which is the midpoint of any redemption period (the "Redemption Period") ordered in the Proceeding, CRD shall have the right and may apply for an order in the Proceeding, unopposed by the Owner, to market and sell the Affordable Unit in accordance with Section 2.1(a)(i), (ii), (iii) and (iv);

(c) on receipt of the order in the Proceeding under Section 2.3.1(b) CRD shall have the right to enter into an agreement with a licensed realtor to market and sell the Affordable Unit at the prevailing commission or fee; and

(d) the Owner shall provide reasonable access to the Affordable Unit by CRD, the licensed realtor and any prospective purchaser of the Affordable Unit for the purpose of repairing, cleaning, appraising, marketing and selling the Affordable Unit.

2.3.2 **CMHC Notice to CRD.**

In the event that CRD does not sell the Affordable Unit pursuant to Section 2.3.1, CMHC or the Approved Lender may, 120 days after expiry of the Redemption Period ordered in the Proceeding, issue a 30 day notice (the "Notice Period") to CRD to redeem the Insured Mortgage. In the event that CRD does not redeem the Insured Mortgage within the Notice Period, CRD shall cause this Agreement to be discharged from title to the Affordable Unit at the LTO within 7 days of expiry of the Notice Period.

2.3.3 **CMHC Sale.**

In the event that the Affordable Unit is sold by the Approved Lender or CMHC after discharge of this Agreement from title to the Affordable Unit and such sale generates funds in excess of the balance owing under the Insured Mortgage and related costs, including charges, taxes, commissions and utilities regarding the Affordable Unit, such excess funds shall forthwith be paid to CRD, for its own use absolutely. This Section 2.3.3 shall bind the Owner, the Approved Lender, CMHC (where CMHC has a mortgage loan insurance policy in force for the Affordable Unit) and CRD both before and after discharge of this Agreement from title to the Affordable Unit.

2.4 **Procedure for Rental and Recovery of Rent Charges.**

2.4.1 **Rental Prohibited.**

2.4.1.1 All rentals of the Affordable Units are prohibited, except:

(a) In the case of hardship, as decided by the NPO in its sole discretion, and on making an application to the NPO in the form provided by the

NPO, if any, an Affordable Unit may be rented at an Affordable Rate for a period no shorter than six months; or

(b) If a qualified buyer cannot be located, as decided by the NPO in its sole discretion, and on making an application to the NPO in the form provided by the NPO, if any, an Affordable Unit may be rented at an Affordable Rate for a period no shorter than six months.

2.4.1.2 The maximum term of any rental shall be two years, at which point the Affordable Unit must be listed for sale in accordance with section 2.2. Rental may continue at an Affordable Rate at the discretion of the NPO. If hardship continues or a qualified buyer cannot be located after this listing, additional sales listings may be required at any time at intervals decided by the NPO at its discretion.

2.4.1.3 Any tenancy shall be governed by an agreement under the *Residential Tenancy Act* (BC) which shall include the following provisions:

(a) permitting the Owner to terminate the tenancy agreement in accordance with the *Residential Tenancy Act* if the tenant uses or occupies, or allows use or occupation of, the Affordable Unit in breach of the use or occupancy restrictions contained in this Agreement;

(b) explicitly prohibiting the assignability, sub-letting, and use of the Affordable Unit for short term vacation rentals;

(c) explicitly specifying that only persons named in the tenancy agreement may occupy the Affordable Unit;

(d) providing that the Owner will have the right, at its option, to terminate the tenancy agreement should the tenant remain absent from the Affordable Unit for three consecutive months or longer, notwithstanding the timely payment of rent;

(e) prohibiting guests residing in the Affordable Unit for more than 30 days, whether or not consecutive, in any 12 month period without the prior written consent of the Owner; and

(f) prohibiting use of the Affordable Unit for non-residential rentals, assignments, sub- lets, licenses and uses, such as vacation rentals, including such services as AirBNB or Vacation Rental By Owner, short term licenses, or short-stay use of any kind, and business-only premises.

2.4.1.4 The Owner will terminate the tenancy if the tenant uses or occupies, or allows use or occupancy in breach of the use and occupancy restrictions in this Agreement.

2.4.2 Rent Charge and Acknowledgement.

2.4.2.1 The Owner acknowledges that the CRD requires affordable housing to ensure prosperity and economic growth for the residents of the Capital Region. The Owner acknowledges the purpose of the Affordable Unit is to provide affordable housing to residents of the Capital Region, and it is not to be used for a short term vacation rental or left as a vacant home. The Owner therefore agrees that for each day an Affordable Unit is occupied in breach of this Agreement, the Owner will pay to the CRD $150 for each day on which the breach has occurred and continues to occur, as liquidated damages and not as a penalty, due and payable at the offices of the CRD on the last day of the calendar month in which the breach occurred. The $150 per day amount will increase on January 1 of each year by the amount calculated by multiplying the amount per day payable on the previous January 1 by the percentage increase between that previous January 1 and the immediately preceding December 31 in the CPI.

2.4.2.2 The Owner hereby grants to the CRD a rent charge under s. 219 of the *Land Title Act* (British Columbia), and at common law, securing payment by the Owner to the CRD of the amount payable by the Owner pursuant to section 2.4.2 of this Agreement. The Owner agrees that the CRD, at its option, may enforce payment of such outstanding amount in a court of competent jurisdiction as a contract debt, by an action for and order for sale, by proceedings for the appointment of a receiver, or in any other method available to the CRD in law or in equity.

SECTION 3.
OPTION TO PURCHASE

3.1 **Option to Purchase**. The Owner hereby grants CRD an exclusive and irrevocable option to purchase the Affordable Unit during the Term at the Option Purchase Price in accordance with Sections 3 and 4.

3.2 **Exercise of Option**. CRD may exercise the Option only if the Owner:

(a) defaults in its obligations under Sections 2.1 or 2.2; or

(b) acquired the Affordable Unit from a previous Owner for a price which was, as of the date of closing of that transaction, greater than the Below Market Value or if the Owner was not, as of that date, a Qualified Buyer; or

(c) defaults in its obligations under any mortgage of the Affordable Unit.

3.3 **Method of Exercise of Option**. CRD may exercise the Option by delivering Notice of exercise of the Option to the Owner.

3.4 **Effect of Exercise of Option**. From and after the Notice Date, this Agreement and the Notice will together constitute a binding and enforceable contract between the Owner and CRD for the purchase and sale of the Affordable Unit in accordance with the terms and conditions of Section 4.

SECTION 4.
PURCHASE AND SALE

4.1 **Purchase and Sale**. Subject to the terms and conditions of this Section 4 and relying on the warranties and representations herein set out, the Owner agrees to sell and CRD agrees to purchase the Affordable Unit on the Closing Date for the Option Purchase Price, and the Owner agrees that, at the request of CRD, it will transfer registered title to the Affordable Unit to CRD or such other Person as CRD may designate.

4.2 **Option Purchase Price**. CRD will pay the Option Purchase Price, subject to adjustment pursuant to Section 4.10, to the Owner on the Closing Date.

4.3 **Repair and Maintenance**. From and after the Notice Date to the Closing Date, the Owner will take good care of the Property, will carry out all necessary repairs, maintenance, and replacements, will take reasonable care to protect and safeguard the Property and will in all other respects deal with the Property so that the warranties and representations of the Owner set out in this Agreement remain true and correct.

4.4 **Insurance**. From and after the Notice Date to the Closing Date, the Owner will ensure that all policies of insurance with respect to the Property remain in full force and effect.

4.5 **Risk**. The Property will be at the risk of the Owner up to the time the Transfer is submitted for registration at the LTO on the Closing Date and will be at the risk of CRD after the time the Transfer is submitted for registration at the LTO on the Closing Date.

4.6 **Damage**. If, prior to the time the Transfer is submitted for registration at the LTO, any damage occurs to the Property or any of the assets comprising the Property, CRD, by notice to the Owner, may elect to postpone the Closing Date for a period of not more than 30 days and may also elect:

(a) not to acquire the Affordable Unit, in which case neither party will have any further obligation to the other under this Section 4 pertaining to that particular Notice; or

(b) that the Owner assign to CRD the Owner's right to receive any and all insurance proceeds payable with respect to the damage, subject to any bona fide loss payee designation, in which case the Owner will execute and deliver to CRD an assignment satisfactory to CRD.

4.7 **Construction Warranties**. From and after the Closing Date, the Owner will assign to CRD all the Owner's rights under all warranties, guarantees or contractual obligations against any contractor or supplier who was engaged in the construction, renovation, or repair of all or any part of the Affordable Unit or any improvement to the Affordable Unit. CRD's acceptance of this assignment will not represent a waiver by CRD of the Owner's covenants, agreements, representations and warranties set out in this Agreement.

4.8 **Owner's Covenants**. The Owner will:

(a) take all proper actions and proceedings on its part to enable the Owner to transfer a

good and marketable title to the Affordable Unit to CRD or such Person as CRD may designate, free and clear of all encumbrances other than Permitted Encumbrances;

(b) deliver vacant possession of the Property to CRD or such Person as CRD may designate on the Closing Date, subject to prior receipt of the Option Purchase Price by the Owner;

(c) not, from and after the Notice Date to the Closing Date, sell, transfer, dispose of or remove from the Affordable Unit any Personal Property; and

(d) both before and after the Closing Date do such other things as CRD may reasonably require for transferring to and vesting in CRD or such Person as CRD may designate title to the Affordable Unit as contemplated by this Section 4.

4.9 **Documents**. CRD will prepare the documents necessary to complete the Transaction which will be in a form and substance reasonably satisfactory to CRD and its lawyers.

4.10 **Adjustments and Credits**. The Owner and CRD will adjust, as at the Closing Date, all usual adjustments for a property similar to the Property including taxes, utility rates and any moneys owing to the strata corporation formed in respect of the Project.

4.11 **Closing**. The Owner and CRD will complete the Transaction on the Closing Date at the offices of CRD or its lawyers.

4.12 **Owner's Closing Documents**. At the closing, the Owner will deliver to CRD the following duly executed documents:

(a) the Transfer;

(b) a vendor's statement of adjustments;

(c) a bill of sale for the Personal Property and all other deeds, transfers, assignments, resolutions, consents, estoppels and other certificates and assurances as CRD may reasonably require;

(d) a certificate in confirmation that the sale of the Affordable Unit to CRD is exempt from taxes under the *Excise Tax Act* (the "GST") or, alternately, a certified cheque or bank draft payable to CRD in an amount equal to the GST payable by CRD on the Option Purchase Price; and

(e) unless waived in writing by CRD, a certified cheque or bank draft payable to CRD in the amount, if any, by which the moneys owing under and required to discharge any mortgage or mortgages of the Affordable Unit exceed the Option Purchase Price (calculated in accordance with Section 1.1.28(2)), as adjusted under Section 4.10.

4.13 **CRD's Closing Documents**. At the closing, CRD will deliver to the Owner:

(a) a purchaser's statement of adjustments; and

(b) a cheque for the Option Purchase Price, as adjusted under Section 4.10.

4.14 **Tabling**. Except for the Transfer, all documents and cheques will be tabled at the closing. CRD will cause its lawyers, on the Closing Date, to conduct a pre-registration index search of the Affordable Unit at the LTO. If that search indicates that no liens, charges or encumbrances have been registered or filed in respect of the Affordable Unit except for Permitted Encumbrances and encumbrances which the lawyers for the Owner have undertaken to discharge, the lawyers for CRD or their agents shall submit the Transfer for registration and then conduct a post-filing registration index search. If that search indicates that no liens, charges or encumbrances have been registered or filed in respect of the Affordable Unit since the pre-filing registration index search, all documents and payments will be released to each of the Owner and CRD according to the entitlement of each of them.

4.15 **Reimbursement.** If CRD waives payment on the Closing Date of the amount referred to in Section 4.12(e), the Owner shall pay such amount to CRD, on demand, with interest thereon at the rate of eighteen percent (18%) per annum, compounded monthly, from the Closing Date to the date of payment.

4.16 **Survival**. All the representations, warranties, covenants and agreements of the Owner and CRD contained in this Agreement will survive the Closing Date, registration of documents, and the payment of the Option Purchase Price.

SECTION 5.
RELEASE

5.1 **Release**. The Owner releases CRD and its officers, directors, employees and agents and their respective heirs, executors, administrators, personal representatives, successors and assigns absolutely and forever, from any claims the Owner may have against all or any of them for costs, expenses or damages the Owner may suffer, incur or be put to arising out of or in connection with this Agreement and from all claims arising out of advice or direction respecting the sale of the Affordable Unit or use of the Property given to the Owner by any of them or by the NPO.

SECTION 6.
GENERAL PROVISIONS

6.1 **Discharge of Covenant and Option to Purchase on Strata Lots not designated as Affordable Units**. The parties agree that this Agreement is intended to only apply to the four (4) strata lots to be designated by the Developer as the Affordable Units upon the filing of the strata plan for the Strata Development and concurrently with filing of the strata plan for the Strata Development this Covenant, the Rent Charge and the Option to Purchase shall be discharged from title to all of the strata lots and the common property except for the Affordable Units designated by the Developer, and this Agreement will only charge the Affordable Units. The parties will execute all such documents as may be required to complete the foregoing discharges.

6.2 **Notices**. Unless otherwise specified, each notice to the Owner must be given in writing and delivered personally or by courier to the Owner at its address shown on title to the

Affordable Unit as registered in the LTO from time to time. Unless otherwise specified, each notice to CRD must be given in writing and delivered personally or by courier to CRD, Attention: Manager Real Estate Services, at the address shown on the General Instrument - Part 1 or to such other address or addresses or person or persons as CRD may designate. Notices will be deemed to have been received when delivered.

6.3 **Fees**. Each of the Owner and CRD will pay its own legal fees. CRD will pay all fees in connection with registration of the Transfer.

6.4 **Enuring Effect**. This Agreement will enure to the benefit of and be binding upon the respective heirs, executors, administrators, successors and permitted assigns as the case may be of the Owner and CRD, provided that the Owner shall not be liable for any breach of the covenant contained in Section 2.1 except as such liability relates to the period of ownership of an Affordable Unit by the Owner. If, by operation of statute or otherwise, the Option becomes or will within a period of three months become void or unenforceable as the result of the passage of time, the Owner or their heir, legal representative, successor or permitted assign, as the case may be, will, at the request of CRD, execute and deliver to CRD a replacement agreement substantially in the form of this Agreement.

6.5 **Registration**. This Agreement will be registered against title to the Lands initially and then shall be restricted to the titles to the Affordable Units upon filing of a strata plan of the Lands in the LTO subject only to Permitted Encumbrances.

6.6 **Discharge**. On expiry of the Term, the Owner may require that CRD execute and deliver to the Owner a release in registrable form of the Covenant and the Option.

6.7 **Amendment**. This Agreement may only be amended by written agreement of the parties.

6.8 **Counterparts**. This Agreement and any amendment, supplement, restatement or termination of any provision of this Agreement may be executed and delivered in any number of counterparts, each of which, when executed and delivered is an original, but all of which taken together constitute one and the same instrument.

IN WITNESS WHEREOF the parties have duly executed this Agreement by signing the General Instrument - Part 1.

CONSENT AND PRIORITY AGREEMENT

GIVEN THAT Coastal Community Credit Union (the "Chargeholder") is the holder of a mortgage and assignment of rents registered against the land legally described (the "Land") in the s. 219 covenant to which this Agreement is attached (the "Covenant"), which mortgage and assignment of rents are registered in the Victoria land title office under instrument numbers CA7295489 and CA7295490 respectively (the "Charge"),

This Consent and Priority Agreement is evidence that in consideration of payment to it of $1.00 by the transferee described in item 6 of Part 1 of the Form C to which this Agreement is attached (the "Transferee"), the Chargeholder agrees with the Transferee as follows:

1. The Chargeholder consents to the granting and registration of the Covenant, Rent Charge, and Option to Purchase, and the Chargeholder agrees that the Covenant, Rent Charge and Option to Purchase bind its interest in and to the Land.

2. The Chargeholder grants to the Transferee priority for the Covenant, Rent Charge, and Option to Purchase over the Chargeholder's right, title and interest in and to the Land and the Chargeholder postpones the Charge, and all of its right, title and interest thereunder, to the Covenant, Rent Charge and Option to Purchase as if the Covenant, Rent Charge, and Option to Purchase had been executed, delivered and registered prior to the execution, delivery and registration of the Charge.

As evidence of its agreement with the Transferee to be bound by this Consent and Priority Agreement, as a contract and as a deed executed and delivered under seal, the Chargeholder has executed and delivered this Agreement by executing Part 1 of the Land Title Act Form C to which this Agreement is attached and which forms part of this Agreement.

SCHEDULE "A"
PERMITTED ENCUMBRANCES

Legal Notations:

Easement EC1406 over Part of Lot 1, Plan 47964

Charges, Liens and Interests:

Undersurface Rights (M76301) – Her Majesty the Queen in Right of the Province of British Columbia, Inter Alia, A.F.B. 3.257.3685, Section 172(3), DD636 OS

SCHEDULE "B"
QUALIFIED BUYER CRITERIA

1. **Sale of an Affordable Unit by the Developer:**

In the case of the sale of an Affordable Unit by the Developer, a Qualified Buyer means:

(a) a first time home buyer, being a buyer who has not owned a principal residence for at least 5 years immediately prior to the date of purchase of an Affordable Unit;

(b) a resident of the Capital Regional District from time to time, for at least one year immediately prior to the date of purchase of an Affordable Unit;

(c) A person who provides Proof of Income that annual gross Income is, for a one-bedroom unit, $84,999 at time of sale, and for a two-bedroom unit, $94,999 at time of sale, for at least one year immediately prior to the date of purchase of an Affordable Unit; and

(d) a person who intends to immediately use and occupy the Affordable Unit as their principal residence and not rent or lease the Affordable Unit to any other person, nor leave the unit vacant, use it solely for a business or profession, or use it as a short-term vacation rental property of any kind.

it being understood and agreed that preferential consideration may be given to a person who meets all of the above criteria and all or some of the following criteria:

(a) a person who does not own a vehicle; and

(b) a person who satisfies such other criteria as may be applied by the NPO and CRD from time to time.

2. **Sale of an Affordable Unit by an Owner other than the Developer:**

In the case of the sale of an Affordable Unit by an Owner other than the Developer, a Qualified Buyer means:

(a) a first time home buyer, being a buyer who has not owned a principal residence for at least 5 years immediately prior to the date of purchase of an Affordable Unit;

(b) a resident of the Capital Regional District from time to time, for at least one year immediately prior to the date of purchase of an Affordable Unit;

(c) a person who provides Proof of Income that annual gross Income is between the range set from time-to-time by the NPO in its sole discretion (which shall not be appealed) for at least one year immediately prior to the date of purchase of an Affordable Unit, it being understood and agreed that the NPO may, from time to time, grant an exemption from or vary such requirement if, in the opinion of the NPO and having regard to prevailing market conditions, such exemption or variation is

consistent with the continued use and availability of the Affordable Unit as affordable housing; and

(d) a person who intends to immediately use and occupy the Affordable Unit as their principal residence and not rent or lease the Affordable Unit to any other person, nor leave the unit vacant, use it solely for a business or profession, or use it as a short-term vacation rental property of any kind.

For the purpose of Schedule B:

"Income" means the total income before income tax from all sources of all persons intending to live in an Affordable Unit including, without limitation:

(a) all income from earnings, including commissions and tips;

(b) all income from all public and private pension plans, old age security and guaranteed income supplement;

(c) all income received under the *Employment and Assistance Act* and the *Employment and Assistance for Persons with Disabilities Act*;

(d) disabled veteran's allowance;

(e) alimony;

(f) child support;

(g) workers' compensation benefits;

(h) employment insurance; and

(i) Income from Assets,

but excluding the following:

(a) child tax benefit;

(b) capital gains, such as insurance settlement, inheritances, disability awards and sale of effects in the year they are received;

(c) the earnings of a person aged 18 and under;

(d) student loans, student loan equalization payments and student grants but excluding non-repayable training allowances, research fellowships or similar grants;

(e) shelter aid for elderly renters (SAFER) or rental assistance program (RAP) payments received prior to purchasing an Affordable Unit;

(f) GST rebates;

(g) taxable benefits received through employment;

(h) government provided daycare allowance; and

(i) payments for foster children, or child in home of relative (CIHR) income under the *Employment and Assistance Act*.

"Income from Assets" means computing income from assets of all persons intending to live in an Affordable Unit at a percentage per annum as determined by CRD, excluding the first $62,051.00 in assets of such persons, based on November 1, 2018 dollars, indexed over time by reference to changes from time to time in the consumer price index (all items, British Columbia) or if such consumer price index is no longer published, such substitute and comparable index as the NPO may designate.

"Proof of Income" means a tax return filed with Canada Revenue Agency or a notice of assessment from Canada Revenue Agency under the *Income Tax Act*.

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REPORT TO THE CAPITAL REGIONAL DISTRICT BOARD
MEETING OF WEDNESDAY, OCTOBER 14, 2020

SUBJECT **Public Hearing Report on Bylaw No. 4316, "Juan de Fuca Land Use Bylaw, 1992, Amendment Bylaw No. 147, 2019" and Bylaw No. 4317, "Otter Point Official Community Plan Bylaw No. 1, 2014, Amendment Bylaw No. 2, 2019"**

ISSUE SUMMARY

To receive the Reports of the Public Hearings held September 21, 2020, for proposed Bylaws No. 4316 and 4317, and to consider Bylaw Nos. 4316 and 4317 for third reading.

BACKGROUND

At its meeting of August 12, 2020, the Capital Regional District (CRD) Board gave first and second reading to Bylaw No. 4316, "Juan de Fuca Land Use Bylaw, 1992, Amendment Bylaw No. 147, 2019" and Bylaw No. 4317, "Otter Point Official Community Plan Bylaw No. 1, 2014, Amendment Bylaw No. 2, 2019" and passed a resolution to delegate authority to the Regional Director to hold a public hearing with respect to Bylaw Nos. 4316 and 4317.

Bylaw No. 4316 (Appendix A) will amend Bylaw No. 2040, "Juan de Fuca Land Use Bylaw, 1992", by deleting That Part of Section 17, Otter District, Lying East of Otter Point Road, Except Parcel C (DD43782I) And Except Parts in Plans 3054 And 17721 from the Rural A (A) zone, and adding to the Rural Residential 2 (RR-2) zone, for the purpose of permitting six rural residential parcels, and by deleting from the Rural A (A) zone, and adding to a new Industrial Sawmill (M-3) zone, for the purpose of permitting one parcel for an industrial sawmill operation.

Bylaw No. 4317 (Appendix B) will amend Bylaw No. 3819, "Otter Point Official Community Plan Bylaw No. 1, 2014, Amendment Bylaw No. 2, 2019" by adding portions of That Part of Section 17, Otter District, Lying East of Otter Point Road, Except Parcel C (DD43782I) And Except Parts in Plan 3054 And 17721 to the Watercourses and Wetlands Development Permit Area and to the Commercial & Industrial Development Permit Area for the purpose of designating portions of the property as Watercourses & Wetland Areas and Commercial & Industrial development permit areas.

On September 21, 2020, public hearings were held for Bylaw Nos. 4316 and 4317. There were five people in attendance at each of the hearings. Four members of the public stated concern regarding Bylaw No. 4316 relative to the sawmill's hours of operation, noise levels, fire hazard and waste management measures, lighting, and impact on adjacent wells. Two written submissions were received regarding Bylaw No. 4316. The first submission stated non-support for the rezoning proposal. The second submission stated concern regarding the proposal's impact on the King Creek watershed and support for protection and remediation of aquatic areas on the subject property. No written submissions or comments were received regarding Bylaw No. 4317. The Reports of the Public Hearing are attached (Appendices A and B).

ALTERNATIVES

Alternative 1

a) That the minutes that form the Reports of the Public Hearing for Bylaw No. 4316, "Juan de Fuca Land Use Bylaw, 1992, Amendment Bylaw No. 147, 2019" and Bylaw No. 4317, "Otter Point Official Community Plan Bylaw No. 1, 2014, Amendment Bylaw No. 2, 2019", which are certified as a fair and accurate summary of the representations that were made at the public hearings held on September 21, 2020, for Bylaw Nos. 4316 and 4317, be received; and
b) That Bylaw Nos. 4316 and 4317 be read a third time.
c) That adoption of Bylaw Nos. 4316 and 4317 be withheld pending:
    i. Confirmation from a Qualified Environmental Professional that the vegetative screening requirements in the M-3 zone and the recommendations for restoration of the riparian area outlined in the Conditions and Impacts report prepared by Corvidae Environmental Consulting Inc., dated February 2020, have been implemented;
    ii. Registration of a covenant on title pursuant to Section 219 of the *Land Title Act* in favour of the CRD requiring that the fire protection works related to the sawmill operation, described in the letter from the Otter Point Volunteer Fire Department dated January 30, 2020, be installed and conveyed to CRD prior to subdivision or further building construction.

Alternative 2

That the minutes that form the Reports of the Public Hearing for Bylaw Nos. 4316 and 4317, which are certified as a fair and accurate summary of the representations that were made at the public hearings held on September 21, 2020 for Bylaw No. 4316, "Juan de Fuca Land Use Bylaw, 1992, Amendment Bylaw No. 147, 2019" and Bylaw No. 4317, "Otter Point Official Community Plan Bylaw No. 1, 2014, Amendment Bylaw No. 2, 2019", be received.

IMPLICATIONS

Legislative Implications

A site profile has been submitted to the Ministry of Environment & Climate Change Strategy (ENV) in accordance with the *Environmental Management Act* and *Contaminated Sites Regulation*. A regional district must not approve a development application with respect to a site where a site profile is required until such time a release is granted pursuant to Section 557 of the *Local Government Act (LGA)*. A release has been granted by the Ministry of Environment for rezoning, but further site investigation is required as part of subdivision approval.

The sawmill operation requires a Waste Discharge Authorization pursuant to the *Environmental Management Act* and a groundwater licence pursuant to the *Water Sustainability Act*. These approvals are issued by the Province and are not a precondition for rezoning.

Regional Growth Strategy Implications

Section 445 of the *LGA* requires that all bylaws adopted by a regional district board after the board has adopted a Regional Growth Strategy (RGS) be consistent with the RGS. Since the proposal includes an amendment to the Otter Point OCP, the bylaws were considered by the Planning and Protective Services Committee at its meeting of September 16, 2020. The CRD Board will consider the bylaws for a determination of consistency with the RGS prior to the bylaws being considered for adoption at its meeting of October 14, 2020.

The proposed OCP amendments update development permit area maps to designate additional parts of the subject property for protection of the natural environment and to establish objectives for the form and character of industrial development. Enhancing measures for protection of the natural environment is an objective of the Regional Growth Strategy.

Referral Process Implications
Bylaw Nos. 4316 and 4317 were referred to external agencies, the Otter Point Advisory Planning Commission, the Juan de Fuca (JdF) Electoral Area (EA) Parks and Recreation Advisory Commission and CRD departments in July 2019. Referral comments were returned and the CRD Board gave first and second readings to Bylaw Nos. 4316 and 4317 at its meeting on August 12, 2020.

Land Use Implications
Proposed Bylaw No. 4317 amends the Otter Point OCP by adding to the Watercourses and Wetland Areas DPA for protection of an unmapped watercourse, and adding to the Commercial and Industrial Areas DPA in order to establish objectives for the form and character of the proposed industrial development.

In consideration of an application for rezoning, Section 4.1.1(4) of the Otter Point OCP states that proposals should demonstrate that community values and features can be protected subject to an assessment of the suitability of the land for the proposed use, no depletion or contamination of groundwater, appropriate scale and rural character, demonstrated protection of sensitive features and land significant to the region or community, use of 'green' building techniques, and measures to mitigate impact of development. Further, Section 4.1.1(11) outlines considerations for mixed use development, including: form and character compatibility; adequate parking and traffic flow; protection and separation of residential areas.

Environmental constraints: As part of this application, an Environmental Assessment report was submitted by Corvidae Environmental Consulting. The report identifies the location of a watercourse on the property and recommends environmental protection measures. In response to recent unauthorized clearing within the riparian area, a Conditions and Impacts report was provided that proposed replanting native species in the riparian area. Staff recommend that a Qualified Environmental Professional (QEP) verify that this work is completed prior to adoption of the bylaws.

Water supply and sewage disposal*:* Section 5.6 of the Otter Point OCP states that the OCP designates 51% of the Plan area as Rural Lands to allow for low density development, that all subdivision applications must include proof of sufficient potable water from individual drilled wells as determined by a Qualified Professional, and that all development should protect groundwater sources and not deplete or contaminate existing wells. The proposed rezoning includes rural residential parcels that are located within the Settlement Area 2 land use designation. This designation is intended for rural residential development and supports industrial activity. Should the rezoning be approved, the new parcels will require proof of potable water in the amount of 1,400 litres per day per lot in accordance with Part 6, Section 6.02 of Bylaw No. 2040, as part of the subdivision process. Members of the public expressed concern that groundwater supplies are scarce in the area and that many wells run dry. To partially address this broader concern, the CRD recently installed a bulk drinking water station on Otter Point Road in Sooke. Additional measures to conserve groundwater could include incorporating rainwater capture systems in new buildings or installing storage tanks at the time of building construction. Finally, the proposed rezoning does not increase the density of residential development permitted by the existing Rural A zone.

The *Water Sustainability Act* requires non-domestic users of groundwater to obtain a licence; therefore, the sawmill operation will require a provincial water licence.

Island Health provided comment to state that subdivisions must comply with the *Drinking Water Protection Act*/*Regulation* and *Sewerage System Regulation*. These regulations pertain to domestic water supply systems and domestic sewage, and not to the industrial component of the proposed development. Discharge associated with the sawmill operation may require provincial authorization under the *Environmental Management Act*. The applicant has initiated the authorization process with the Province.

Scale of development: The subject property is designated as Settlement Area 2, which supports a desired average parcel area for residential development of one ha with a minimum parcel area of 0.8 ha. Proposed Bylaw No. 4316 rezones a portion of the property to the RR-2 zone, which allows an average lot size of one ha and permits residential, agricultural and home based business uses, with a density of one dwelling unit plus either a secondary suite or a detached accessory suite. This is in keeping with the OCP policies.

An economic development objective of the Otter Point OCP supports accommodating limited industrial and commercial development with a focus on the Sooke Business Park. The subject property is in the vicinity of the Sooke Business Park and the sawmill use predates CRD zoning bylaws.

Protection of natural features: Proposed Bylaw No. 4317 will add the unmapped watercourse to the Riparian development permit area and require that any future encroachment within this area be authorized by permit. The reports prepared by Corvidae Environmental Consulting Inc. outline recommendations to protect or restore natural features on the site. Due to the historical industrial use, there is a contaminated sites review underway. The Ministry of Environment, which is the authority having jurisdiction, has granted a release for rezoning; however, subdivision approval will be withheld until a final determination is made.

Access to the proposed sawmill operation is across the watercourse at the eastern edge of the property on the existing Tenbury Road allowance. Industrial access and road dedication will be determined by TRAN and secured at time of subdivision. Works in and about a stream require provincial notification under Section 11 of the *Water Sustainability Act*. A development permit will be required as part of subdivision.

Adequate setbacks and vegetated buffers: Proposed Bylaw No. 4316 includes requirements to implement natural vegetative buffers to screen the proposed industrial use from adjacent roads and rural residential properties. Staff recommend that a Qualified Professional confirm these buffers are implemented prior to adoption of the proposed bylaws.

Protection of land considered regionally or locally significant: Section 5.1(15) of the Otter Point OCP identifies high potential park and trail opportunities including a desire to establish an inter-connected network of trails through the Plan area. The JdF Community Parks division currently holds a Licence of Occupation over the Weiland Road right-of-way for future construction of a multi-use trail extending from William Simmons Memorial Park to Kemp Lake Road, but the right of way terminates at the subject property. The JdF EA PRAC recommended establishment of a trail for continuation of Wieland Road. TRAN has requested dedication of Weiland Road along the southern portion of the property, which would allow the network to be completed.

Subdivisions that create three or more lots, where the smallest lot is less than 2 ha in size, are required to provide park dedication pursuant to Section 510 of the *LGA*. Future consideration of statutory park dedication would occur as part of the subdivision process should the rezoning be supported.

Use of 'green' building techniques: Bylaw No. 4317 designates part of the property as a Commercial and Industrial DPA to regulate form and character in accordance with the DP guidelines. A development permit will be required for construction of any sawmill buildings or structures. The CRD Building Inspection Division advises that a Registered Professional will be required to be involved in certain aspects of the construction and that the applicant is advised to work with the CRD to resolve any outstanding building permits. The Commercial and Industrial Development Permit Guidelines include the desire for ground-oriented lighting in order to limit light-pollution and maintain dark skies in rural areas.

Works, services or community benefits to mitigate the impact of development: The need for fire protection measures was raised during the referral process. The Otter Point Volunteer Fire Department has proposed that the applicant install water supply in the form of tanks (60,000 ga)

to aid fire protection for the industrial sawmill use and the community. Staff recommend a covenant be registered on the title of the property that requires the installation of the works by the applicant and access to the system by the fire department prior to subdivision or further building construction.

Concerns were raised at the APC meeting regarding noise and nuisances from the existing sawmill operation and increased intensity of the proposed uses. Concerns with increased traffic were also raised at the APC resulting from the number of employees and commercial trucks. CRD Bylaw Enforcement has noted that nuisance-related complaints are likely to increase with an expansion of the sawmill operation in close proximity to residences. However, the applicant's planned upgrades include moving the sawmill indoors and switching from combustion engine saws to electric saws. These measures are anticipated to reduce the disturbance generated by noise. The Noise Bylaw for the Juan de Fuca Electoral Area restricts the unloading of vehicles and construction noise to between the hours of 7:00 am and 7:00 pm. The applicant has indicated that the hours of operation at the mill are between 8:00 am and 4:00 pm on weekdays with activity generally limited to wood sales on Saturday. Long-term compliance with the zone regulations would be determined by CRD Bylaw Enforcement on a complaint-driven basis.

CONCLUSION

Public hearings were held on September 21, 2020, for Bylaw No. 4316 "Juan de Fuca Land Use Bylaw, 1992, Amendment Bylaw No. 138, 2018" and Bylaw No. 4317. The minutes are attached as the Reports of the Public Hearing.

There were five people in attendance at each of the hearings. Four members of the public stated concern regarding Bylaw No. 4316 relative to the sawmill's hours of operation, noise levels, fire hazard management measures, lighting, and impact on adjacent wells. Two written submissions were received regarding Bylaw No. 4316. The first submission stated non-support for the rezoning proposal. The second submission stated concern regarding the proposal's impact on the King Creek watershed and support for protection and remediation of aquatic areas on the subject property. No written submissions or comments were received regarding Bylaw No. 4317.

Staff recommend Alternative 1 to receive the minutes and for the proposed bylaws to be given third reading and that adoption of the bylaws be withheld subject to confirmation from a Qualified Environmental Professional that screening and restoration measures are implemented and subject to registration of a covenant requiring fire protection works prior to subdivision or further building construction.

RECOMMENDATIONS

a) That the minutes that form the Reports of the Public Hearing for Bylaw No. 4316, "Juan de Fuca Land Use Bylaw, 1992, Amendment Bylaw No. 147, 2019" and Bylaw No. 4317, "Otter Point Official Community Plan Bylaw No. 1, 2014, Amendment Bylaw No. 2, 2019", which are certified as a fair and accurate summary of the representations that were made at the public hearings held on September 21, 2020, for Bylaw Nos. 4316 and 4317, be received; and
b) That Bylaw Nos. 4316 and 4317 be read a third time.
c) That adoption of Bylaw Nos. 4316 and 4317 be withheld pending:
    i. Confirmation from a Qualified Environmental Professional that the vegetative screening requirements in the M-3 zone and the recommendations for restoration of the riparian area outlined in the Conditions and Impacts report prepared by Corvidae Environmental Consulting Inc., dated February 2020, have been implemented;
    ii. Registration of a covenant on title pursuant to Section 219 of the *Land Title Act* in favour of the CRD requiring that the fire protection works related to the sawmill operation, described in the letter from the Otter Point Volunteer Fire Department dated January 30, 2020, be installed and conveyed to CRD prior to subdivision or further building construction.

Submitted by::	Iain Lawrence, MCIP, RPP, Manager, Juan de Fuca Community Planning
Concurrence:	Kevin Lorette, P.Eng., MBA, General Manager, Planning & Protective Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENTS

Appendix A: Proposed Bylaw No. 4316
Appendix B: Proposed Bylaw No. 4317
Appendix C: Reports of the Public Hearing September 21, 2020

Appendix A: Proposed Bylaw No. 4316

CAPITAL REGIONAL DISTRICT
BYLAW NO. 4316

A BYLAW TO AMEND BYLAW NO. 2040, THE "JUAN DE FUCA LAND USE BYLAW, 1992"

The Capital Regional District Board, in open meeting assembled, enacts as follows:

1. Bylaw No. 2040 being the "Juan de Fuca Land Use Bylaw, 1992" is hereby amended:

A. SCHEDULE A, PART 1 DEFINITIONS

(a) By adding a new definition of "INDUSTRIAL SAWMILL" after the definition of "INDUSTRIAL USE, LIGHT", to be read as follows:

"INDUSTRIAL SAWMILL means a building, structure, or area where timber is cut, sawn, or planed, either to finished lumber or as an intermediary step, and may include facilities for the kiln drying of lumber, and may include the distribution of such products on a wholesale or retail basis, subject to the *Environmental Management Act*;"

(b) By deleting the definition of INDUSTRIAL ZONE and replacing it with a new definition, to be read as follows:

"INDUSTRIAL ZONE means the M-SBP, M-2 and M-3 zoning districts;"

B. SCHEDULE A, PART 1, GENERAL REGULATIONS

(a) By amending section 3.07 ZONES by adding the words "M-3 Industrial Sawmill" and deleting the words "M-1 Light Industrial" "M-2-MM General Industrial – Medical Marihuana", "M-3 Heavy Industrial" and "M-4 Marine Industrial"

C. SCHEDULE A, PART 2, ZONING DISTRICTS

(a) By deleting section 26.0 Light Industrial Zone – M-1, section 28.0 Heavy Industrial Zone – M-3, and section 29.0 Marine Industrial Zone – M-4 in their entirety;

(b) By renumbering section 27B.0 Sooke Business Park Industrial Zone – M-SBP as section 26.0.

(c) By creating a new zone, "Industrial Sawmill Zone – M-3", to be inserted after section 27.0, and to be read as follows:

"**28.0 Industrial Sawmill Zone – M-3**

28.01 Permitted Uses

In addition to the uses permitted by Section 4.15 of Part 1 of this Bylaw, the following uses and buildings are permitted in the Industrial Sawmill M-3 zone:

(a) Sawmills on a permanent foundation and enclosed in a building;

(b) Lumber milling, processing and storage;

(c) Processing and manufacturing of wood products, including the making of cabinets, furniture, plywood, lath and particle board, and the manufacturing of modular or pre-fabricated homes and structures, excluding pulp and paper mills;

(d) Log storage and sorting;

Accessory Uses:

(a) Accessory retail and wholesale sale of lumber processed on site;

(b) Accessory retail and wholesale sale of wood products manufactured on site;

(c) Offices accessory to a principal use;

(d) Accessory buildings and structures pursuant to Part 1, Section 4.01.

28.02 Minimum Lot Size for Subdivision Purposes

The minimum lot size for subdivision purposes shall be 8 ha.

28.03 Maximum Floor Area

The maximum total floor area of all buildings shall be 5000 m^2.

28.04 Height

The maximum height shall be 11 m for all principal buildings and structures.

28.05 Required Yards

(a) Buildings shall be set back at least 30 m from parcel boundaries.

(b) Storage of any material shall not be permitted within 30 m from the parcel boundaries.

28.06 Storage

Storage shall not be permitted in required yards.

28.07 Lot Coverage

(a) The maximum lot coverage (buildings and structures) shall be 10%.

(b) The maximum area to be used for an industrial sawmill operation including storage of materials) is 15% of the parcel.

28.08 Screening

(a) A vegetative screen shall be located and maintained along the entire length of parcel boundaries.

(b) This vegetative screen shall consist of coniferous vegetation native to the region that is not less than 2 m high, not less than 15 m deep, and spaced not more than 2 m apart."

D. SCHEDULE A, PART 3, PARKING AND LOADING REQUIREMENTS

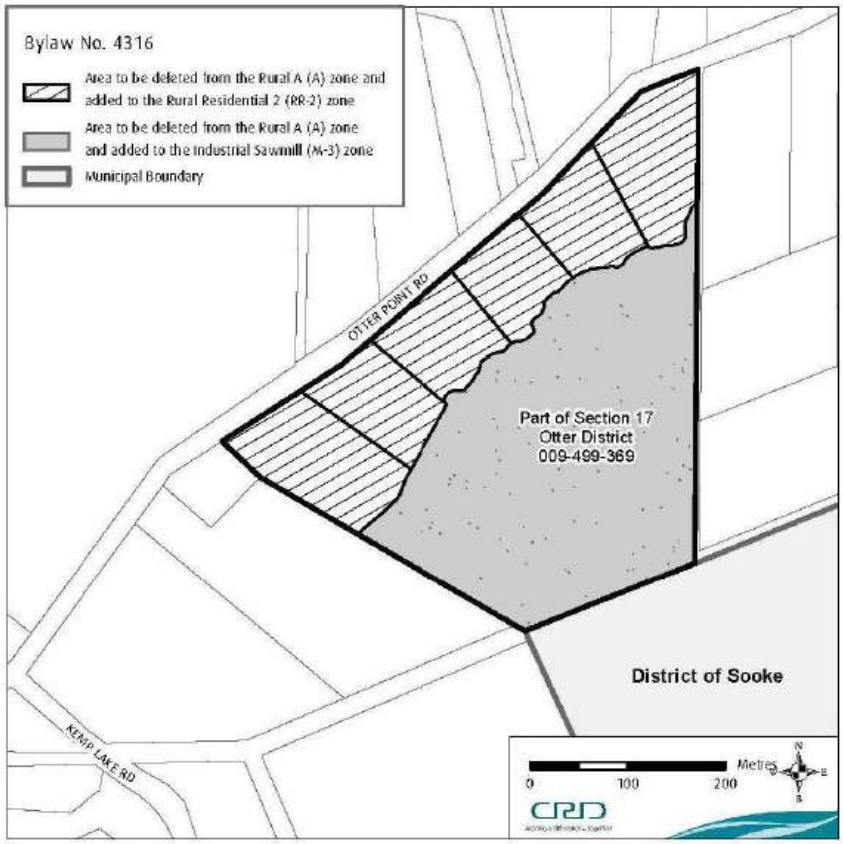
(a) By amending section 5.0 by adding the words "Industrial Sawmill 1 per 2 employees but not less than 5 per tenant or establishment;"

E. SCHEDULE B, MAP NO. 2 – OTTER POINT ZONING MAP

(a) By deleting That Part of Section 17, Otter District, Lying East of Otter Point Road, Except Parcel C (DD43782I) And Except Parts in Plans 3054 And 17721 from the Rural A (A) Zone, and adding to the Rural Residential 2 (RR-2) Zone, as shown on Plan No.1.

(b) By deleting That Part of Section 17, Otter District, Lying East of Otter Point Road, Except Parcel C (DD43782I) And Except Parts in Plans 3054 And 17721 from the Rural A (A) Zone, and adding to the Industrial Sawmill (M-3) Zone, as shown on Plan No.1.

Plan No. 1 of Bylaw 4316, an amendment to Bylaw No. 2040



2. This bylaw may be cited as "Juan de Fuca Land Use Bylaw, 1992, Amendment Bylaw No. 147, 2019".

READ A FIRST TIME THIS	day of	, 2020.
READ A SECOND TIME THIS	day of	, 2020.
READ A THIRD TIME THIS	day of	, 2020.
ADOPTED THIS	day of	, 2020.

CHAIR CORPORATE OFFICER

Appendix B: Proposed Bylaw No. 4317

CAPITAL REGIONAL DISTRICT
BYLAW NO. 4317

A BYLAW TO AMEND BYLAW NO. 3819, THE "OTTER POINT OFFICIAL COMMUNITY PLAN, 2014"

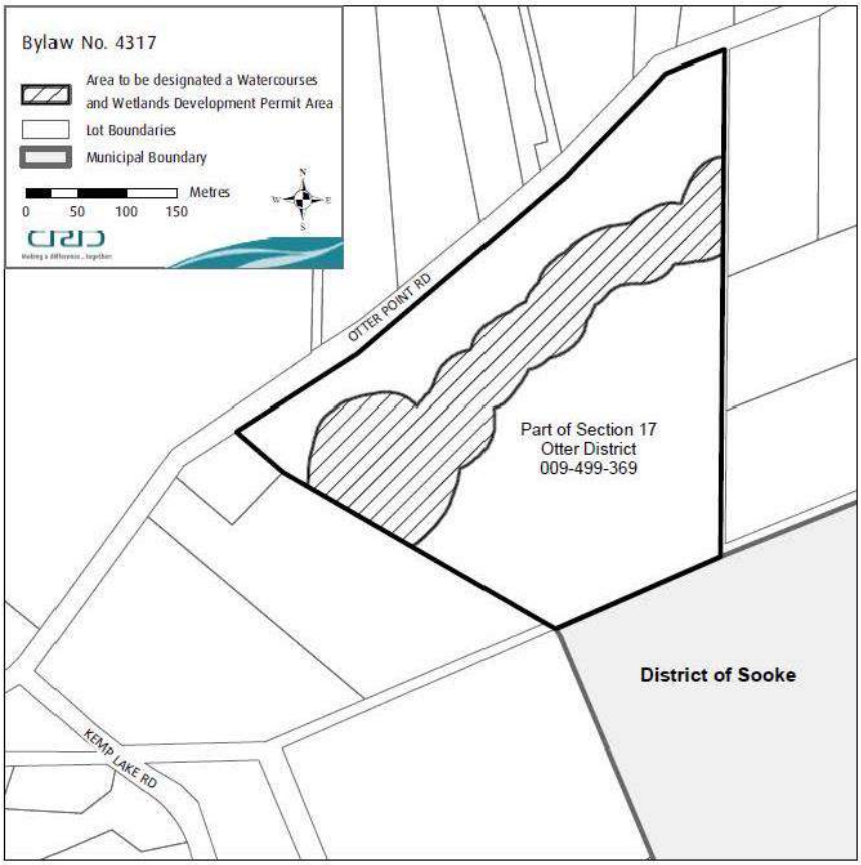
The Capital Regional District Board, in open meeting assembled, enacts as follows:

1. Bylaw No. 3819 being the "Otter Point Official Community Plan, 2014" is hereby amended:

   A. SCHEDULE A, MAP NO. 5c – WATERCOURSES & WETLANDS DEVELOPMENT PERMIT AREA

   (a) By adding that part of That Part of Section 17, Otter District, Lying East of Otter Point Road, Except Parcel C (DD43782I) And Except Parts in Plan 3054 And 17721 to the Watercourses and Wetlands Development Permit Area, as shown on Plan No. 1.

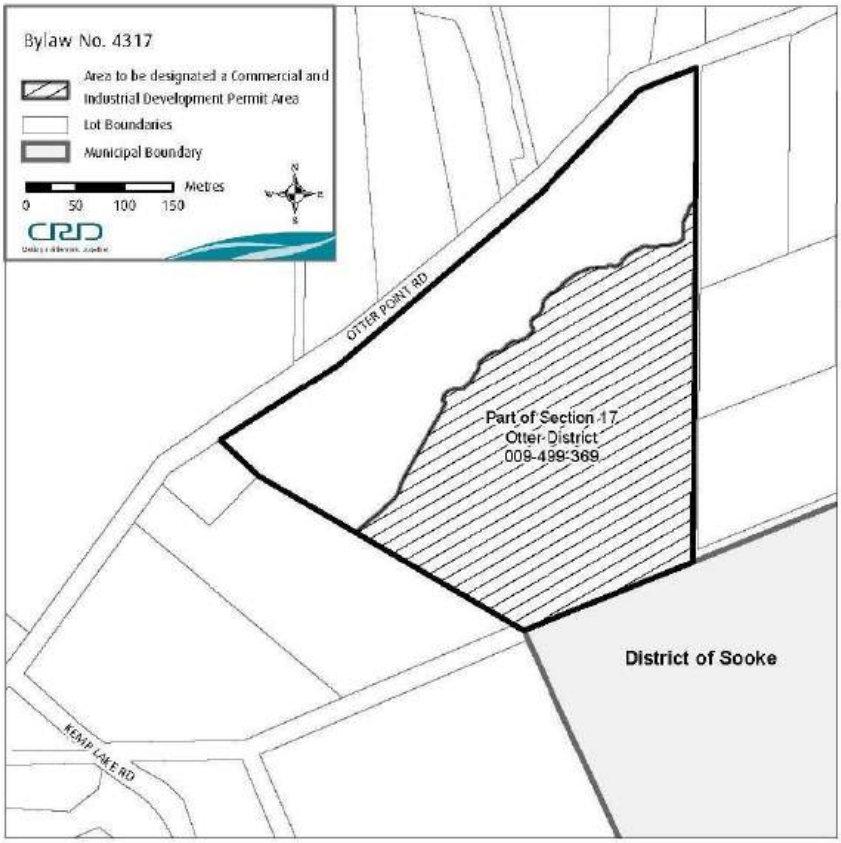
Plan No. 1 of Bylaw 4317, an amendment to Bylaw No. 3819



B. **SCHEDULE A, MAP NO. 5e – COMMERCIAL & INDUSTRIAL DEVELOPMENT PERMIT AREA**

(a) By adding that part of That Part of Section 17, Otter District, Lying East of Otter Point Road, Except Parcel C (DD43782I) And Except Parts in Plan 3054 And 17721 to the Commercial & Industrial Development Permit Area, as shown on Plan No.2.

Plan No. 2 of Bylaw 4317, an amendment to Bylaw No. 3819



2. This bylaw may be cited as "Otter Point Official Community Plan, 2014, Amendment Bylaw No. 2, 2019".

READ A FIRST TIME THIS	day of	, 2020.
READ A SECOND TIME THIS	day of	, 2020.
READ A THIRD TIME THIS	day of	, 2020.
ADOPTED THIS	day of	, 2020.

CHAIR CORPORATE OFFICER

Appendix C: Reports of the Public Hearing

REPORT OF PUBLIC HEARING
held at the Juan de Fuca Local Area Services Building
3-7450 Butler Road, Otter Point, BC
September 21, 2020 at 7:00 pm

SUBJECT: **BYLAW NO. 4316**, cited as "Juan de Fuca Land Use Bylaw, 1992, Amendment Bylaw No. 147, 2019"

PRESENT: **Director M. Hicks**, Chair by Resolution of the Capital Regional District Board on Wednesday, August 12, 2020
CRD Staff: I. Lawrence, Manager; JdF Community Planning (EP);
W. Miller, Recorder (EP)

PURPOSE OF THE HEARING:

Bylaw No. 4316 will amend Bylaw No. 2020, "Juan de Fuca Land Use Bylaw, 1992," by deleting That Part of Section 17, Otter District, Lying East of Otter Point Road, Except Parcel C (DD43782I) And Except Parts in Plans 3054 And 17721 from the Rural A (A) Zone, and adding to the Rural Residential 2 (RR-2) Zone, for the purpose of permitting six rural residential parcels, and by deleting from the Rural A (A) Zone, and adding to a new Industrial Sawmill (M-3) Zone, for the purpose of permitting one parcel for an industrial sawmill operation.

NOTICE: Notices were inserted in two (2) consecutive issues of the Sooke News Mirror appearing on September 10, and September 17, 2020.

ATTENDANCE: 1 In-person; 4 EP

EP – Electronic Participation

The Chair declared the public hearing open at 7:00 pm.

The guidelines and procedures of the public hearing and the Notice of Public Hearing were read to those present.

I. Lawrence advised that two submissions regarding the proposal were received. The submission from Robyn Bishop states non-support for the rezoning proposal. The submission from the Otter Point and Shirley Residents and Ratepayers Association (OPSRRA) states concern regarding the proposal's impact on the King Creek watershed and support for protection and remediation of aquatic areas on the subject property.

Cheryl Travis, Otter Point, stated concern regarding:
- the sawmill area being utilized for a dry land sort
- the operation's impact on adjacent wells

Ron Watson, Otter Point, stated concern regarding:
- the noise associated with the equipment needed to complement the sawmill including chainsaws, juicers and frontend loaders
- early hours of operation in the summer to work around fire hazard concerns
- fire hazards associated with bark piles and overall fire hazard management

Anne Bell, Otter Point, stated concern regarding invasive lighting, noise and hours of operation.

Lara Bell, Otter Point, questioned how concerns regarding the sawmill operation are addressed, should the proposal proceed, and it is determined that the sawmill operation is not complying with the zone.

The Chair called three times for further discussion on the bylaw and hearing none closed the public hearing on Bylaw No. 4316 at 7:09 pm.

CHAIR, Director M. Hicks

jdf info

From: Robyn
Sent: Sunday, September 20, 2020 12:55 PM
To: jdf info
Subject: zoning application

Hi Wendy,
Thank you for continuing to send updates/changes re this issue, much appreciated. I would like to submit my non support of this application for zoning change for the reasons stated in my previous letters.

Thank you,
Robyn Bishop

1

OPSRRA

Representing the Residents and Ratepayers of Otter Point, Shirley and Jordan River

Colin Plant, Chair,
Capital Regional District (CRD) Board
625 Fisgard Street
Victoria, BC V8W 1R7

August 12, 2020

Dear Colin,

Re: Watershed Protection as part of Proposed Re-zoning at Section 17 Otter District (3542 and 1-3542 Otter Point Rd.)

We hope this letter finds you all well during these difficult times for our region and the rest of the world.

We are writing to you to express concerns over the proposal to subdivide the property at the above noted location in Otter Point by the property owner [redacted] to allow a five lot rural residential subdivision, six ha area to a new Industrial Sawmill (M-3) zone, and a four ha portion to a new Industrial Aquaculture (M-4) zone (Bylaw No. 4316).

As you are probably aware, East King Creek is an important part of our watershed in Otter Point. It supports local wildlife, as well as providing a water supply directly and indirectly (feeding aquifers) for neighbouring residential properties and a local farm (ALM), the latter of which also has a prior agricultural license for deep well and surface water use from the creek.

We would like to respectfully ask the CRD Board and its operating committees at its upcoming September 12 meeting to ensure that the aquatic areas associated with the properties are properly protected as per provincial guidelines for set-backs and buffer zones. We also request that the Board ensure that any aquatic habitat damage that has so far occurred from improper clearing by the property owner, as determined by inspection by provincial and regional authorities and within applicable laws, be properly remediated by the owner to ensure it continues to provide important ecosystem functions and services for our community into the future.

Given the current trend of development in our communities, we would also like to again reiterate the hope that the CRD takes a more holistic and overall systems approach in ensuring ALL remaining and functioning watersheds in Shirley, Otter Point and Jordan River communities and traditional lands of the T'Souke and Pacheedaht First Nations are given the same important considerations and protection.

We look forward to hearing your decision on August 12 around the JdF Landuse Committee's recommendation for public hearing of bylaws 4316 and 4317, and would be happy to entertain any questions you may have.

Sincerely,

Bill Dushenko
President

OPSRRA www.opsrra.ca | Facebook | Blog | Calendar

Representing the Residents and Ratepayers of Otter Point, Shirley and Jordan River

cc. CRD Board

REPORT OF PUBLIC HEARING
held at the Juan de Fuca Local Area Services Building
3-7450 Butler Road, Otter Point, BC
September 21, 2020 at 7:00 pm

SUBJECT: **BYLAW NO. 4317**, cited as "Otter Point Official Community Plan Bylaw, 2014, Amendment Bylaw No. 2, 2019"

PRESENT: **Director M. Hicks**, Chair by Resolution of the Capital Regional District Board on Wednesday, August 12, 2020
CRD Staff: I. Lawrence, Manager; JdF Community Planning; W. Miller, Recorder

PURPOSE OF THE HEARING:

Bylaw No. 4317 will amend Bylaw No. 3819, "Otter Point Official Community Plan Bylaw No. 1, 2014, Amendment Bylaw No. 2, 2019" by adding portions of That Part of Section 17, Otter District, Lying East of Otter Point Road, Except Parcel C (DD43782I) And Except Parts in Plan 3054 And 17721 to the Watercourses and Wetlands Development Permit Area and to the Commercial & Industrial Development Permit Area for the purpose of designating portions of the property as Watercourses & Wetland Areas and Commercial & Industrial development permit areas.

NOTICE: Notices were inserted in two (2) consecutive issues of the Sooke News Mirror appearing on September 10, and September 17, 2020.

ATTENDANCE: 1 In-person; 4 EP

EP – Electronic Participation

The Chair declared the public hearing open at 7:10 pm.

The guidelines and procedures of the public hearing and the Notice of Public Hearing were read to those present.

I. Lawrence confirmed that no submissions regarding the proposal were received.

The Chair called three times for further discussion on the bylaw and hearing none closed the public hearing on Bylaw No. 4317 at 7:12 pm.

CHAIR, Director M. Hicks

Making a difference...together

AMENDED SUPPLEMENTARY REPORT TO
JUAN DE FUCA LAND USE COMMITTEE
MEETING OF TUESDAY, SEPTEMBER 15, 2020

SUBJECT **Comprehensive Community Development Plan Amendment Application for: That Part of Section 97, Renfrew District as Shown Coloured Red on Plan 344R (PID: 009-592-342); Lot 1, Section 97, Renfrew District, Plan EPP24972 (PID: 028-991-125); That Part of District Lot 17, Renfrew District Shown Outlined in Red on Plan 347R (PID: 009-575-006); and Those Parts of Block A and B, District Lot 751, Together with Unsurveyed Crown Foreshore or Land Covered by Water Being Part of the Bed of Port San Juan, All Within Renfrew District, Shown Outlined in Red on Licence V905027, Containing 3.86 Hectares, More or Less**

ISSUE SUMMARY

This report provides further supplementary information and a revised bylaw for the Report tabled by the Juan de Fuca Land Use Committee (LUC) on June 16, 2020, and the supplementary report provided as part of the September 15, 2020, Land Use Committee meeting agenda package in response to correspondence received from Pacheedaht First Nation on September 8, 2020.

BACKGROUND

Subsequent to concerns raised by Pacheedaht First Nation in their correspondence of June 16, 2020, receipt by JdF Planning of additional information from the applicant, and the writing of a supplementary report to the September 15, 2020, JdF Land Use Committee meeting, further correspondence dated September 8, 2020, (Appendix A) was received from Pacheedaht expressing remaining concerns related to areas of cultural and archaeological significance within the subject properties and providing three potential solutions.

In response to those remaining concerns, the applicant has agreed to remove the property, known colloquially as “Little Renfrew” (legally described as That Part of District Lot 17, Renfrew District Shown Outlined in Red on Plan 347R; PID: 009-575-006) from the application. JdF Planning staff have amended Bylaw No. 4096 accordingly by removing said property from the amendments to the Land Use Designation and Zoning maps of the Port Renfrew Comprehensive Community Development Plan, Bylaw No. 3109, and by removing Development Areas E and F from proposed Bylaw No. 4096 (Appendix B).

CONCLUSION

In response to the September 8, 2020, correspondence from Pacheedaht First Nation, and at the applicant’s request, JdF Planning staff have amended proposed Bylaw No. 4096. Staff recommend that original recommendation from the September 15, 2020, Land Use Committee report remain unchanged, but that the amended version of the bylaw be considered for first and second reading.

RECOMMENDATION

That the Land Use Committee recommends to the Capital Regional District (CRD) Board:

a) That the referral of proposed Bylaw No. 4096, “Comprehensive Community Development Plan for Port Renfrew, Bylaw No. 1, 2003, Amendment Bylaw No. 13, 2020” to a Public Information Meeting in Port Renfrew, the Juan de Fuca Electoral Area Parks and Recreation Advisory Commission; CRD departments; BC Hydro; Cowichan Valley Regional District; Department of Fisheries and Oceans; District of Sooke; Island Health; Ministry of Environment and Climate

Change Strategy; Ministry of Forests, Lands and Natural Resource Operations; Ministry of Transportation and Infrastructure; Pacheedaht First Nation; RCMP; Sooke School District #62 be approved and the comments received;

b) That proposed Bylaw No. 4096, "Comprehensive Community Development Plan for Port Renfrew, Bylaw No. 1, 2003, Amendment Bylaw No. 13, 2020" be introduced and read a first time and read a second time;

c) That in accordance with the provisions of Section 469 of the *Local Government Act*, the Director for the Juan de Fuca Electoral Area, or Alternate Director, be delegated authority to hold a public hearing with respect to Bylaw No. 4096; and

d) That prior to adoption of the bylaws, the applicant:
   i. Register a covenant on the title of the lands pursuant to Section 219 of the *Land Title Act* in favour of the CRD securing the Archaeological Impact Assessment prepared by Duncan McLaren, PhD, dated July 31, 2018, and the geotechnical report prepared by Bruce Dagg, P.Eng., dated November 19, 2015.

Submitted by:	Iain Lawrence, MCIP, RPP, Manager, Juan de Fuca Community Planning

ATTACHMENT:

Appendix A: Correspondence from Pacheedaht First Nation, September 8, 2020

Appendix B: Bylaw No. 4096

Appendix A: Correspondence from Pacheedaht First Nation

Pacheedaht First Nation
350 Kalaid Street
Port Renfrew, BC
V0S 1K0
Phone: (250) 647-5521
Fax: (250) 647-5561

September 8, 2020

VIA EMAIL

Capital Regional District
625 Fisgard Street
Victoria, BC V8W 1R7

Attention: **Iain Lawrence**
Manager, Juan de Fuca Community Planning
(ilawrence@crd.bc.ca)

Dear Sirs/Mesdames:

Re: **Proposed New Pacific Gateway Marine Comprehensive Development Zone**
Comprehensive Community Development Plan Amendment Application ("Application") for:
That Part of District Lot 17, Renfrew District Shown Outlined in Red on Plan 347R (PID: 009-575-006) (with reference to the Draft By-law, "Lot 1");
That Part of Section 97, Renfrew District as Shown Coloured Red on Plan 344R (PID: 009-592-342) ("Lot 2");
Lot 1, Section 97, Renfrew District, Plan EPP24972 (PID: 028-991-125) ("Lot 3", and together with Lots 1 and 2, the "Uplands"); and
Those Parts of Block A and B, District Lot 751, Together with Unsurveyed Crown Foreshore or Land Covered by Water Being Part of the Bed of Port San Juan, All Within Renfrew District, Shown Outlined in Red on Licence V905027, Containing 3.86 Hectares, More or Less ("Water Lot")

Thank you for your letter dated July 31, 2020, in which you reference the concerns we set out in our letter dated June 16, 2020 in relation to the above-noted Application.

As you referenced in your letter, the CRD's existing development application process does not allow for our meaningful participation for the consideration of proposed developments within our traditional territory. The process employed to date for this Application has not resulted in any meaningful opportunity for our input on the proposed rezoning, or for dialogue between the CRD and Pacheedaht about our concerns. As you noted, Pacheedaht was merely advised of the Application, and our earlier comments were attached to the staff report. This approach has not resulted in any real engagement on the Application.

In order to support a meaningful discussion about our concerns with the Application, we have set out some of our main concerns with the Application as currently proposed below.

Concerns with PGM's Application as Proposed

1. **Separation of Marina and Uplands Development Portions of Application**

As you noted in your letter, Pacific Gateway Marina Sport Fishing and Marina Inc. ("PGM") engaged in some consultation with Pacheedaht in connection with the application for the licence of occupation ("LOO") from the Province and the temporary use permit ("TUP") from the CRD. PGM's marina site was changed in late 2015. The marina layout has been fairly well established since that time. This stands in contrast to the Uplands development, a serious plan for which has only been disclosed in 2020.

It is our understanding that PGM was seeking to secure an LOO over the Water Lot, where the marina is located, from FLNRORD at the same time that it was seeking to obtain a TUP from the CRD. We recall that Juan de Fuca Electoral Area Director Mike Hicks was unable to participate in discussions with the Province in connection with the LOO application due to concerns that he may have been in a position of personal conflict as the owner of a fishing charter and lodge business, which would be a potential patron of the marina. However, the CRD was not excluded from the Province's process for the LOO.

The Province granted a two-year LOO to PGM on February 16, 2016. Also in 2016, we understand that the CRD granted PGM a three-year TUP (our copy is undated and unsigned). Both the TUP and the LOO set out similar permitted activities and cover only the Water Lot, not the Uplands. The marina is now built, and, no matter the status of the LOO or the TUP, will not be removed.

Although we had conversations with the Province with respect to the granting of the LOO and the development of the marina, in our view, not all matters were resolved. It is also important to note that this consultation did not touch on the Uplands development.

Now that the marina has been in operation for four years, we, together with the Port Renfrew community and the CRD, have had the opportunity to observe and experience the impacts from its operations. Our concerns echo those concerns we expressed back in 2015. We also have additional concerns, such as about the disposal of grey water and sewage. Our community is extremely close to the marina; any marine impacts have a direct impact on our community, land management, and important resource harvesting.

We believe that the zoning for the marina requires multi-agency input to ensure that the marina's operations are conducted in a way that minimizes their environmental effects and impacts to our Aboriginal rights. Although the foreshore is under Provincial jurisdiction, the Comprehensive Community Development Plan ("CCDP") sets land use policies around a marine-protection zone. This demonstrates that the CRD perceives a role in respect to zoning and land use in connection with the marine area, by, as noted in the CCDP, "non-government persons for non-government purposes."[1] The CRD should bring its own experience to ensure that the types of operations it permits fit in harmoniously with the region, keeping in mind sustainability, community development, and priorities for investment in the Port Renfrew community, such as water and sewer infrastructure, and housing for the community.

Given the different considerations at play and the different stages of engagement that have occurred with respect to planning and operations as between the marina and the Uplands development, we suggest that the PGM marina zoning be separated from the residential development application and proceed on a separate track. We also suggest that the CRD think carefully about the options at its disposal with respect to the zoning of the marina, and not take the position that FLNRORD completed this job back in 2016.

[1] CCDP, section 4.2.

It is important to remember that at the time the LOO was issued, it was just the marina being considered and none of the residential development of the Uplands. The level of Uplands development currently being proposed was not a focus at the time, let alone subject to assessment or consultation with Pacheedaht. From our perspective, the Uplands development poses a completely different and serious set of impacts, including to the network of sea caves adjacent to the PGM site. These impacts were not considered when the marina was approved. The proposed Uplands development is a distinct and complex project that needs to be subject to its own thorough assessment before being allowed to proceed. It cannot be allowed to piggy-back on the existing approvals for the marina.

Finally, with regards to the marina portion of the Application, we ask that you apprise us of the current status of the TUP, given that the three year term would have expired last year.

2. **CRD's Consideration of Proposed Uplands Development**

As noted above, the PGM marina plan, reflected in the LOO and the TUP, has been known since late 2015 / early 2016. The development plan for the Uplands seeks to piggyback on that work without engagement specific to the area, which contains important archaeological sites. In Pacheedaht's view, the area around the sea caves should include a no-build zone. The work that has been done to date has demonstrated the risk to carrying on residential development; we should learn from the developments that have been previously approved (in different zoning) rather than use those developments as a basis for approving a development that is even closer to the sea caves.

You mention the following reports relevant to the CRD's consideration of the Uplands. These reports need to be discussed with Pacheedaht.

a) Archaeological Report

The Archaeological Inventory and Impact Assessment of Sea Caves in the Vicinity of the Pacific Gateway Marina Project in Port Renfrew BC by Duncan McLaren, Cordillera Archaeology dated July 31, 2018 (the "AIA") that you reference in your letter was prepared with Pacheedaht input. We have concerns with your suggested approach of preparing summaries of the AIA and November 19, 2015 Ryzuk geotechnical report ("Ryzuk Report") that is attached for the September 15, 2020 Land Use Committee (the "Committee"), and also with the proposed measure of registering a covenant that would set vibration thresholds. This approach seems likely to distill a complex report touching on archaeology, history and environment down to a set of construction guidelines.

As noted in our June 16, 2020 letter, it is not sufficient or appropriate to limit the Committee's considerations of impacts to a report written about us. Further, your comments relating to the report suggest to us that you are taking points from the AIA selectively. We offer some comments on work that went into the AIA, the AIA itself and some limitations.

The AIA is the product of the latest effort to learn more about the network of sea caves adjacent to the PGM site. As noted in the AIA, the work resulted in the registration of a heritage site (DdSc-24, the "Registered Cave"), being the one burial cave that has been located and identified. This burial cave is the subject of much of the AIA. However, we draw your attention to the map at Figure 7 of the AIA, which labels nine known sea caves on or near PGM's lands and development plans.

Pacheedaht oral history indicates that there is an additional burial cave, which has not yet been found. The AIA notes that possible candidates are caves 1, 2, 5, or possibly 7 (marked on Figure 7 of the AIA).[2] The AIA notes that Cave 5 may be a significant and large cave feature with a high archaeological potential; Cave 7 includes an area

[2] AIA, page 17, 7.A5.

above the high tide line with a moderate archaeological potential.[3] Technology is advancing at a rapid pace, even since the work conducted in connection with the AIA. Pacheedaht has not yet lost hope of finding the second burial cave. We do not accept that the caves that have not yet been found or accessed are inaccessible.

Our oral history indicates that the network of sea caves was not limited to the area indicated on Figure 7, but was extensive, and led to Botanical Beach. More contemporary accounts from Port Renfrew residents describe the network of sea caves being used to walk to the general store. In our view, there is more to learn, protect and restore about the network of sea caves. In the highlighting of the registration of the Registered Cave, and in subsequent summaries and reference, there is a tendency to place emphasis on the Registered Cave to the exclusion of the cave network and the caves that have not yet been accessed.

The AIA focuses on the damage that has been done to the Registered Cave and also on mitigation measures that were recommended to preserve the Registered Cave from further damage during construction or due to more people accessing the Registered Cave site in connection with the marina construction and property development by Three Point Properties. We note that the AIA was not evaluating any PGM proposed residential development plan of the Uplands, as there was not one to evaluate.

Pacheedaht emphasizes the historical, spiritual and ecological importance of the cave network. In addition to this historical importance, Pacheedaht views the cave network as having an ongoing cultural importance, and we hope to be able to once again use the Registered Cave for ceremonial purposes. The mitigation measures proposed to date, such as a fence preventing access to the Registered Cave, are insufficient protection measures and would also block Pacheedaht ready access to this important site. Development of the area will irreparably harm the sea caves and accordingly we reiterate our view that building near the cave network should not be permitted, as it is likely to harm the cave network.

We continue to have serious concerns about the proposed development blocking off our access and permanently damaging this incredibly significant site, which will have serious adverse effects on our cultural connection to the sacred burial cave and our ability to conduct ceremonies there.

b) Geotechnical Report

The AIA references the blasting guidelines set out in the Ryzuk Report as among the management recommendations that PGM should follow around the Registered Site. However, Pacheedaht has concerns that neither the AIA nor the Ryzuk Report give sufficient weight to the uncertainty and irreparable harm that are likely to arise in connection with residential development.

The Ryzuk Report notes that the impact of vibrations on caves is not as well understood as on other structures.[4] In making their recommendations, the consultants reference one study from England about blasting from quarrying near limestone caves.[5] We are unsure if this study is applicable to the sea caves, which are not limestone, and if it should be relied on. For example, these caves are shale. Fallen fragments that have impeded cave access have been observed and reported on to the authorities. The consultants set out an important proviso to their conclusion that blasting may be safely carried out: "it is certainly possible that additional rockfall may be experienced from time to time, and such may have no discernible trigger mechanism."[6]

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[3] AIA, page 16, 3rd additional recommendation.
[4] Page 4.
[5] Page 4.
[6] Page 5.

The Ryzuk Report also references the blasting that previously occurred in connection with the development of the Wild Coast Cottages, behind Lot 1. The Report notes that the blasting was carried out with no monitoring. Although there were no reported impacts, the consultants noted "the possibility that blasting at the Wild Coast Cottages development may have contributed to the apparent relatively recent rockfall event that partially blocked the cave entrance cannot be discounted." It also notes that "anecdotal evidence suggests that the fractured phyllite or slate rock at the cave entrance has been unstable for some time, although it is possible that such has been exacerbated by recent construction activity in the area."

The AIA notes that "some of the West Coast Cottages may be built on relatively unstable sea cave roofs. Erosion in and around these features appears to be more rapid than away from them as indicated by the V-shaped indents in which the caves are situated." These observations demonstrate that past development behind Lot 1 may have occurred on ground less stable than it was understood to be, and may have impacted the ground and the sea caves below. In our view, this demonstrates that the further construction associated with the proposed development, of Lot 1 in particular, poses serious risk.

c) Environmental Report

The Environmental Impact Assessment conducted by Cascadia Biological Services dated March 10, 2019 ("Environmental Report") places emphasis on the fact that that the Uplands are not in a natural state. However, developing the Uplands would make permanent the disturbed condition. Once the Uplands are subdivided into small residential lots, there will be no going back.

The Environmental Report does not take into account Pacheedaht ecological knowledge in its consideration of the Application. Pacheedaht was unaware that this report was being done. Pacheedaht needs to be a part of the environmental work undertaken to fully evaluate the uplands portion of the Application.

Uplands Development Should Not Proceed at This Time

On the basis of these unaddressed concerns, and as there has yet to be a meaningful assessment of PGM's proposed development of the Uplands, Pacheedaht requests that the CRD not approve the development of the Uplands, in order to identify a no-build zone on the Uplands that will protect not only the Registered Cave, but the cave network, including the burial cave that has yet to be located.

Should the CRD be unwilling to designate a no-go zone, as set out in our comments above on the various reports, much more work is needed in terms of identifying and assessing potential impacts from any development of the Uplands, as well as any required mitigation. This work must be completed with Pacheedaht's involvement before any future applications are considered for the Uplands.

Working Together

It is critical to improve on these processes to allow for the CRD and Pacheedaht to work together on the review, consideration and approval stages of development processes. The task of evaluating a proposed rezoning application is made all the more difficult in the absence of an updated CCDP.

Thank you for letting us know that the CRD is committed to reviewing the Official Community Plan component of the CCDP in 2021. Pacheedaht is ready, willing and able to meaningfully participate in this important process. An updated CCDP to which the communities have had the opportunity to contribute, will:

- allow all community members to understand how rezoning applications fit in to the overall vision for the area;

- enable more effective application processes; and
- address the perception that there is a different set of rules applicable to certain proponents.

In the meantime, Pacheedaht and CRD should be engaging in a joint decision-making process for the Application given the size of the development and the importance of the area, especially the spiritually and culturally important sea caves, and would like to discuss with you how that might be done. In considering the Application, sufficient time must be allowed for working with Pacheedaht and for our concerns to be considered and addressed. With this in mind, in our view September 15th is not a realistic date for the Committee to consider the rezoning application. More time is needed to consider the full range of issues involved.

Closing

We ask that the CRD:

I. Proceed with the Application on two tracks, one for the marina and the other for the development for the Uplands;
II. Work with Pacheedaht to determine a no build zone for the Uplands, to reflect the unacceptable risk of developing in a way that is likely to irreparably harm the network of sea caves; and
III. Alternatively, work with Pacheedaht to determine the further work required to proceed with the proposed development of the Uplands.

We do not believe that consideration of the Application can proceed with the scheduled Committee meeting on September 15th, but suggest that we arrange a meeting the week of September 8th.

Yours truly,

PACHEEDAHT FIRST NATION

Chief Jeff Jones

cc: Capital Regional District, Attn. Mike Hicks, Regional Director, Juan de Fuca Electoral Area (**directorjdf@crd.bc.ca**)
Mandell Pinder LLP, Attn. Rosanne Kyle (**rosanne@mandellpinder.com**)

Appendix B: Bylaw No. 4096

CAPITAL REGIONAL DISTRICT
BYLAW NO. 4096

****

A BYLAW TO AMEND BYLAW NO. 3109,
THE "COMPREHENSIVE COMMUNITY PLAN FOR PORT RENFREW, BYLAW NO. 1, 2003"

****

The Capital Regional District Board, in open meeting assembled, enacts as follows:

1. Bylaw No. 3109 being the "Comprehensive Community Plan for Port Renfrew, Bylaw No. 1, 2003" is hereby amended:

A. SCHEDULE A, SECTION 4.0 DEVELOPMENT POLICIES

(a) By inserting a new Section 4.5 "Pacific Gateway Marina (PGM) Policies" after Section 4.4, to be read as follows:

4.5. Pacific Gateway Marina (PGM) Policies

Objective

The objective of the PGM designation is to provide a mix of community uses, year-round residential accommodation, vacation properties, and commercial tourism, recreation and marina services to the general public. Development within the PGM designation should support the economic, social and cultural well-being of the Port Renfrew community.

4.5.1. Development (PGM) Policies

1) In order to facilitate the increased level of use supported by the PGM designation the following services should be constructed and bylaws adopted prior to development:

a) Installation of a second water reservoir to expand the capacity of the Port Renfrew Water Supply System to the satisfaction of the Capital Regional District.

b) Adoption of an amendment to the Port Renfrew Water Supply Local Service Establishment Bylaw No. 1, 1989, Bylaw No. 1747, to include all those lands and the surface of the water within the PGM land use designation.

c) Adoption of an amendment to the Port Renfrew Fire Protection Local Service Establishment Bylaw, 1989, Bylaw No. 1743, to include all those lands and the surface of the water within the PGM land use designation.

2) The following amenity is of interest to the community and should be completed in accordance with the requirements specified by the Pacific Gateway Marina Comprehensive Development (PGM-CD) zone:

a) Construction of a public trail and staircase providing connectivity between the Juan de Fuca Electoral Area Community Parks and Recreation trail on Lot 64, Plan VIP24755, and Baird Road. The route provided by this trail and staircase should be protected by a statutory right-of-way in favour of the CRD.

3) Areas of known archaeological significance that are located within the area under the PGM designation are to be protected in accordance with Provincial legislation.

and renumbering Section 4 accordingly.

B. SCHEDULE B, PART IV ZONES

(a) By inserting a new "Pacific Gateway Marina Comprehensive Development (PGM-CD)" zone after Section 27, to be read as follows:

28.0 Pacific Gateway Marina Comprehensive Development (PGM-CD) Zone

Purpose

The purpose of this zone is to implement the Pacific Gateway Marina (PGM) land use designation in order to provide a mix of community uses, year-round residential accommodation, vacation properties, and commercial tourism, recreation and marina services to the general public.

The PGM-CD zone is divided into Development Areas A – D, which are shown in Section 28.05. Development within each Development Area is to occur in accordance with the regulations indicated below.

Except where otherwise provided for in this Bylaw, only the specified list of permitted uses may be carried out on the parcels within the PGM-CD zone.

28.01 PGM-CD Zone – General Regulations

(a) Permitted uses:
  (i) Single-family residential
  (ii) Accessory buildings and structures

(b) Maximum density:
  (i) One single-family dwelling

(c) Where the following services and amenities are provided, the permitted uses, densities and regulations of Development Areas A-D, as specified in Sections 28.02 to 28.05, shall apply:
  (i) Connection to the Port Renfrew Water Supply System to the satisfaction of the Capital Regional District.
  (ii) Connection to a community sewer system to the satisfaction of Island Health where total daily flows are less than 22,700 L/day, and to the satisfaction of the Ministry of Environment where total daily flows exceed 22,700 L/day.
  (iii) Provision of a public trail constructed in a location and to a standard approved by Juan de Fuca Electoral Area Community Parks and Recreation, connecting Development Area A with Development Areas B and C. The trail is to be protected for public use via statutory right-of-way and maintenance agreement in favour of the Capital Regional District.

(d) The Development Area boundaries, as shown in Section 28.05 shall be deemed to be lot boundaries for the purposes of determining applicable uses, densities and regulations.

(e) Where a survey plan approved by the Surveyor General indicates the adjustment of a parcel boundary due to accretion, the zoning and development area designation applicable to the parcel is deemed to extend to the new parcel boundary despite the zoning designation of the accreted area indicated in Section 28.05.

(f) As a requirement of subdivision, each proposed parcel within the PGM-CD zone must be connected to a community sewer system to the satisfaction of Island Health or the Ministry of Environment, and to a community water system to the satisfaction of the Capital Regional District.

28.02 Development Area A – Specific Regulations

(1) Permitted uses	(a) Single-family residential (b) Duplex residential (c) Accessory buildings or structures to the above permitted uses
(2) Minimum lot size for subdivision purposes	0.75 ha
(3) Minimum front yard setback	6.0 m
(4) Minimum interior side yard setback	3.0 m
(5) Minimum exterior side yard setback	4.5 m
(6) Minimum rear yard setback	4.5 m
(7) Maximum floor area ratio of residential units shall be:	0.30
(8) Maximum lot coverage	40% of the parcel area
(9) Maximum principal building height	11.75 m
(10) Maximum accessory building height	6.0 m

28.03 Development Areas B and D – Specific Regulations

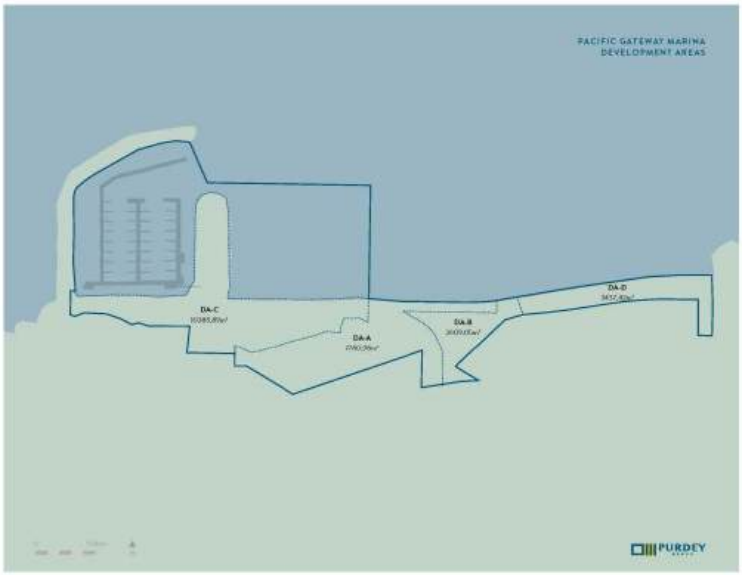
(1) Permitted uses	(a) Single-family residential (b) Duplex residential (c) Home based business (d) Staff accommodation (e) Accessory buildings or structures to the above permitted uses
(2) Minimum lot size for subdivision purposes:	
(a) Development Area B	0.26 ha
(b) Development Area D	0.34 ha
(3) Minimum front yard setback	6.0 m
(4) Minimum interior side yard setback	3.0 m
(5) Minimum exterior side yard setback	4.5 m
(6) Minimum rear yard setback	4.5 m
(7) Maximum combined floor area ratio of residential, tourist accommodation and staff accommodation units	
(a) Development Area B	0.35
(b) Development Area D	0.25
(8) Maximum lot coverage	40% of the parcel area

(9) Maximum principal building height	11.75 m
(10) Maximum accessory building height	6.0 m

28.04 Development Area C – Specific Regulations

(1) Permitted uses	(a) Commercial marina (b) Community uses (c) Conference centre (d) Fish processing (e) Food service establishments (f) Hotels and motels (g) Office uses (h) Retail establishments (i) Staff accommodation (j) Tourist facilities and related amenities (k) Accessory buildings or structures to the above permitted uses
(2) Minimum lot size for subdivision purposes	1.0 ha
(3) Minimum front yard setback	6.0 m
(4) Minimum interior side yard setback	3.0 m
(5) Minimum exterior side yard setback	4.5 m
(6) Minimum rear yard setback	4.5 m
(7) Maximum combined floor area ratio of tourist accommodation and staff accommodation units	0.60
(8) Maximum lot coverage	50% of the parcel area
(9) Maximum principal building height	12.0 m
(10) Maximum accessory building height	6.0 m

28.05 PGM-CD Zone Development Areas Map



C. SCHEDULE B, MAP NO. 2 – LAND USE DESIGNATIONS

(a) By deleting That Part of Section 97, Renfrew District as Shown Coloured Red on Plan 344R (PID: 009-592-342) and Lot 1, Section 97, Renfrew District, Plan EPP24972 (PID: 028-991-125) from the Residential (R) designation and adding said lots to the Pacific Gateway Marina (PGM) designation, as shown on Plan No. 1; and

(b) By deleting Those Parts of Block A and B, District Lot 751, Together with Unsurveyed Crown Foreshore or Land Covered by Water Being Part of the Bed of Port San Juan, All Within Renfrew District, Shown Outlined in Red on Licence V905027, Containing 3.86 Hectares, More or Less from the Marine Protection (M) designation and adding said licence area to the Pacfic Gateway Marina (PGM) designation, as shown on Plan No. 1.

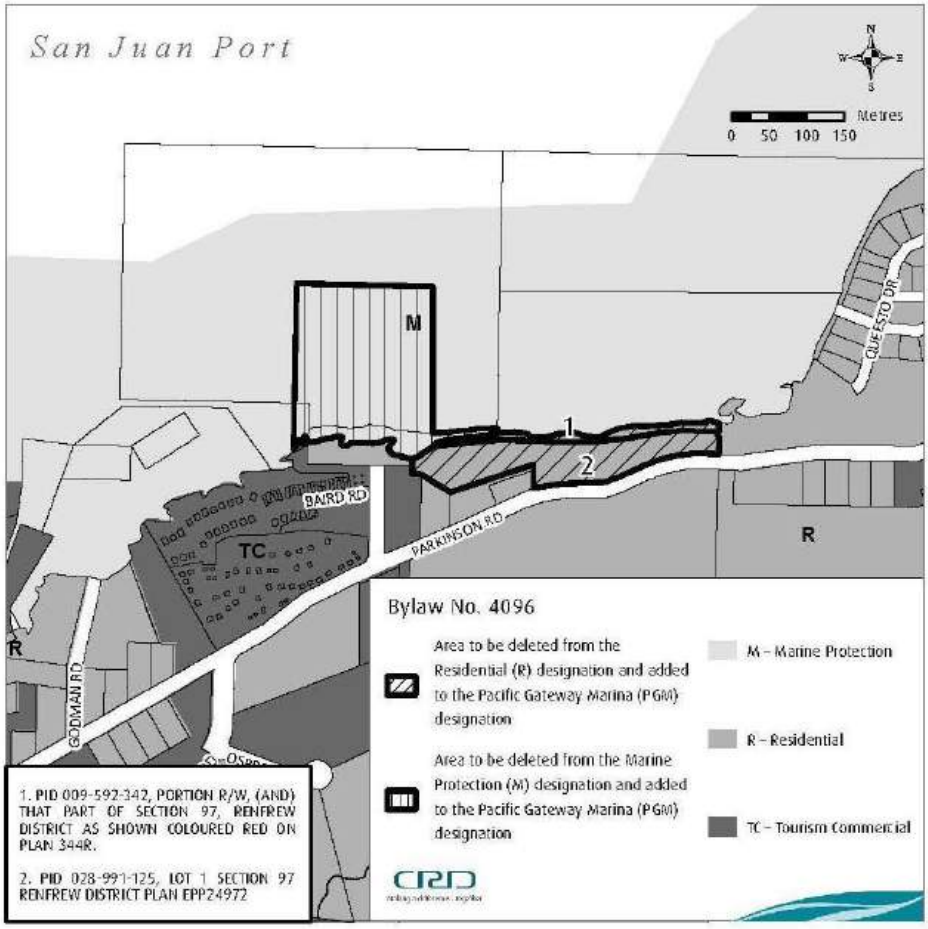
D. SCHEDULE B, MAP NO. 3 – ZONING

(a) By deleting That Part of Section 97, Renfrew District as Shown Coloured Red on Plan 344R (PID: 009-592-342) and Lot 1, Section 97, Renfrew District, Plan EPP24972 (PID: 028-991-125) from the Community Residential – One (CR-1) zone and adding said lots to the Pacific Gateway Marina Comprehensive Development (PGM-CD) zone, as shown on Plan No. 2; and

(b) By deleting Those Parts of Block A and B, District Lot 751, Together with Unsurveyed Crown Foreshore or Land Covered by Water Being Part of the Bed of Port San Juan, All Within Renfrew District, Shown Outlined in Red on Licence V905027, Containing 3.86 Hectares, More or Less from the Marine (M) zone and adding said licence area to the Pacfic Gateway Marina Comprehensive Development (PGM-CD) zone, as shown on Plan No. 2.

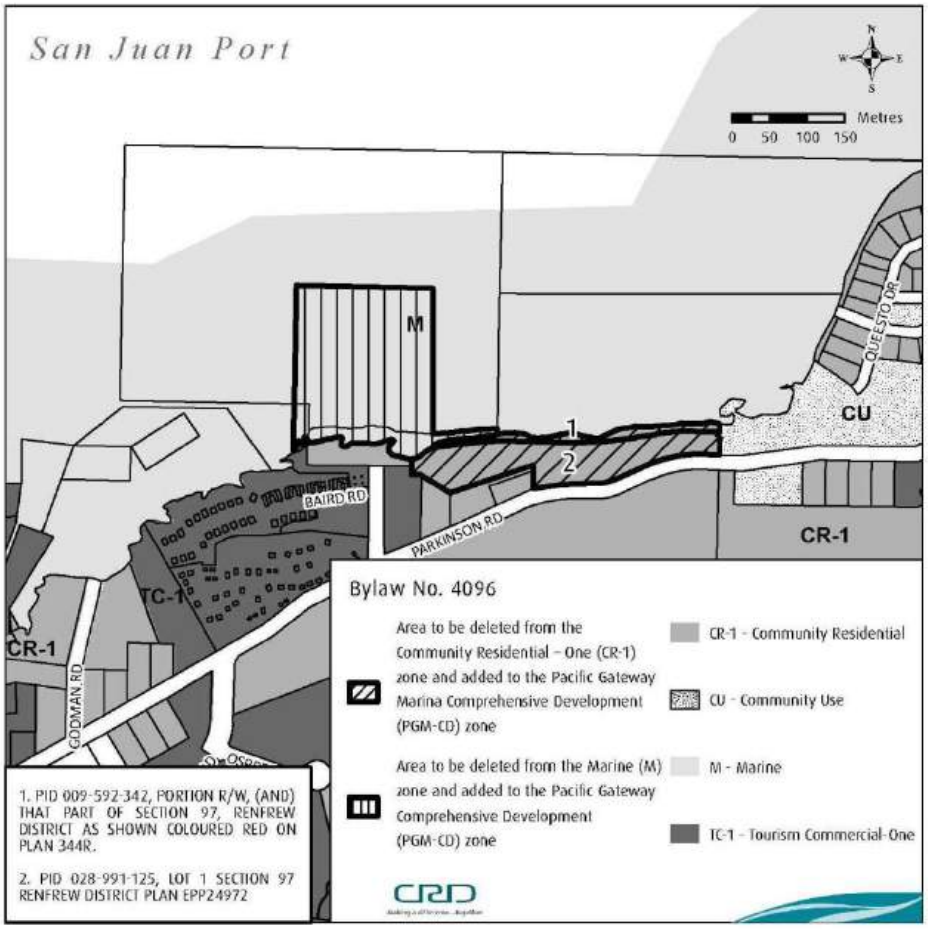
Plan No. 1 of Bylaw 4096, an amendment to Bylaw No. 3109

That Part of Section 97, Renfrew District as Shown Coloured Red on Plan 344R (PID: 009-592-342); Lot 1, Section 97, Renfrew District, Plan EPP24972 (PID: 028-991-125) and Those Parts of Block A and B, District Lot 751, Together with Unsurveyed Crown Foreshore or Land Covered by Water Being Part of the Bed of Port San Juan, All Within Renfrew District, Shown Outlined in Red on Licence V905027, Containing 3.86 Hectares, More or Less shown on this plan attached to and forming part of this bylaw.



Plan No. 2 of Bylaw 4096, an amendment to Bylaw No. 3109

That Part of Section 97, Renfrew District as Shown Coloured Red on Plan 344R (PID: 009-592-342); Lot 1, Section 97, Renfrew District, Plan EPP24972 (PID: 028-991-125) and Those Parts of Block A and B, District Lot 751, Together with Unsurveyed Crown Foreshore or Land Covered by Water Being Part of the Bed of Port San Juan, All Within Renfrew District, Shown Outlined in Red on Licence V905027, Containing 3.86 Hectares, More or Less shown on this plan attached to and forming part of this bylaw.



2. This bylaw may be cited as "Comprehensive Community Development Plan for Port Renfrew, Bylaw No. 1, 2003, Amendment Bylaw No. 10, 2020".

READ A FIRST TIME THIS	day of	, 2020.
READ A SECOND TIME THIS	day of	, 2020.
READ A THIRD TIME THIS	day of	, 2020.
ADOPTED THIS	day of	, 2020.

CHAIR CORPORATE OFFICER

CAPITAL REGIONAL DISTRICT
BYLAW NO. 4096

****

A BYLAW TO AMEND BYLAW NO. 3109,
THE "COMPREHENSIVE COMMUNITY PLAN FOR PORT RENFREW, BYLAW NO. 1, 2003"

****

The Capital Regional District Board, in open meeting assembled, enacts as follows:

1. Bylaw No. 3109 being the "Comprehensive Community Plan for Port Renfrew, Bylaw No. 1, 2003" is hereby amended:

A. SCHEDULE A, SECTION 4.0 DEVELOPMENT POLICIES

(a) By inserting a new Section 4.5 "Pacific Gateway Marina (PGM) Policies" after Section 4.4, to be read as follows:

4.5. Pacific Gateway Marina (PGM) Policies

Objective

The objective of the PGM designation is to provide a mix of community uses, year-round residential accommodation, vacation properties, and commercial tourism, recreation and marina services to the general public. Development within the PGM designation should support the economic, social and cultural well-being of the Port Renfrew community.

4.5.1. Development (PGM) Policies

1) In order to facilitate the increased level of use supported by the PGM designation the following services should be constructed and bylaws adopted prior to development:

a) Installation of a second water reservoir to expand the capacity of the Port Renfrew Water Supply System to the satisfaction of the Capital Regional District.

b) Adoption of an amendment to the Port Renfrew Water Supply Local Service Establishment Bylaw No. 1, 1989, Bylaw No. 1747, to include all those lands and the surface of the water within the PGM land use designation.

c) Adoption of an amendment to the Port Renfrew Fire Protection Local Service Establishment Bylaw, 1989, Bylaw No. 1743, to include all those lands and the surface of the water within the PGM land use designation.

2) The following amenity is of interest to the community and should be completed in accordance with the requirements specified by the Pacific Gateway Marina Comprehensive Development (PGM-CD) zone:

a) Construction of a public trail and staircase providing connectivity between the Juan de Fuca Electoral Area Community Parks and Recreation trail on Lot 64, Plan VIP24755, and Baird Road. The route provided by this trail and staircase should be protected by a statutory right-of-way in favour of the CRD.

3) Areas of known archaeological significance that are located within the area under the PGM designation are to be protected in accordance with Provincial legislation.

and renumbering Section 4 accordingly.

B. SCHEDULE B, PART IV ZONES

(a) By inserting a new "Pacific Gateway Marina Comprehensive Development (PGM-CD)" zone after Section 27, to be read as follows:

28.0 Pacific Gateway Marina Comprehensive Development (PGM-CD) Zone

Purpose

The purpose of this zone is to implement the Pacific Gateway Marina (PGM) land use designation in order to provide a mix of community uses, year-round residential accommodation, vacation properties, and commercial tourism, recreation and marina services to the general public.

The PGM-CD zone is divided into Development Areas A – D, which are shown in Section 28.05. Development within each Development Area is to occur in accordance with the regulations indicated below.

Except where otherwise provided for in this Bylaw, only the specified list of permitted uses may be carried out on the parcels within the PGM-CD zone.

28.01 PGM-CD Zone – General Regulations

(a) Permitted uses:
  (i) Single-family residential
  (ii) Accessory buildings and structures

(b) Maximum density:
  (i) One single-family dwelling

(c) Where the following services and amenities are provided, the permitted uses, densities and regulations of Development Areas A-D, as specified in Sections 28.02 to 28.05, shall apply:
  (i) Connection to the Port Renfrew Water Supply System to the satisfaction of the Capital Regional District.
  (ii) Connection to a community sewer system to the satisfaction of Island Health where total daily flows are less than 22,700 L/day, and to the satisfaction of the Ministry of Environment where total daily flows exceed 22,700 L/day.
  (iii) Provision of a public trail constructed in a location and to a standard approved by Juan de Fuca Electoral Area Community Parks and Recreation, connecting Development Area A with Development Areas B and C. The trail is to be protected for public use via statutory right-of-way and maintenance agreement in favour of the Capital Regional District.

(d) The Development Area boundaries, as shown in Section 28.05 shall be deemed to be lot boundaries for the purposes of determining applicable uses, densities and regulations.

(e) Where a survey plan approved by the Surveyor General indicates the adjustment of a parcel boundary due to accretion, the zoning and development area designation applicable to the parcel is deemed to extend to the new parcel boundary despite the zoning designation of the accreted area indicated in Section 28.05.

(f) As a requirement of subdivision, each proposed parcel within the PGM-CD zone must be connected to a community sewer system to the satisfaction of Island Health or the Ministry of Environment, and to a community water system to the satisfaction of the Capital Regional District.

28.02 Development Area A – Specific Regulations

(1) Permitted uses	(a) Single-family residential (b) Duplex residential (c) Accessory buildings or structures to the above permitted uses
(2) Minimum lot size for subdivision purposes	0.75 ha
(3) Minimum front yard setback	6.0 m
(4) Minimum interior side yard setback	3.0 m
(5) Minimum exterior side yard setback	4.5 m
(6) Minimum rear yard setback	4.5 m
(7) Maximum floor area ratio of residential units shall be:	0.30
(8) Maximum lot coverage	40% of the parcel area
(9) Maximum principal building height	11.75 m
(10) Maximum accessory building height	6.0 m

28.03 Development Areas B and D – Specific Regulations

(1) Permitted uses	(a) Single-family residential (b) Duplex residential (c) Home based business (d) Staff accommodation (e) Accessory buildings or structures to the above permitted uses
(2) Minimum lot size for subdivision purposes:	
(a) Development Area B	0.26 ha
(b) Development Area D	0.34 ha
(3) Minimum front yard setback	6.0 m
(4) Minimum interior side yard setback	3.0 m
(5) Minimum exterior side yard setback	4.5 m
(6) Minimum rear yard setback	4.5 m
(7) Maximum combined floor area ratio of residential, tourist accommodation and staff accommodation units	
(a) Development Area B	0.35
(b) Development Area D	0.25
(8) Maximum lot coverage	40% of the parcel area

(9) Maximum principal building height	11.75 m
(10) Maximum accessory building height	6.0 m

28.04 Development Area C – Specific Regulations

(1) Permitted uses	(a) Commercial marina (b) Community uses (c) Conference centre (d) Fish processing (e) Food service establishments (f) Hotels and motels (g) Office uses (h) Retail establishments (i) Staff accommodation (j) Tourist facilities and related amenities (k) Accessory buildings or structures to the above permitted uses
(2) Minimum lot size for subdivision purposes	1.0 ha
(3) Minimum front yard setback	6.0 m
(4) Minimum interior side yard setback	3.0 m
(5) Minimum exterior side yard setback	4.5 m
(6) Minimum rear yard setback	4.5 m
(7) Maximum combined floor area ratio of tourist accommodation and staff accommodation units	0.60
(8) Maximum lot coverage	50% of the parcel area
(9) Maximum principal building height	12.0 m
(10) Maximum accessory building height	6.0 m

28.05 PGM-CD Zone Development Areas Map



C. SCHEDULE B, MAP NO. 2 – LAND USE DESIGNATIONS

(a) By deleting That Part of Section 97, Renfrew District as Shown Coloured Red on Plan 344R (PID: 009-592-342) and Lot 1, Section 97, Renfrew District, Plan EPP24972 (PID: 028-991-125) from the Residential (R) designation and adding said lots to the Pacific Gateway Marina (PGM) designation, as shown on Plan No. 1; and

(b) By deleting Those Parts of Block A and B, District Lot 751, Together with Unsurveyed Crown Foreshore or Land Covered by Water Being Part of the Bed of Port San Juan, All Within Renfrew District, Shown Outlined in Red on Licence V905027, Containing 3.86 Hectares, More or Less from the Marine Protection (M) designation and adding said licence area to the Pacfic Gateway Marina (PGM) designation, as shown on Plan No. 1.

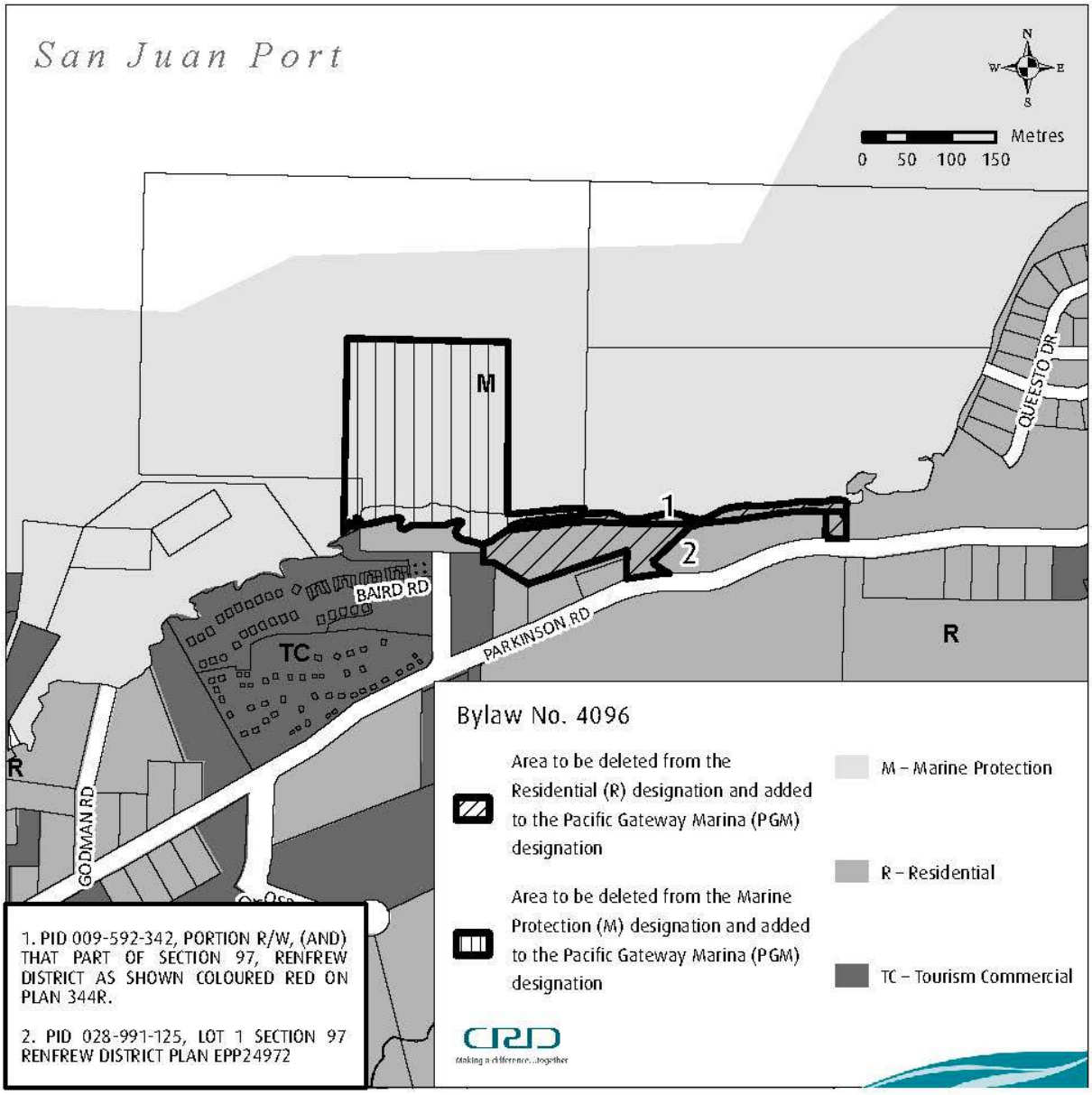
D. SCHEDULE B, MAP NO. 3 – ZONING

(a) By deleting That Part of Section 97, Renfrew District as Shown Coloured Red on Plan 344R (PID: 009-592-342) and Lot 1, Section 97, Renfrew District, Plan EPP24972 (PID: 028-991-125) from the Community Residential – One (CR-1) zone and adding said lots to the Pacific Gateway Marina Comprehensive Development (PGM-CD) zone, as shown on Plan No. 2; and

(b) By deleting Those Parts of Block A and B, District Lot 751, Together with Unsurveyed Crown Foreshore or Land Covered by Water Being Part of the Bed of Port San Juan, All Within Renfrew District, Shown Outlined in Red on Licence V905027, Containing 3.86 Hectares, More or Less from the Marine (M) zone and adding said licence area to the Pacfic Gateway Marina Comprehensive Development (PGM-CD) zone, as shown on Plan No. 2.

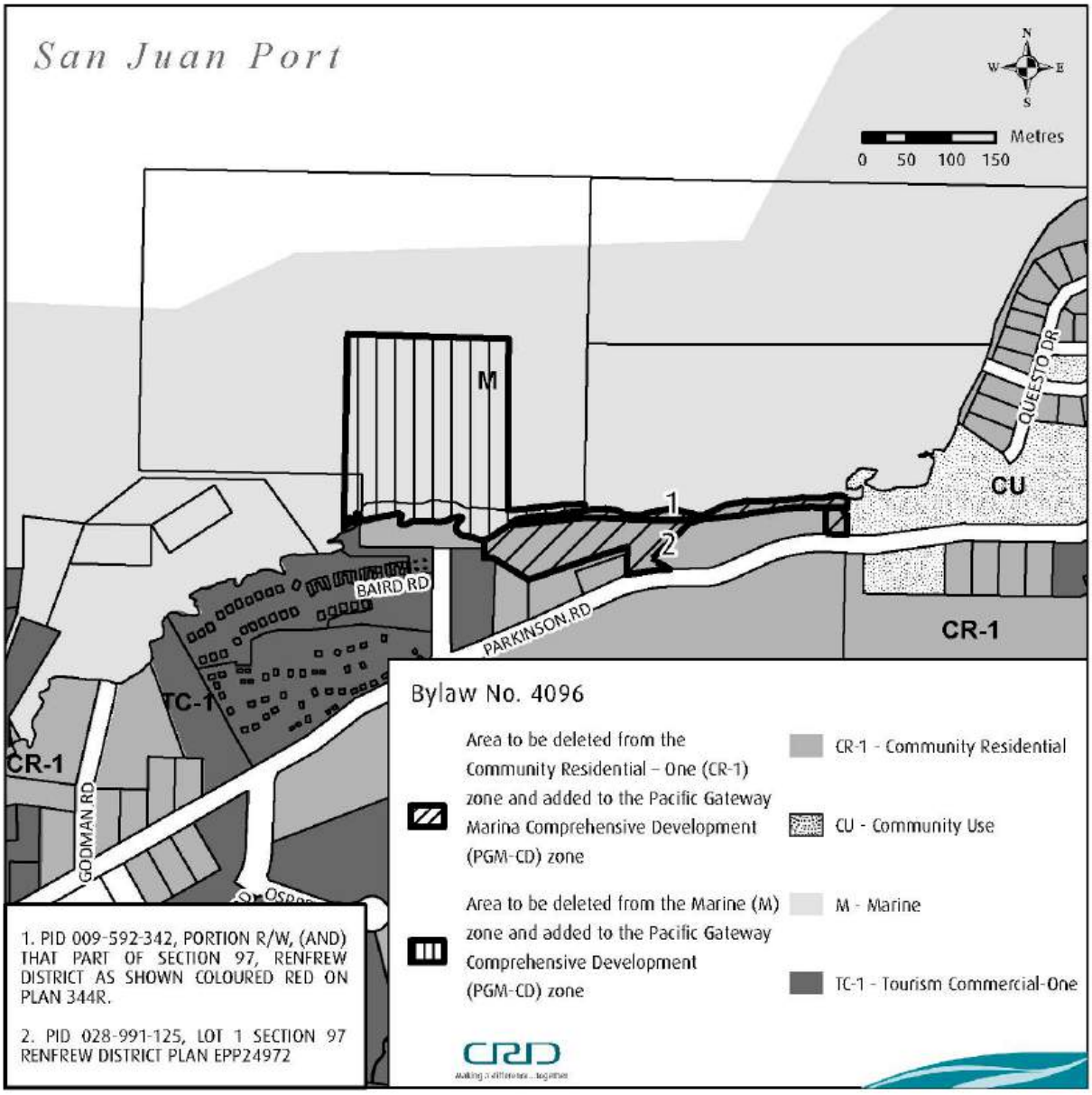
Plan No. 1 of Bylaw 4096, an amendment to Bylaw No. 3109

That Part of Section 97, Renfrew District as Shown Coloured Red on Plan 344R (PID: 009-592-342); Lot 1, Section 97, Renfrew District, Plan EPP24972 (PID: 028-991-125) and Those Parts of Block A and B, District Lot 751, Together with Unsurveyed Crown Foreshore or Land Covered by Water Being Part of the Bed of Port San Juan, All Within Renfrew District, Shown Outlined in Red on Licence V905027, Containing 3.86 Hectares, More or Less shown on this plan attached to and forming part of this bylaw.



Plan No. 2 of Bylaw 4096, an amendment to Bylaw No. 3109

That Part of Section 97, Renfrew District as Shown Coloured Red on Plan 344R (PID: 009-592-342); Lot 1, Section 97, Renfrew District, Plan EPP24972 (PID: 028-991-125) and Those Parts of Block A and B, District Lot 751, Together with Unsurveyed Crown Foreshore or Land Covered by Water Being Part of the Bed of Port San Juan, All Within Renfrew District, Shown Outlined in Red on Licence V905027, Containing 3.86 Hectares, More or Less shown on this plan attached to and forming part of this bylaw.



2. This bylaw may be cited as “Comprehensive Community Development Plan for Port Renfrew, Bylaw No. 1, 2003, Amendment Bylaw No. 10, 2020”.

READ A FIRST TIME THIS	day of	, 2020.
READ A SECOND TIME THIS	day of	, 2020.
READ A THIRD TIME THIS	day of	, 2020.
ADOPTED THIS	day of	, 2020.

CHAIR CORPORATE OFFICER

Making a difference...together

SUPPLEMENTARY REPORT TO
JUAN DE FUCA LAND USE COMMITTEE
MEETING OF TUESDAY, SEPTEMBER 15, 2020

SUBJECT **Comprehensive Community Development Plan Amendment Application for: That Part of Section 97, Renfrew District as Shown Coloured Red on Plan 344R (PID: 009-592-342); Lot 1, Section 97, Renfrew District, Plan EPP24972 (PID: 028-991-125); That Part of District Lot 17, Renfrew District Shown Outlined in Red on Plan 347R (PID: 009-575-006); and Those Parts of Block A and B, District Lot 751, Together with Unsurveyed Crown Foreshore or Land Covered by Water Being Part of the Bed of Port San Juan, All Within Renfrew District, Shown Outlined in Red on Licence V905027, Containing 3.86 Hectares, More or Less**

ISSUE SUMMARY

This report provides supplementary information and a revised recommendation for the Report tabled by the Juan de Fuca Land Use Committee (LUC) on June 16, 2020, as a result of correspondence received from Pacheedaht First Nation on June 16, 2020.

BACKGROUND

Prior to consideration of this application by the LUC on June 16, 2020, JdF Community Planning received correspondence from Pacheedaht First Nation (Appendix A) highlighting a number of concerns and questions related to the consultation process and governance, and regarding various aspects of the development of the subject lands within Pacheedaht's traditional territory. The LUC determined that the concerns warranted tabling the item to its September 15, 2020, meeting, in order to give staff time to work with the applicant and Pacheedaht to address the noted concerns and questions.

Subsequent to the June 16, 2020, meeting, JdF Community Planning received an Archaeological Impact Assessment (AIA), dated July 31, 2018, and accompanying geotechnical report, dated November 19, 2015. Having received and reviewed this new information, staff recommend a revised recommendation.

ALTERNATIVES

Alternative 1
That the Land Use Committee recommends to the Capital Regional District (CRD) Board:

a) That the referral of proposed Bylaw No. 4096, "Comprehensive Community Development Plan for Port Renfrew, Bylaw No. 1, 2003, Amendment Bylaw No. 13, 2020" to a Public Information Meeting in Port Renfrew, the Juan de Fuca Electoral Area Parks and Recreation Advisory Commission; CRD departments; BC Hydro; Cowichan Valley Regional District; Department of Fisheries and Oceans; District of Sooke; Island Health; Ministry of Environment and Climate Change Strategy; Ministry of Forests, Lands and Natural Resource Operations; Ministry of Transportation and Infrastructure; Pacheedaht First Nation; RCMP; Sooke School District #62 be approved and the comments received;
b) That proposed Bylaw No. 4096, "Comprehensive Community Development Plan for Port Renfrew, Bylaw No. 1, 2003, Amendment Bylaw No. 13, 2020" be introduced and read a first time and read a second time;
c) That in accordance with the provisions of Section 469 of the *Local Government Act*, the Director for the Juan de Fuca Electoral Area, or Alternate Director, be delegated authority to hold a public hearing with respect to Bylaw No. 4096; and

d) That prior to adoption of the bylaws, the applicant:
   i. Register a covenant on the title of the lands pursuant to Section 219 of the *Land Title Act* in favour of the CRD securing the Archaeological Impact Assessment prepared by Duncan McLaren, PhD, dated July 31, 2018, and the geotechnical report prepared by Bruce Dagg, P.Eng., dated November 19, 2015.

Alternative 2
That the CRD Board not proceed with proposed Bylaw No. 4096.

Alternative 3
That more information be provided.

IMPLICATIONS

In their correspondence dated June 16, 2020, Pacheedaht First Nation raised a number of concerns regarding the application review and consultation processes, and potential impacts on the environment and damage to sites of cultural importance. They also asked several questions regarding site servicing, including community water and sewage disposal.

Consultation Implications
The CRD's development application processes are established through Bylaw No. 3885 and the *Local Government Act*. The process allows for referral by the Juan de Fuca Land Use Committee and the CRD Board to agencies and departments they determine may have interests that are affected by proposed development. Comments received from external agencies, including Pacheedaht, were included in the staff report for the June 16, 2020, LUC meeting and part of the staff recommendation was intended to address their original concerns. However, as a result of ongoing dialogue between CRD and Pacheedaht, CRD has acknowledged the desire for greater participation on the part of the Nation, and has committed to providing an avenue for more meaningful dialogue with those First Nations in whose traditional territory a development application is being considered.

Land Use Implications
As part of the Licence of Occupation application process for the marina, a consultation process involving the proponent and Pacheedaht was required by the Province. That process was to have addressed concerns related to the impact on the marine environment, including shellfish harvesting and underwater noise, and resulted in moving the marina infrastructure and breakwater to their present location. As part of the current development application, we are in receipt of an environmental report for the upland portion of the development. The report was attached to the June 16, 2020, LUC report.

Subsequent to the June 16, 2020, LUC meeting, JdF Community Planning received a copy of an archaeological inventory and impact assessment report, dated July 31, 2018, prepared by Duncan McLaren, PhD, (Cordillera Archaeology). The report provided details on the results of assessment of the land in the vicinity of the Pacific Gateway Marina, and focused on a number of sea cave features along the foreshore. The report affirmed Pacheedaht's concerns regarding vibrations from blasting and machinery activities in the vicinity of the sea caves, including those that would originate from the "Little Renfrew" site directly above the caves. The Report also included a 2015 Ryzuk geotechnical report (the "Geotechnical Report") that commented on the stability of the caves and provided vibration threshold recommendations. In light of this information, staff recommend registration of a covenant on the title of the lands to require that all future development be conducted in accordance with the recommendations of the Archaeological and Geotechnical Reports. This would address future land alteration and construction activity on District Lot 17, and ensure that it follows the recommendations for a vibration threshold, monitoring and impact mitigation.

With regards to water supply, the proponent has partnered with Port Renfrew Management Ltd. to install a 100,000 gallon water tank to increase the overall storage capacity of the Port Renfrew water system. In exchange for that work and based on the value of the contract, under an agreement with the Port Renfrew Utility Services Commission and CRD Integrated Water Services, 32 single-family equivalents (SFEs) are to be allocated to Pacific Gateway Marina, 32 SFEs to Port Renfrew Management Ltd, and 8 SFEs to Port Renfrew Business Park Ltd. As a result of this increase in capacity, approximately 75 SFEs presently remain unallocated and available for other development proposals within the local service area upon payment of the amenity fee.

At the present time, sewage treatment is proposed to be via a community system constructed in partnership with Port Renfrew Management Ltd., on the south side of Parkinson Road. The system would require approval from Island Health under the *Sewerage System Regulation* of the *Public Health Act*. Such a system is limited to a flow rate of 22,700 L/day. At such time as the development proposes to exceed this threshold, a larger system, involving approvals from the Ministry of Environment under the *Environmental Management Act* and *Municipal Wastewater Regulation*, will be required.

As a result of the concerns raised by Pacheedaht and the additional information received from the applicant regarding the culturally sensitive areas within the development area, staff recommend a revised Land Use Committee recommendation to include a covenant securing the 2018 Duncan McLaren archaeological assessment and associated 2015 Ryzuk geotechnical report.

RECOMMENDATION

That the Land Use Committee recommends to the Capital Regional District (CRD) Board:

a) That the referral of proposed Bylaw No. 4096, "Comprehensive Community Development Plan for Port Renfrew, Bylaw No. 1, 2003, Amendment Bylaw No. 13, 2020" to a Public Information Meeting in Port Renfrew, the Juan de Fuca Electoral Area Parks and Recreation Advisory Commission; CRD departments; BC Hydro; Cowichan Valley Regional District; Department of Fisheries and Oceans; District of Sooke; Island Health; Ministry of Environment and Climate Change Strategy; Ministry of Forests, Lands and Natural Resource Operations; Ministry of Transportation and Infrastructure; Pacheedaht First Nation; RCMP; Sooke School District #62 be approved and the comments received;

b) That proposed Bylaw No. 4096, "Comprehensive Community Development Plan for Port Renfrew, Bylaw No. 1, 2003, Amendment Bylaw No. 13, 2020" be introduced and read a first time and read a second time;

c) That in accordance with the provisions of Section 469 of the *Local Government Act*, the Director for the Juan de Fuca Electoral Area, or Alternate Director, be delegated authority to hold a public hearing with respect to Bylaw No. 4096; and

d) That prior to adoption of the bylaws, the applicant:
   i. Register a covenant on the title of the lands pursuant to Section 219 of the *Land Title Act* in favour of the CRD securing the Archaeological Impact Assessment prepared by Duncan McLaren, PhD, dated July 31, 2018, and the geotechnical report prepared by Bruce Dagg, P.Eng., dated November 19, 2015.

Submitted by:	Iain Lawrence, MCIP, RPP, Manager, Juan de Fuca Community Planning
Concurrence:	Michael Barnes, MPP, Acting General Manager, Planning & Protective Services
Concurrence:	Ted Robbins, B. Sc., C. Tech., Acting Chief Administrative Officer

ATTACHMENT:

Appendix A: Correspondence from Pacheedaht First Nation, June 16, 2020

Appendix A: Correspondence from Pacheedaht First Nation

Pacheedaht First Nation
350 Kalaid Street
Port Renfrew, BC
V0S 1K0
Phone: (250) 647-5521
Fax: (250) 647-5561

June 16, 2020

VIA EMAIL

Capital Regional District
625 Fisgard Street
Victoria, BC V8W 1R7

Attention: **Mike Hicks, Director**
Chair, Juan de Fuca Land Use Committee
(mhicks@crd.bc.ca)

Dear Sirs/Mesdames:

Re: Proposed New Pacific Gateway Marine Comprehensive Development Zone
Comprehensive Community Development Plan Amendment Application for:
That Part of Section 97, Renfrew District as Shown Coloured Red on Plan 344R (PID: 009-592-342); Lot 1, Section 97, Renfrew District, Plan EPP24972 (PID: 028-991-125);
That Part of District Lot 17, Renfrew District Shown Outlined in Red on Plan 347R (PID: 009-575-006); and Those Parts of Block A and B, District Lot 751, Together with Unsurveyed Crown Foreshore or Land Covered by Water Being Part of the Bed of Port San Juan, All Within Renfrew District, Shown Outlined in Red on Licence V905027, Containing 3.86 Hectares, More or Less

On behalf of the Pacheedaht First Nation, I am writing in relation to this evening's meeting of the Juan de Fuca Land Use Committee (the Committee).

I understand that tonight's agenda includes an application by Pacific Gateway Marina (PGM) for a rezoning of the properties listed above (the Rezoning Application). The rezoning would seriously change the way the properties are used, allowing year-round residential accommodation, vacation properties, commercial tourism, and increased recreation and marina services.

Before the Committee meets, I wanted to take this opportunity to explain some of Pacheedaht's concerns with the Rezoning Application. I am writing to you directly in advance of the Committee convening as in the background materials for tonight, I do not see a plan for direct engagement with Pacheedaht other than some proposed input on an archaeological report. I wanted to let you know at this early juncture that, due to the nature of the potential impacts it contemplates, a process of direct engagement is needed between the Capital Regional District (CRD) and Pacheedaht in relation to the Rezoning Application before any further steps are taken.

Pacheedaht Concerns with Rezoning Application

As you will be aware, Pacheedaht asserts Aboriginal rights and title to the properties included in the Rezoning Application, as well as the surrounding lands and waters. Our members are worried about what the Rezoning Application could mean for our territory. Some of our concerns are as follows.

Heritage and cultural sites

There are a number of known archaeological sites as well as undocumented sites within the area subject to the Rezoning Application. These sites are of immeasurable value to Pacheedaht and include sacred sea caves and other cultural features. Our oral history tells us these sites were used for burials and were also sites for cleansing, collecting red ochre (a substance sacred to Pacheedaht), and other important cultural rituals. Protecting these sites and the cultural remains they contain is of the highest concern to our Nation.

These sites have already been subject to damage, including by construction of the railway in the 1930s, when burials boxes were removed. As Pacheedaht, we know these sites to be incredibly fragile. Damage to them in the past has resulted in some caves collapsing such that they are no longer accessible.

Were it permitted, the Rezoning Application would allow PGM to build a very dense residential development above these sites. Pacheedaht is deeply concerned that blasting and other heavy machinery work associated with construction near these fragile sites could lead to irreparable damage, including their permanent collapse and the loss or damage to their sacred contents. We simply cannot take the risk that this part of our history and culture could be lost.

I see from the background materials for this evening's meeting that one of the Committee's options in considering the Rezoning Application would be for PGM to submit an archaeological report, created with Pacheedaht's input, to be considered at a public hearing. I stress that it is absolutely crucial that the Committee, and the CRD, hear directly from Pacheedaht in relation to our concerns about preventing and managing impacts to these sites. It is not sufficient or appropriate for consideration of impacts to Pacheedaht to be limited to a report written about us.

Other impacts

Pacheedaht's concerns with the Rezoning Application are not limited to our heritage and cultural sites. I feel compelled to set out some of our additional concerns here because the background materials for this evening's meeting appear to limit our concerns to archaeological impacts.

Our other concerns with the Rezoning Application include impacts to shoreline and marine species from construction activities, ongoing underwater noise, environmental impacts caused by fuel and other vessel discharges, and potential interference with our members' harvesting activities due to increased marine traffic and reduced shoreline access.

Water supply is also a serious concern in our remote community. Pacheedaht understands that PGM is applying for community piped water to be supplied to the properties, but that the usual amenity contributions for water use are being waived due to a cost share of a proposed storage tank. Pacheedaht is requesting more information about this proposal as well as the general water needs for what PGM is proposing. Along these same lines, Pacheedaht also has concerns relating to drainage,

grey water, and sewage disposal. Given the proximity of the properties to our community, and important fishing areas, our members will be deeply impacted by any changes in service levels from PGM's proposed development of the area.

Pacheedaht is also concerned that PGM's plans for the properties may not comply with Port Renfrew's 2003 Official Community Plan (OCP). For example it is not clear to us whether PGM's proposed residential accommodation meets the needs of the area in terms of affordability, and whether the proposed tourist accommodation of cabins, RV and camper rental spaces comply with the OCP. As set out in the May 2019 letter from Pacheedaht's Referrals Coordinator, Kristine Pearson, in our view the OCP needs to be updated in collaboration with Pacheedaht to reflect current land use and needs from both Pacheedaht and the Port Renfrew community. The Rezoning Application is an important opportunity to consider how the CRD, Port Renfrew and Pacheedaht can work together on land and marine use planning in Pacheedaht territory.

Next Steps

As set out above, we have a number of serious concerns with the Rezoning Application, and also the process by which it will be reviewed. A public hearing with consideration of an archaeological report is not sufficient. Rather than being the subject of a report, Pacheedaht needs a seat at the table. There needs to be a meaningful opportunity for our governments to sit down and discuss what is being proposed, and more generally to work collaboratively on applications in Pacheedaht territory.

Given the serious issues it raises, Pacheedaht is requesting the opportunity to work with the CRD to develop a process for ensuring our views and concerns are meaningfully considered in the Rezoning Application. Such a process would be in line with the CRD's Statement of Reconciliation, which includes supporting the participation of First Nations in the CRD's decision-making processes.

As a first step, please contact Kristine Pearson at referrals@pacheedaht.ca to set up a meeting as soon as possible, to be held by way of video conference or teleconference.

We look forward to hearing from you.

Yours truly,

PACHEEDAHT FIRST NATION

Chief Jeff Jones
jeffj@pacheedaht.ca

cc: Capital Regional District, Attn. Colin Plant, Board Chair (**cplant@crd.bc.ca**)
Pacheedaht First Nation, Attn. Kristine Pearson (**referrals@pacheedaht.ca**)
Mandell Pinder LLP, Attn. Rosanne Kyle (**rosanne@mandellpinder.com**)

Making a difference...together

REPORT TO JUAN DE FUCA LAND USE COMMITTEE
MEETING OF TUESDAY, JUNE 16, 2020

SUBJECT **Comprehensive Community Development Plan Amendment Application for:**
That Part of Section 97, Renfrew District as Shown Coloured Red on Plan 344R (PID: 009-592-342);
Lot 1, Section 97, Renfrew District, Plan EPP24972 (PID: 028-991-125);
That Part of District Lot 17, Renfrew District Shown Outlined in Red on Plan 347R (PID: 009-575-006); and
Those Parts of Block A and B, District Lot 751, Together with Unsurveyed Crown Foreshore or Land Covered by Water Being Part of the Bed of Port San Juan, All Within Renfrew District, Shown Outlined in Red on Licence V905027, Containing 3.86 Hectares, More or Less

ISSUE SUMMARY

The applicant has applied to re-designate the subject properties from Marine Protection (M) and Residential (R) to a new Pacific Gateway Marina (PGM) designation, and to rezone the subject properties from Marine (M) and Community Residential – One (CR-1) to a new Pacific Gateway Marina Comprehensive Development (PGM-CD) zone, in order to permit a mix of community uses, year-round residential accommodation, vacation properties and commercial tourism, recreation and marina services to the general public.

BACKGROUND

The subject properties are located in Port Renfrew at 17110 Parkinson Road and 6598 Baird Road (Appendices A and B). The upland properties are designated as Residential (R) and the Licence of Occupation area is designated as Marine Protection (M) under the Comprehensive Community Development Plan (CCDP) for Port Renfrew, 2003, Bylaw No. 3109. The upland properties are zoned Community Residential – One (CR-1) and the Licence area is zoned Marine (M) under Bylaw No. 3109. The subject areas are adjacent to Tourist Commercial – One (TC-1) and CR-1 zoned land to the south and west, Community Use (CU) zoned land to the east, and Port San Juan to the north.

The parcels located at 17110 Parkinson Road and the Licence area are currently located outside the Port Renfrew Water Service Area, while the property located at 6598 Baird Road is located inside the service area. The land based parcels are all located within the Port Renfrew Fire Protection Local Service Area, while the Licence area on which the marina is situated is located outside the service area.

The CR-1 zone allows development in the form of one residential unit per parcel, home based businesses, bed and breakfasts, religious centres, and retail establishments. The Marine zone allows private boat docks.

The Licence of Occupation area, on which the current marina infrastructure is located, was issued by the Province on February 25, 2016. Temporary Use Permit TP000008 was issued by the Regional Board on June 28, 2016, renewed on July 24, 2019, and will expire on June 28, 2022. The Permit authorizes the operation of a 60-slip commercial marina, offices, food services, fuel sales, recreation, boat trailer parking and boat storage within the Licence area and part of the adjoining upland property.

The proposed rezoning to a new Pacific Gateway Marina Comprehensive Development (PGM-CD) zone would establish six development areas, each with a variety of uses including residential, tourist commercial, recreation, community and marina services to the general public (Appendices C and D).

In order to rezone the property, a new Pacific Gateway Marina (PGM) land use designation has been developed. The PGM designation includes policies that support the uses of the proposed zone, that outline the required level of servicing for the proposed development, and that formalize the community's interest in a publicly accessible walking trail through the marina development.

Staff have prepared Bylaw No. 4096 (Appendix E), to re-designate the subject properties and Licence of Occupation area from Residential and Marine Protection to a new Pacific Gateway Marina designation, and to rezone the subject areas from CR-1 and M to a new PGM-CD zone.

At their meeting of September 18, 2018, the Juan de Fuca Land Use Committee recommended referral of the proposed bylaws to agencies and to a Public Information Meeting in Port Renfrew. Comments are included as received in Appendix F.

ALTERNATIVES

Alternative 1
That the Land Use Committee recommends to the Capital Regional District (CRD) Board:

a) That the referral of proposed Bylaw No. 4096, "Comprehensive Community Development Plan for Port Renfrew, Bylaw No. 1, 2003, Amendment Bylaw No. 13, 2020" to a Public Information Meeting in Port Renfrew, the Juan de Fuca Electoral Area Parks and Recreation Advisory Commission; CRD departments; BC Hydro; Cowichan Valley Regional District; Department of Fisheries and Oceans; District of Sooke; Island Health; Ministry of Environment and Climate Change Strategy; Ministry of Forests, Lands and Natural Resource Operations; Ministry of Transportation and Infrastructure; Pacheedaht First Nation; RCMP; Sooke School District #62 be approved and the comments received;
b) That proposed Bylaw No. 4096, "Comprehensive Community Development Plan for Port Renfrew, Bylaw No. 1, 2003, Amendment Bylaw No. 13, 2020" be introduced and read a first time and read a second time;
c) That in accordance with the provisions of Section 469 of the *Local Government Act*, the Director for the Juan de Fuca Electoral Area, or Alternate Director, be delegated authority to hold a public hearing with respect to Bylaw No. 4096 upon receipt by the CRD from the applicant of a report prepared by a professional archaeologist, with input from the Pacheedaht First Nation, to the satisfaction of the CRD and the Archaeology Branch that addresses the known archaeological site and any additional sites identified in the area, and that determines the steps in managing impacts to the site.

Alternative 2
That the CRD Board not proceed with proposed Bylaw No. 4096.

Alternative 3
That more information be provided.

IMPLICATIONS

Legislative Implications
Pursuant to Section 477 of the *Local Government Act (LGA)*, an amendment to a zoning bylaw requires that the local government provide one or more opportunities for consultation it considers appropriate to the persons, organizations and authorities the local government considers may be affected by the adoption, repeal or amendment of a zoning bylaw.

Consultation under the above noted sections of the *LGA* must occur prior to the requirement under Section 477 to hold a public hearing as part of the amendment process. On December 11, 2018, the Electoral Director and staff met with the members of the Port Renfrew community and the applicant at a Public Information Meeting to discuss the proposal.

Regional Growth Strategy Implications
Section 445 of the *LGA* requires that all bylaws adopted by a regional district board after the board has adopted a Regional Growth Strategy (RGS) be consistent with the RGS. Since the proposal includes an amendment to the Official Community Plan (OCP) schedule of Bylaw No. 3109, the bylaw

will be considered by the Planning, Transportation and Protective Services Committee and/or the CRD Board for a determination of consistency with the RGS prior to first reading. An amendment to the water servicing bylaw will also require a determination of consistency prior to adoption.

Referral Process Implications
Referrals were sent to external agencies, CRD departments, the Juan de Fuca Electoral Area (JdF EA) Parks and Recreation Advisory Commission, and to a Public Information Meeting in Port Renfrew. Comments received are noted below and included in Appendix F.

CRD Bylaw Enforcement does not anticipate any significant bylaw enforcement implications as a result of this proposal.

CRD Integrated Water Services commented that water could be supplied to the proposed lots subject to all lots being included in the water service area, and a second reservoir tank being installed and commissioned. Among other things, the owners would be required to provide an amenity contribution of $8,000 per single family equivalent (SFE) for future water system upgrades; however, a total of 32 SFEs are reserved for the development in-lieu of payment due to a cost share of the proposed storage tank.

The Cowichan Valley Regional District commented that the proposal was too remote to impact their interests.

The Department of Fisheries and Oceans commented that the agency does not have a regulatory role related to this application because the proposal does not directly propose works, undertakings or activities that may result in serious harm to fish.

District of Sooke stated no objection as the subject properties are well outside the District's boundaries.

Ministry of Forests, Lands and Natural Resource Operations (FLNRO) – Archaeology Branch commented that there is a documented archaeological site on one of the subject properties. The site is protected under the *Heritage Conservation Act* and must not be altered or damaged without a permit from the Archaeology Branch. The waterfront location and proximity to other nearby archaeological sites increases the potential for unknown/unrecorded archaeological deposits to be present. Prior to any land-altering activities, an eligible consulting archaeologist should be engaged to determine the steps in managing impacts to the site.

FLNRO – Ecosystems commented that they had few concerns with the proposal provided that vegetation clearing was minimized and occurred outside the bird nesting period, and that the development follow other best management practices in the Develop with Care manual.

Island Health commented that they would have regulatory requirements with regards to drinking water supply systems, liquid waste discharges less than 22,700 L/day, food premises, and facilities that include the recreational use of water such as pools and spas. Island Health acknowledged that there were a number of aspects of the development that address their objective of encouraging a healthy built environment.

Ministry of Transportation and Infrastructure stated no objection to the proposed amendment. The Ministry would provide additional comment should the property be subdivided in the future. Commercial access permits for any new access onto Parkinson Road would be required.

Pacheedaht First Nation (PFN) commented that the Nation has concerns regarding the high strength of claim and cultural values in the area of the application. The area has known archaeological sites and undocumented sites, both of which are of vital importance to PFN. The Nation also retains the water lot lease to the southeast of the marina and want to ensure that the impacts of this application are better understood.

Sooke School District #62 commented that the school district does not have any concerns with the development.

A Public Information Meeting was held in Port Renfrew on December 11, 2018. There were 38 members of the public in attendance. One submission was received and read at the meeting and four

supplementary submissions were received after the meeting. Concern was raised regarding enforcement of conditions of the applicant's current temporary use permit, the perceived broad scope of the rezoning application and a lack of related development permits. Concern was also raised regarding the impact on sewage and water capacity, drainage, roads and access, and the volunteer fire department. Support was expressed for continued access to the waterfront trails historically used by the community.

A meeting of the JdF EA Parks and Recreation Advisory Commission was held on January 29, 2019. There was one member of the public in attendance and no written submissions were received regarding the application. The Commission discussed the proposal and passed the following motion:

MOVED by Commissioner Braunschweig, **SECONDED** by Commissioner Sloan that the Commission accept the amenity in the form of a continuous statutory right-of-way, trail and stairway from Lot 64 to Baird Road which is open to the public with the trail and staircase maintained by the development. **CARRIED**

Land Use Implications
The official community plan schedule of the Port Renfrew CCDP, designates the subject properties as Residential (R) and the Licence of Occupation area as Marine Protection (M). The objectives of the Residential designation is to ensure the housing stock in the plan area meets the needs and requirements of the market place for at least five years. This designation identifies mixed residential/commercial uses as viable activities for economic development within the residential designation. The Marine Protection designation prohibits the operation of log booms. Neither the Residential nor the Marine Protection designations are entirely appropriate for use of the property as a comprehensive marina development; therefore a change from the Residential and Marine Protection designations to a new Pacific Gateway Marina (PGM) designation is required.

The proposed PGM land use designation includes policies regarding improvements to the Port Renfrew Water Supply System, as well as the provision of community water and sewer service to the subject properties. The PGM policies also outline the community interest in a publicly accessible trail through the property as part of larger network connecting various areas of Port Renfrew.

The proposed Pacific Gateway Marina Comprehensive Development (PGM-CD) zone establishes six development areas. Each development area includes a specific set of permitted uses and regulations. These uses are conditional upon connection to the Port Renfrew Community Water Supply System, connection to a community sewer system to the satisfaction of Island Health or the Ministry of Environment, and provision of a public walking trail connecting Development Areas A, B and C.

Development Area A is proposed to include a series of courtyard cabins and stacked duplexes that range in size from 70 m^2 to 90 m^2 to a maximum floor area ratio of 0.30, in one- and two-bedroom configurations. Based on the proposed area of DA-A, this would allow a total floor area of 2,334 m^2.

Development Area B is proposed to include six courtyard cabins of approximately 90 m^2, to a maximum floor area ratio of 0.35. Based on the proposed area of DA-B, this would allow a total floor area of 913 m^2.

Development Area C comprises the marina operation itself, and includes boat docks, food services and retail establishments, community uses, office uses, and tourist facilities. This area could include a future fishing lodge and/or small conference centre. A portion of this area may also be dedicated to Canadian Coast Guard operations.

Development Area D is proposed to include tourist accommodation facilities in the form of cabins, and RV and camper rental spaces. Density is limited to a floor area ratio of 0.25, which would allow a total floor area of 859 m^2.

Development Area E includes an existing dwelling unit and may be subdivided from the parent property in the future. The use of this development area would remain as residential to a maximum of one dwelling unit.

Development Area F is proposed to include larger, single-family dwellings with the option of year-

round residency. Units are proposed to be in the 110 m^2 to 150 m^2 range to a maximum floor area ratio of 0.35. Based on the proposed size of DA-F, this would allow a total floor area of 1,454 m^2. DA-F could potentially be used as the site of a small conference centre or spa associated with the fishing lodge proposed for Development Area C.

The proposed PGM-CD zone includes minimum servicing requirements for community water and community sewer, as well as a community amenity requirement in the form of a public trail through Development Areas A, B, C and D, connecting Baird Road and Lot 64. In order to achieve the full development potential permitted in each development area, the property must first be connected to a community water system and a community sewer system. The Port Renfrew community water system requires expansion in order to support the level of development proposed. Construction and commissioning of the expansion must be completed prior to the property being included in the local service area. With regards to community sewer, daily flows to a small community/strata system that fall below 22,700 L/day may be approved by Island Health under the *Sewerage System Regulation*. Flows in excess of this amount will require a larger system approved by the Ministry of Environment under the *Municipal Wastewater Regulation*. The public trail must be constructed and secured via statutory right-of-way in favour of the CRD. Until such time as these services and the amenity are provided, the use and density of the property is limited to one single-family dwelling.

Section 4.2 of the Port Renfrew CCDP outlines the preferred form and methods for acquiring park land. At their meeting of January 29, 2019, the JdF EA Parks and Recreation Advisory Commission reviewed the proposed bylaw amendment and recommended that a trail and staircase connecting Lot 64 to the east and Baird Road to the southwest, be constructed and that the trail be secured by a maintenance agreement and statutory right-of-way. This is in keeping with the policies of the CCDP.

Pacheedaht First Nation noted their strength of claim and cultural values in the area, and the Archaeology Branch advised that there is a known archaeological site within the application area. They also commented that given the waterfront location, there may be additional, unidentified deposits in the area and recommended that prior to any land-altering activities, an eligible consulting archaeologist should be engaged to determine the steps in managing impacts to the site. While the Archaeology Branch could not require a study for development activity beyond the known site, JdF Planning staff recommend that the applicant provide a professional archaeologist's report of the entire subject property, with input from Pacheedaht First Nation and to the satisfaction of the CRD and the Archaeology Branch, prior public hearing. The study would address the known site and any additional sites identified in the area, and determine the steps in managing impacts to the site.

Subsequent to the Public Information Meeting, the applicant has submitted an environmental assessment report prepared by a professional biologist (Appendix G). In addition, three new development permit areas (DPAs) were added to the Port Renfrew CCDP: a Shoreline Protection DPA, a Riparian DPA, and a Sensitive Ecosystem DPA. The property is now partially designated as a Shoreline Protection development permit area (DPA) and a development permit will be required as a condition of subdivision or prior to upland construction activity within 15 m of the natural boundary of the sea. The recommendations of the environmental report could be included as conditions of a future development permit.

Juan de Fuca Community Planning staff recommend receipt of referral comments, proceeding with proposed Bylaw No. 4096 for first and second readings, and that a public hearing be held in the community.

CONCLUSION

The purpose of this Comprehensive Community Development Plan (OCP and zoning) amendment application is to allow a mix of community uses, year-round residential accommodation, vacation properties and commercial tourism, recreation, and marina services to the general public. Referral comments have been received and staff recommend that proposed Bylaw No. 4096 proceed for first and second readings, and that a public hearing be held. Upon closure of the public hearing, a report of the hearing will be forwarded to the Board along with a recommendation regarding further readings of the Bylaw.

RECOMMENDATION

That the Land Use Committee recommends to the Capital Regional District (CRD) Board:

a) That the referral of proposed Bylaw No. 4096, "Comprehensive Community Development Plan for Port Renfrew, Bylaw No. 1, 2003, Amendment Bylaw No. 13, 2020" to a Public Information Meeting in Port Renfrew, the Juan de Fuca Electoral Area Parks and Recreation Advisory Commission; CRD departments; BC Hydro; Cowichan Valley Regional District; Department of Fisheries and Oceans; District of Sooke; Island Health; Ministry of Environment and Climate Change Strategy; Ministry of Forests, Lands and Natural Resource Operations; Ministry of Transportation and Infrastructure; Pacheedaht First Nation; RCMP; Sooke School District #62 be approved and the comments received;

b) That proposed Bylaw No. 4096, "Comprehensive Community Development Plan for Port Renfrew, Bylaw No. 1, 2003, Amendment Bylaw No. 13, 2020" be introduced and read a first time and read a second time;

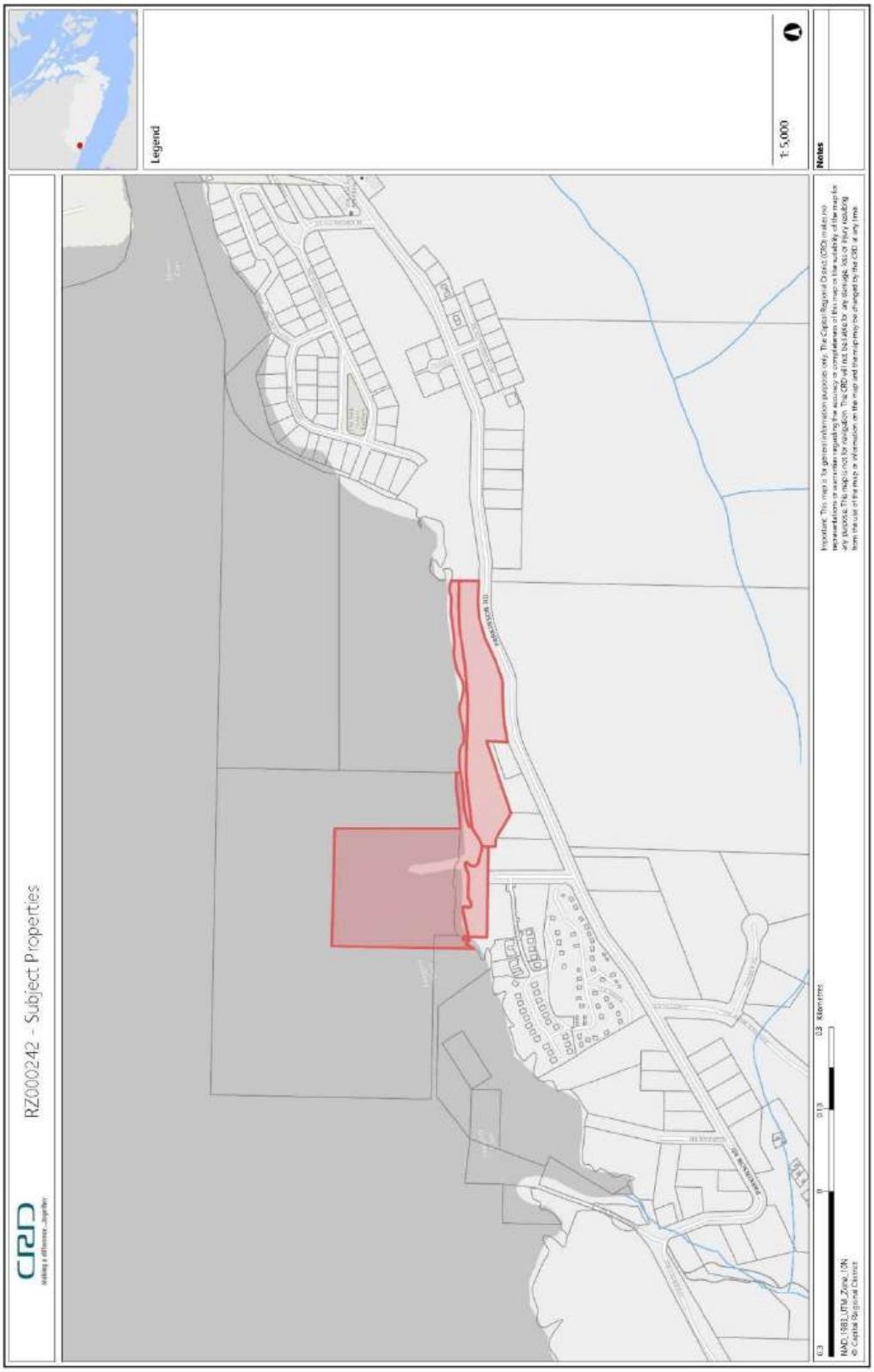
c) That in accordance with the provisions of Section 469 of the *Local Government Act*, the Director for the Juan de Fuca Electoral Area, or Alternate Director, be delegated authority to hold a public hearing with respect to Bylaw No. 4096 upon receipt by the CRD from the applicant of a report prepared by a professional archaeologist, with input from the Pacheedaht First Nation, to the satisfaction of the CRD and the Archaeology Branch that addresses the known archaeological site and any additional sites identified in the area, and that determines the steps in managing impacts to the site.

Submitted by:	Iain Lawrence, MCIP, RPP, Manager, Juan de Fuca Community Planning
Concurrence:	Kevin Lorette, P. Eng., MBA, General Manager, Planning & Protective Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT(S)

Appendix A: Subject Property Map
Appendix B: Orthophoto Plan
Appendix C: Site Plans
Appendix D: Concept Sketch
Appendix E: Proposed Bylaw No. 4096
Appendix F: Referral Comments
Appendix G: Environmental Report

Appendix A: Subject Property Map



Appendix B: Orthophoto Plan



Appendix C: Site Plans




RECEIVED
MAY 03 2018
Draft
Lot 1 18 spaces
(Under Hotel)
Trailer Parking/
Turnaround Area
(confirm)
Lot 4 - 12 spaces
Lot 2 -19 spaces
Additional


Existing Structures:
1 Marina Docks
2 Shelter
3 Single Family Residence
4 Fuel Tanks
5 Marina Office
DA-D
DA-B
DA-A
DA-C
DA-E
DA-F
Easement
Easement
Parkinson Road
Boat Road
RECEIVED
MAY 03 2018
JdF Electoral Area Planning
Pacific Gateway Marina
Topography and Sensitive Areas
Scale 1:2000
50m
May 02, 2018
D'AMBROSIO
architecture + urbanism
For illustration only. Delineation subject to legal survey confirmation

Appendix D: Concept Sketch

RECEIVED
MAY 03 2018
JdF Electoral Area Planning



Appendix E: Proposed Bylaw No. 4096

CAPITAL REGIONAL DISTRICT
BYLAW NO. 4096

****

A BYLAW TO AMEND BYLAW NO. 3109,
THE "COMPREHENSIVE COMMUNITY PLAN FOR PORT RENFREW, BYLAW NO. 1, 2003"

****

The Capital Regional District Board, in open meeting assembled, enacts as follows:

1. Bylaw No. 3109 being the "Comprehensive Community Development Plan for Port Renfrew, Bylaw No. 1, 2003" is hereby amended:

A. SCHEDULE A, SECTION 4.0 DEVELOPMENT POLICIES

(a) By inserting a new Section 4.5 "Pacific Gateway Marina (PGM) Policies" after Section 4.4, to be read as follows:

4.5. Pacific Gateway Marina (PGM) Policies

Objective

The objective of the PGM designation is to provide a mix of community uses, year-round residential accommodation, vacation properties, and commercial tourism, recreation and marina services to the general public. Development within the PGM designation should support the economic, social and cultural well-being of the Port Renfrew community.

4.5.1. Development (PGM) Policies

1) In order to facilitate the increased level of use supported by the PGM designation the following services should be constructed and bylaws adopted prior to development:

a) Installation of a second water reservoir to expand the capacity of the Port Renfrew Water Supply System to the satisfaction of the Capital Regional District.

b) Adoption of an amendment to the Port Renfrew Water Supply Local Service Establishment Bylaw No. 1, 1989, Bylaw No. 1747, to include all those lands and the surface of the water within the PGM land use designation.

c) Adoption of an amendment to the Port Renfrew Fire Protection Local Service Establishment Bylaw, 1989, Bylaw No. 1743, to include all those lands and the surface of the water within the PGM land use designation.

2) The following amenity is of interest to the community and should be completed in accordance with the requirements specified by the Pacific Gateway Marina Comprehensive Development (PGM-CD) zone:

a) Construction of a public trail and staircase providing connectivity between the Juan de Fuca Electoral Area Community Parks and Recreation trail on Lot 64, Plan VIP24755, and Baird Road. The route provided by this trail and staircase should be protected by a statutory right-of-way in favour of the CRD.

3) Areas of known archaeological significance that are located within the area under the PGM designation are to be protected in accordance with Provincial legislation.

and renumbering Section 4 accordingly.

B. SCHEDULE B, PART I, SECTION 1 DEFINITIONS

(a) By inserting a new definition for "COMMERCIAL MARINA" before the words "COMMUNITY SEWAGE SYSTEM", as follows:

"COMMERCIAL MARINA means a facility providing moorage for commercial vessels and private pleasure craft, as well as offices, food service establishments, fuel sales, recreation, boat trailer parking and boat storage."

(b) By inserting a new definition for "CONFERENCE CENTRE" before the words "BED AND BREAKFAST", as follows:

"CONFERENCE CENTRE means an establishment used for the holding of conventions, seminars, workshops or similar activities, and may include dining and lodging facilities for the use of participants, as well as compatible accessory facilities."

C. SCHEDULE B, PART IV ZONES

(a) By inserting a new "Pacific Gateway Marina Comprehensive Development (PGM-CD)" zone after Section 27, to be read as follows:

28.0 Pacific Gateway Marina Comprehensive Development (PGM-CD) Zone

Purpose

The purpose of this zone is to implement the Pacific Gateway Marina (PGM) land use designation in order to provide a mix of community uses, year-round residential accommodation, vacation properties, and commercial tourism, recreation and marina services to the general public.

The PGM-CD zone is divided into Development Areas A – F, which are shown in Section 28.06. Development within each Development Area is to occur in accordance with the regulations indicated below.

Except where otherwise provided for in this Bylaw, only the specified list of permitted uses may be carried out on the parcels within the PGM-CD zone.

28.01 PGM-CD Zone – General Regulations

(a) Permitted uses:
  (i) Single-family residential
  (ii) Accessory buildings and structures
(b) Maximum density:
  (i) One single-family dwelling
(c) Where the following services and amenities are provided, the permitted uses, densities and regulations of Development Areas A-F, as specified in Sections 28.02 to 28.06, shall apply:
  (i) Connection to the Port Renfrew Water Supply System to the satisfaction of the Capital Regional District.
  (ii) Connection to a community sewer system to the satisfaction of Island Health where total daily flows are less than 22,700 L/day, and to the satisfaction of the Ministry of Environment where total daily flows exceed 22,700 L/day.
  (iii) Provision of a public trail constructed in a location and to a standard approved by Juan de Fuca Electoral Area Community Parks and Recreation, connecting Development Area A with Development Areas B and C. The trail is to be protected for public use via statutory right-of-way and maintenance agreement in favour of the Capital Regional District.

(d) The Development Area boundaries, as shown in Section 28.06 shall be deemed to be lot boundaries for the purposes of determining applicable uses, densities and regulations.

(e) Where a survey plan approved by the Surveyor General indicates the adjustment of a parcel boundary due to accretion, the zoning and development area designation applicable to the parcel is deemed to extend to the new parcel boundary despite the zoning designation of the accreted area indicated in Section 28.06.

(f) As a requirement of subdivision, each proposed parcel within the PGM-CD zone must be connected to a community sewer system to the satisfaction of Island Health or the Ministry of Environment, and to a community water system to the satisfaction of the Capital Regional District.

28.02 Development Area A – Specific Regulations

(1) Permitted uses	(a) Single-family residential (b) Duplex residential (c) Accessory buildings or structures to the above permitted uses
(2) Minimum lot size for subdivision purposes	0.75 ha
(3) Minimum front yard setback	6.0 m
(4) Minimum interior side yard setback	3.0 m
(5) Minimum exterior side yard setback	4.5 m
(6) Minimum rear yard setback	4.5 m
(7) Maximum floor area ratio of residential units shall be:	0.30
(8) Maximum lot coverage	40% of the parcel area
(9) Maximum principal building height	11.75 m
(10) Maximum accessory building height	6.0 m

28.03 Development Areas B, D and E – Specific Regulations

(1) Permitted uses	(a) Single-family residential (b) Duplex residential (c) Home based business (d) Staff accommodation (e) Accessory buildings or structures to the above permitted uses
(2) Minimum lot size for subdivision purposes:	
(a) Development Area B	0.26 ha
(b) Development Area D	0.34 ha
(c) Development Area E	300 m^2
(3) Minimum front yard setback	6.0 m
(4) Minimum interior side yard setback	3.0 m
(5) Minimum exterior side yard setback	4.5 m
(6) Minimum rear yard setback	4.5 m

(7) Maximum combined floor area ratio of residential, tourist accommodation and staff accommodation units (a) Development Area B (b) Development Area D (c) Development Area E	 0.35 0.25 0.35
(8) Maximum lot coverage	40% of the parcel area
(9) Maximum principal building height	11.75 m
(10) Maximum accessory building height	6.0 m

28.04 Development Area C – Specific Regulations

(1) Permitted uses	(a) Commercial marina (b) Community uses (c) Conference centre (d) Fish processing (e) Food service establishments (f) Hotels and motels (g) Office uses (h) Retail establishments (i) Staff accommodation (j) Tourist facilities and related amenities (k) Accessory buildings or structures to the above permitted uses
(2) Minimum lot size for subdivision purposes	1.0 ha
(3) Minimum front yard setback	6.0 m
(4) Minimum interior side yard setback	3.0 m
(5) Minimum exterior side yard setback	4.5 m
(6) Minimum rear yard setback	4.5 m
(7) Maximum combined floor area ratio of tourist accommodation and staff accommodation units	0.60
(8) Maximum lot coverage	50% of the parcel area
(9) Maximum principal building height	12.0 m
(10) Maximum accessory building height	6.0 m

28.05 Development Area F – Specific Regulations

(1) Permitted uses	(a) Single-family residential (b) Duplex residential (c) Townhouse residential (d) Community uses (e) Conference centre (f) Food service establishments (g) Home based business (h) Hotels and motels (i) Office uses (j) Retail establishments (k) Staff accommodation (l) Tourist facilities and related amenities (m) Accessory buildings or structures to the above permitted uses
(2) Minimum lot size for subdivision purposes	0.4 ha
(3) Minimum front yard setback	6.0 m
(4) Minimum interior side yard setback	3.0 m
(5) Minimum exterior side yard setback	4.5 m
(6) Minimum rear yard setback	4.5 m
(7) Maximum combined floor area ratio of residential, tourist accommodation and staff accommodation units	0.35
(8) Maximum lot coverage	40% of the parcel area
(9) Maximum principal building height	12.0 m
(10) Maximum accessory building height	6.0 m

28.06 PGM-CD Zone Development Areas Map



D. SCHEDULE A, MAP NO. 2 – LAND USE DESIGNATIONS

(a) By deleting That Part of Section 97, Renfrew District as Shown Coloured Red on Plan 344R (PID: 009-592-342); Lot 1, Section 97, Renfrew District, Plan EPP24972 (PID: 028-991-125); and That Part of District Lot 17, Renfrew District Shown Outlined in Red on Plan 347R (PID: 009-575-006) from the Residential (R) designation and adding said lots to the Pacific Gateway Marina (PGM) designation, as shown on Plan No. 1, attached to and forming part of this bylaw; and

(b) By deleting Those Parts of Block A and B, District Lot 751, Together with Unsurveyed Crown Foreshore or Land Covered by Water Being Part of the Bed of Port San Juan, All Within Renfrew District, Shown Outlined in Red on Licence V905027, Containing 3.86 Hectares, More or Less from the Marine Protection (M) designation and adding said licence area to the Pacfic Gateway Marina (PGM) designation, as shown on Plan No. 1, attached to and forming part of this bylaw.

E. SCHEDULE B, MAP NO. 3 – ZONING

(a) By deleting That Part of Section 97, Renfrew District as Shown Coloured Red on Plan 344R (PID: 009-592-342); Lot 1, Section 97, Renfrew District, Plan EPP24972 (PID: 028-991-125); That Part of District Lot 17, Renfrew District Shown Outlined in Red on Plan 347R (PID: 009-575-006) from the Community Residential – One (CR-1) zone and adding said lots to the Pacific Gateway Marina Comprehensive Development (PGM-CD) zone, as shown on Plan No. 2, attached to and forming part of this bylaw; and

(b) By deleting Those Parts of Block A and B, District Lot 751, Together with Unsurveyed Crown Foreshore or Land Covered by Water Being Part of the Bed of Port San Juan, All Within Renfrew District, Shown Outlined in Red on Licence V905027, Containing 3.86 Hectares, More or Less from the Marine (M) zone and adding said licence area to the Pacfic Gateway Marina Comprehensive Development (PGM-CD) zone, as shown on Plan No. 2, attached to and forming part of this bylaw.

2. This bylaw may be cited as “Comprehensive Community Development Plan for Port Renfrew, Bylaw No. 1, 2003, Amendment Bylaw No. 13, 2020”.

READ A FIRST TIME THIS	day of	, 2020.
READ A SECOND TIME THIS	day of	, 2020.
READ A THIRD TIME THIS	day of	, 2020.
ADOPTED THIS	day of	, 2020.

CHAIR

CORPORATE OFFICER

Appendix F: Referral Comments

Wendy Miller

From: Wilf Marquis
Sent: Wednesday, October 17, 2018 10:10 AM
To: Wendy Miller
Subject: RE: Comprehensive Community Plan Amendment Application RZ000242 (Pacific Gateway Marina - Port Renfrew)

CRD Bylaw Enforcement Services has reviewed the staff report for Comprehensive Community Plan Amendment Application RZ000242 (Pacific Gateway Marina - Port Renfrew) and does not anticipate any significant bylaw enforcement implications as a result of this proposal.

Wilf MARQUIS
Senior Bylaw Officer

Bylaw and Animal Care Services
212-2780 Veterans Memorial Parkway, Victoria, BC, Canada V9B 3S6
Ph. 250.474.3351 ext. 22 \ Fax: 250.391.9727 \ TF: 800.665.7899
email: wmarquis@crd.bc.ca

Memo

TO: Iain Lawrence, Manager, Juan de Fuca Local Area Planning

FROM: Joseph Marr, Manager, Water Distribution Engineering and Planning

CRD FILE: 3360-20-PRENW-18-003

DATE: December 13, 2018

SUBJECT: ZONING AMENDMENT APPLICATION – PACIFIC GATEWAY MARINA

Thank you for the zoning amendment application referral received September 21, 2018, which requests that we examine the above referenced proposal with regard to the water supply regulations and policies of the Capital Regional District (CRD) Integrated Water Services as established for the Port Renfrew Utility Service Committee (PRUSC).

If the CRD receives an appropriate application to supply water, and if the Owner(s) is prepared to meet the conditions of CRD Bylaw No. 1792, and pay the necessary costs and fees as authorized under CRD Bylaw No. 3847, community piped water can be supplied to this proposed development subject to the following:

1) Confirmation that all proposed lots to be serviced by CRD water are within the Port Renfrew water service area.

2) The proposed additional storage tank for the Port Renfrew Water Service area has been installed and commissioned.

3) The water service(s) must comply with all relevant bylaws and applicable codes for servicing (CRD land use approvals, Building Code, MOTI, etc).

4) The Owner(s) provides an amenity contribution of $8,000 per Single Family Equivalent Unit for future water system upgrades. There are currently 32 Single Family Equivalent Units proposed to be reserved in lieu of payment due to a cost share of the proposed storage tank.

5) The Owner(s) pays for all applicable fees, applications, process review, including parcel taxes and/or user fees as required.

6) The Owner(s) provides engineering design drawings for the development showing the proposed water servicing and an associated design brief.

7) The Owner(s) provides metering and appropriate back flow prevention device(s) at the property line(s) to service the proposed lots.

8) The Owner(s) needs to provide confirmation that all approvals have been met for the proposed sewer system.

IWSS-1714139953-3960

9) If a service connection is required for a 'Common Property' disposal field(s), then the Owner(s) pays all applicable connection fees and must install an approved backflow prevention device at his/her own expense. The device is to be tested annually by a certified technician of cross connection control devices and the test results, including repairs performed, are to be submitted to the CRD.

The subject property 6598 Baird Road is located within the Port Renfrew water service area, property 17110 Parkinson Road is not located in the water service area.

This memo is for the purpose of providing you with information regarding the services available from the CRD, and should not be construed as either approval or rejection of the proposed rezoning by the CRD.

These conditions are valid for 180 days from date of writing. However, if at any time there is a change in legislation, regulations or CRD Bylaws, which would cause any of the above conditions to be non-conforming, then the CRD reserves the right to revise any or all of the conditions accordingly, at any time during the 180 day period.

Yours truly,

Joseph Marr, P.Eng.
Manager, Water Distribution Engineering and Planning
Infrastructure Engineering
Integrated Water Services

Jm:eu
Attachments: Report to the Juan De Fuca Land Use Committee – September 18, 2018

cc: Ian Jesney, Senior Manager, Infrastructure Engineering
Wendy Miller, Administrative Clerk, Juan de Fuca Local Area Planning
Malcolm Cowley, Manager Regional Wastewater, Infrastructure Engineering

IWSS-1714139953-3960

RESPONSE SUMMARY
COMPREHENSIVE COMMUNITY PLAN AMENDEMENT APPLICATION RZ000242

/ Interest Affected by Proposal for Reasons Outlined Below

___ Interest Unaffected by Proposal

Comments:

too remote from CVRD for an impact.
Best wishes,

Signed

MANAGER COMM. PLANNING
Title

2018/10/16
Date

CVRD
Agency

Wendy Miller

From: Gravelle, Kristin <Kristin.Gravelle@dfo-mpo.gc.ca>
Sent: Tuesday, September 25, 2018 10:36 AM
To: Wendy Miller
Subject: RE: Comprehensive Community Plan Amendment Application RZ000242 (Pacific Gateway Marina - Port Renfrew) - CRD Referral

Hello Wendy,

The role of the DFO's Fisheries Protection Program (FPP) is to protect and conserve fish and fish habitat in support of Canada's coastal and inland fisheries resources, and to make regulatory decisions under the fisheries protection provisions of the Fisheries Act. The FPP is specifically responsible for reviewing projects for which a s.35(2) Fisheries Act Authorization is required.

DFO does not have a regulatory role related to RZ000242 (Pacific Gateway Marina - Port Renfrew) Proposed Bylaw No. 4096 because it does not directly propose works, undertakings or activities that may result in serious harm to fish.

DFO's Projects Near Water website (http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html) includes information for proponents on how to comply with the *Fisheries Act*, request a DFO review of a project, and request a *Fisheries Act* authorization.

If you have any further questions about DFO's regulatory process or need general information, contact DFO's Fisheries Protection Program toll free: 1-866-845-6776 or email: EnquiriesPacific@dfo-mpo.gc.ca.

Thank you,

Kristin Gravelle

Fisheries Protection Biologist, Fisheries Protection Program
Fisheries and Oceans Canada/Government of Canada
Kristin.Gravelle@dfo-mpo.gc.ca/Tel: 250-756-7292

Biologiste de la protection des pêches, La protection des pêches Programme
Pêches et Océans Canada | Gouvernement du Canada
Kristin.Gravelle@dfo-mpo.gc.ca/Tél 250-756-7292

Wendy Miller

From: Nicholas Deibler <ndeibler@sooke.ca>
Sent: Friday, October 12, 2018 9:27 AM
To: Wendy Miller
Subject: RE: Comprehensive Community Plan Amendment Application RZ000242 (Pacific Gateway Marina - Port Renfrew) - CRD Referral

Good Morning Wendy,

Thank you for your development referral regarding the Comprehensive Community Plan Amendment Application for 17110 Parkinson Road and 6598 Baird Road, received by the District of Sooke on September 21.

The District of Sooke has no objections to the proposed Comprehensive Community Plan Amendment, as the subject properties are located well outside of our boundaries.

Regards,

Nicholas Deibler
Planner 1
District of Sooke
2205 Otter Point Rd
Sooke BC, V9Z 1J2
250-642-1634 ext. 627



Wendy Miller

From: Cooper, Diana FLNR:EX <Diana.Cooper@gov.bc.ca>
Sent: Friday, September 21, 2018 12:37 PM
To: Wendy Miller
Subject: RE: Comprehensive Community Plan Amendment Application RZ000242 (Pacific Gateway Marina Port Renfrew) - CRD Referral

Hello Wendy,

Thank you for your referral regarding a proposed Comprehensive Community Plan Amendment (Application RZ000242) for lands describes as:

- [redacted]

Provincial records indicate previously recorded archaeological site DdSc-24 is recorded on [redacted] (see screenshot below). DdSc-24 is recorded as a cave burial. The site is protected under the *Heritage Conservation Act* and must not be altered or damaged without a permit from the Archaeology Branch.

Additionally, the waterfront location and proximity to other nearby archaeological sites increases the potential for unknown/unrecorded archaeological deposits to be present.

Prior to any land-altering activities (e.g. addition to home, property redevelopment, extensive landscaping, service installation), an Eligible Consulting Archaeologist should be engaged to determine the steps in managing impacts to the archaeological site.

An Eligible Consulting Archaeologist is one who is able to hold a Provincial heritage permit that allows them to conduct archaeological studies. Ask an archaeologist if he or she can hold a permit, and contact the Archaeology Branch (250-953-3334) to verify an archaeologist's eligibility. Consulting archaeologists can be contacted through the BC Association of Professional Archaeologists (www.bcapa.ca) or through local directories.

Occupying an existing dwelling or building without any land alterations does not require archaeological study or permitting.

If a permit is required, proponents should be advised that the permit application and issuance process takes approximately 8-10 weeks and should plan their development schedule accordingly.

If work is planned that is **outside of the red area** as shown in the screenshot below, the Archaeology Branch cannot require the proponent conduct an archaeological study or obtain a permit prior to development. In this instance it is a risk management decision for the proponent. However, the Archaeology Branch strongly encourages engaging an archaeologist prior to development as the site may extend beyond the limits indicated on the attached screenshot.

If any land-altering development is planned and proponents choose not to contact an archaeologist prior to development, owners and operators should be notified that if an archaeological site is encountered during development, activities **must** be halted and the Archaeology Branch contacted at 250-953-3334 for direction. If an archaeological site is encountered during development and the appropriate permits are not in place, proponents will be

in contravention of the *Heritage Conservation Act* and likely experience development delays while the appropriate permits are obtained.

If you or your clients have questions, please visit the FAQ page at http://www.for.gov.bc.ca/archaeology/faq.htm and the Property Owners and Developers web page at http://www.for.gov.bc.ca/archaeology/property_owners_and_developers/index.htm.

If you or your clients have further questions regarding the permitting process, please contact Nathan Friesen (Supervisor, Archaeology Branch) at 250-953-3306 or Nathan.P.Friesen@gov.bc.ca.

Please review the screenshot of the property below (outlined in yellow) in relation to the archaeological site (red area). If this is not the property as described in the data request, please contact me.

Please feel free to contact me should you have any questions regarding this referral response.

Kind regards,

Diana

RESPONSE SUMMARY
COMPREHENSIVE COMMUNITY PLAN AMENDEMENT APPLICATION RZ000242

___ Interest Affected by Proposal for Reasons Outlined Below

X Interest Unaffected by Proposal

Comments:

We have few concerns with the proposed rezoning, providing the following recommendations are followed during subsequent development:

- We recommend that vegetation clearing be minimized and occur outside the nesting period from March 1 to August 31 to reduce impacts on all bird species. A search for the nests of birds (eagles, peregrine falcons, gyrfalcon, ospreys and herons) protected under Section 34(b) of the *Wildlife Act* should be conducted before the start of vegetation clearing. Should the nest of a bird requiring protection under Section 34(b) of the *Wildlife Act* be located, please refer to the recommended buffer distances in Table 4.1 (Section 4) of ***Develop with Care: Environmental Guidelines for Urban and Rural Land Development in British Columbia (MOE 2014)*** available at https://www2.gov.bc.ca/gov/content/environment/natural-resource-stewardship/laws-policies-standards-guidance/best-management-practices/develop-with-care .

- Follow other relevant best management practices in ***Develop with Care.***

- The San Juan River and its estuary provide high value fish habitat and support important salmon spawning activity. It is essential that any future development in the Port Renfrew area does not adversely impact this resource. We recommend that a referral be sent to the Ministry of Forests, Lands, Natural Resource Operations and Rural Development, and Fisheries and Oceans Canada, for any proposed development that may impact fish habitat. This will provide an opportunity for government biologists to assess potential adverse impacts to fish and suggest mitigation measures.

DR. Grant Bracher PAg, RPBio

DR. GRANT BRACHER
Signed

ECOSYSTEM BIOLOGIST
Title

SEPTEMBER 27, 2018
Date

ECOSYSTEMS SECTION
Agency FLNRORD - WEST COAST

Wendy Miller

From: Takeuchi, Kazuhiro <Kazuhiro.Takeuchi@VIHA.CA>
Sent: Friday, October 19, 2018 3:09 PM
To: Wendy Miller
Subject: RE: Comprehensive Community Plan Amendment Application RZ000242 (Pacific Gateway Marina - Port Renfrew) - CRD Referral

Hi Wendy,

Thank you for the opportunity to comment on this Community Plan Amendment. The past few years have seen significant advances in linking urban planning with a variety of health outcomes. These include outcomes such as: the encouragement of physical activity, healthier eating, greater safety, cleaner air and healthier living environments, access to health services, food security, age friendly communities, and improved social interaction amongst other potential health criteria. There are a number of aspects from a *Healthy Built Environment* (HBE) perspective that is inclusive of these health outcomes, however we have some notable regulatory concerns we must bring forward prior to any HBE related comments:

- Drinking water - Under the Drinking Water Protection Act and Regulation, any construction, installation, alteration, or extension of (a) a water supply system, or (b) works, facilities, or equipment that are intended to be a water supply system or part of a water supply system, must be issued a construction permit from our Public Health Engineer. Consultation with our Drinking Water Officer will also be needed (https://www.islandhealth.ca/index.php/learn-about-health/drinking-water/drinking-water-legislation-approval) in light of the developments water needs and the second reservoir to expand capacity.

- Liquid waste – For wastewater systems servicing, under 22,700 L flow/day, this office has jurisdiction under the Sewerage System Regulation. For any new system or alteration to an existing septic system property owners must consult with an Authorized Person (as defined in the Regulation) and submit paperwork to this office. For wastewater systems servicing greater than 22,700 L flow/day, please refer to the Ministry of Environment.

- Food premises - The Health Protection and Environmental Services (HPES) department in Island Health has a regulatory role in food premises from construction to operation (under the Food Premises Regulation). Any changes to the existing food premises and the possible construction of new food premises must be undertaken with the appropriate construction and operating permits.

- Proposed spa may include recreational water, e.g. swimming pool and hot tub, and personal service establishment (PSE) amenities - These types of facilities, depending on public use and the nature of services offered, may be privy to the Pool Regulation and Regulated Activities Regulation respectively under the Public Health Act and overseen by Island Health HPES. Again, we would review these activities from construction to operation.

- HBE commentary - could zero in on public trails, diversity of housing access, greenspace/blue space, commercial space-mixed use, and climate change adaptability. Although, due to the above mentioned concerns (#'s 1-4) we have not provided a HBE lens to this rezoning. If however, after the above infrastructure/issues are addressed and your office would like to hear our comments in this regard, we'd be happy to provide them.

If you have any questions regarding the above information, please do not hesitate to contact me.

Sincerely,

Kazuhiro Takeuchi, B.Sc., B.Tech., CPHI(C)
Environmental Health Officer
Gateway Village Health Unit
Suite 201 – 771 Vernon Avenue, Victoria, BC. V8X 5A7
Phone: (250) 519-3401 Ext 33655
Email: Kazuhiro.Takeuchi@viha.ca

Wendy Miller

From: Schneider, Nikki TRAN:EX <Nikki.Schneider@gov.bc.ca>
Sent: Monday, October 22, 2018 10:48 AM
To: Wendy Miller
Subject: RE: Comprehensive Community Plan Amendment Application RZ000242 (Pacific Gateway Marina - Port Renfrew) - CRD Referral

Good Morning,

Please accept this as official response from the Ministry of Transportation and Infrastructure in regards to the Comprehensive Community Plan Amendment for Pacific Gateway in Port Renfrew; Ministry File 2018-05576.

The Ministry has no objections to the proposed Community Plan Amendment at this time. The Ministry will provide comments should the parcel be further subdivided.
Commercial Developments wishing to construct new access onto West Coast Road are required to apply for a commercial access permit through this office.

If you have any questions please do not hesitate to ask.

Thank you,

Nikki Schneider
District Development Technician
Ministry of Transportation and Infrastructure – Vancouver Island District
Ph: 778-974-2633
Fx: 250-952-4508

EMPLOYEE ADVISORY FORUM

Proud Member of the EAF
For employees, by employees

Pacheedaht First Nation
350 Kalaid Street
Port Renfrew, BC
V0S 1K0
Phone: (250) 647-5521
Fax: (250) 647-5561

May 14, 2019

Capital Regional District
Juan De Fuca Community Planning
3-7450 Butler Road
Sooke, BC V9Z 1N1

Attention: Iain Lawrence

Dear Sirs/Mesdames:

Re: Proposed Bylaw No. 4266 and Referral #RZ000242

Thank you for your efforts to inform Pacheedaht First Nation on the two files above as they relate to Pacheedaht territory and processes.

The proposed Bylaw # 4266 will help to update the parameters in Port Renfrew to bring development into compliance, as required in CRD's jurisdictions. PFN recommends it as an interim step to bring more oversight to hazardous conditions currently being challenged, including slope stability, geotechnical review, and compatible land uses with marine stewardship. The long term solution will still require an updating of the OCP, and therefore it is critical for CRD to implement a plan for the OCP to be updated, to reflect current land use and needs from both Pacheedaht and Port Renfrew Community.

Until such time, PFN would like to discuss the possibility of also integrating developmental considerations around heritage and archeological sites, to recognize Pacheedaht's strong rights and title central to Port Renfrew.

PFN is completing the Land Use Plan for the territory and would like to be involved in CRD land use planning conversations to facilitate communication now; with Treaty negotiations progressing, it is important to facilitate this communication to enable both governments to work collaboratively in the region. In particular, any advances in the understanding of flood risks, tsunami risks, liquefaction, or sea level rise would be very helpful to learn from the CRD's perspective. We would be happy to discuss the initial Pacheedaht Land Use Plan when appropriate.

With respect to Referral #RZ000242, PFN has concerns regarding the high strength of claim and cultural values in the area of the application. The development area has

known archeological sites and undocumented sites, both of which are vitally importance to PFN.

The Nation also retains the water lot lease to the Southeast of the marina infrastructure and want to ensure the impacts from this application are better understood. Any infrastructure improvements relating to drainage, grey water, and sewage contemplated by the new zonation will need further conversation.

We look forward to being informed of the next steps for both files

Respectfully,



Kristine Pearson
Pacheedaht Referrals Coordinator

Wendy Miller

From:	Pete Godau <pgodau@sd62.bc.ca>
Sent:	Friday, September 21, 2018 9:44 AM
To:	Wendy Miller
Cc:	Scott Stinson; Harold Cull; Joanne Kimm
Subject:	FW: Comprehensive Community Plan Amendment Application RZ000242 (Pacific Gateway Marina - Port Renfrew) - CRD Referral
Attachments:	REFFERAL-FORM-AGENCIES-RZ000242.pdf; STAFFRPT-LUC-REFERRAL-RZ000242.pdf

Morning Wendy,

At this time the school district does not have any concerns with this development.

Thank you,

Pete

Peter Godau
Director of Facilities| School District # 62
P (250)474-9840 Ext 203 | C (250)361-7330 | pgodau@sd62.bc.ca
Shaping Tomorrow Today

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Notes from a Public Information Meeting
Held December 11, 2018 at the Port Renfrew Community Centre, 6638 Deering Road, Port Renfrew, BC

SUBJECT: **Comprehensive Community Plan Amendment Application for:**
That Part of Section 97, Renfrew District as Shown Coloured Red on Plan 344R (PID: 009-592-342);
Lot 1, Section 97, Renfrew District, Plan EPP24972 (PID: 028-991-125);
That Part of District Lot 17, Renfrew District Shown Outlined in Red on Plan 347R (PID: 009-575-006); and
Those Parts of Block A and B, District Lot 751, Together with Unsurveyed Crown Foreshore or Land Covered by Water Being Part of the Bed of Port San Juan, All Within Renfrew District, Shown Outlined in Red on Licence V905027, Containing 3.86 Hectares, More or Less

PRESENT: Director Mike Hicks
Staff: Iain Lawrence, Manager, Local Area Planning; Wendy Miller, Recorder

PUBLIC: Approximately 38

The meeting was called to order at 6:05 p.m.

The Director welcomed everyone to the meeting and introduced staff and the application representatives. It was advised that since the Advisory Planning Commission for Port Renfrew is inactive, the proposal has been referred to a public information meeting to receive comments from the community. The information collected from the meeting and from referral agencies and First Nations will be presented to the Juan de Fuca Land Use Committee (LUC) for recommendation to the CRD Board. It was noted that the LUC representative for Port Renfrew, Roy McIntyre, was in attendance.

Iain Lawrence spoke to the staff report and the request to redesignate the subject properties from Marine Protection (M) and Residential (R) to a new Pacific Gateway Marina (PGM) designation, and to rezone the subject properties from Marine (M) and Community Residential – One (CR-1) to a new Pacific Gateway Marina Comprehensive Development (PGM-CD) zone, in order to permit a mix of community uses, year-round residential accommodation, vacation properties, commercial tourism, recreation and marina services to the general public. It was reported that the proposed PGM-CD zone includes six development areas and that each development area has specific regulations.

The planner for the application spoke to a visual presentation, outlining the six development areas proposed by the PGM-CD zone and the design elements intended to compliment the topography and natural environment and protect identified heritage areas.

The architect for the application spoke to the building layout plan advising that buildings will be sited to meet flood plain elevations and that buffering used to stabilize steep slope areas will be used as a walkway to a proposed waterfront trail. Buildings will generally be long, narrow and terraced to allow for viewscapes and solar capture. A natural colour palette will be used to highlight the natural environment. Roofing will be metal.

The planner for the application advised that as the development area does not have the capacity to accommodate onsite sewer infrastructure, an easement has been secured to permit a land-based system on a property located to the south. The system, which will be able to accommodate 3-5 years of development, will need to be authorized by Island Health. Should the project exceed that capacity, the system will be converted into system authorized by the Ministry of Environment. The proposal includes funding a $500,000 water tower, which will double the current water servicing capacity and

increase fire flow capacity. The development proposal will create jobs, provide a tourism boost, and expand the community trail networks.

Janice Hiles, Port Renfrew, referenced the 2003 Official Community Plan (OCP) for Port Renfrew and stated that the number one goal of the OCP is to protect and preserve the natural ecosystem and that the number one objective of the OCP is to preserve natural amenities including major watercourses and tributaries, wetland areas, steep hill sides and the marine foreshore.

Janice Hiles stated concern regarding enforcement of the conditions of the applicant's current temporary use permit, concern regarding the broad scope of the rezoning application, concern regarding the lack of related development permits and an independent environmental study, and concern for the development's overall impact on:
- sewerage
- water capacity
- drainage
- roads and road accesses and the community's one-way bridges
- the volunteer fire department

Janice Hiles noted the community's current level of internet and telephone service and lack of cell phone coverage, safe pedestrian routes, affordable housing and rental housing.

Peter Hovey, Port Renfrew, stated:
- support for development
- concern regarding the lack of parking proposed by the development scheme
- support for increased water system capacity

Iain Lawrence stated that a condition of the zoning application is the installation of a second water reservoir to expand the capacity of the Port Renfrew Water Supply System to the satisfaction of the Capital Regional District.

The Director stated that the second water reservoir will provide water capacity to allow development of properties outside of the subject application area.

Mike Conlin, Port Renfrew, stated that:
- the community has received assurances in the past from other developers that water system infrastructure will be improved
- there are properties currently located in the Port Renfrew Water Service Area that want to hook up to the system
- the proposed water tower will only be able to service low lying properties due to the proposed location of the tower
- the Beach Camp sewerage system will need to be replaced eventually
- developers should be approached regarding improving the Beach Camp sewerage system to pump effluent upland
- should the rezoning proposal proceed, the applicant's land value will increase substantially
- it is understood that written comment regarding the proposal will be submitted by the Pacheedaht First Nation

A member of the public stated support for having developers pay for infrastructure improvements as opposed to residential taxpayers.

The Director stated that there may be opportunity to utilize gas tax funding to provide a pump station to increase water pressure to upland properties and that sewerage grant opportunities are being monitored.

Iain Lawrence responded to a question from a member of the public confirming the location of the area to be deleted from the Marine Protection designation and added to the new Pacific Gateway Marina (PGM) designation.

A member of the public stated support for continued access to the waterfront trails historically used by the community.

The planner for the application outlined the proposed statutory right-of-way in favour of the CRD which would run from the stairway at Baird Road and along the waterfront to the stairway located at Lot 64.

A member of the public stated concern for the rocks placed in the ocean by the applicant (below proposed Development Area D). It was noted that rock replacement has increased the land base significantly and that campers have been using the land and deposing of greywater inappropriately.

Iain Lawrence reported that the licence of occupation issued by the Province permitted the placement of rock and that the licence required the submission of environmental reports.

A member of the public stated that Port Renfrew has seen a lot of environmental pressure over the years, that developments have started and stopped and that some developments have not been done well. The member of the public stated concern regarding sewerage running down to the foreshore, impacting the local ecosystem. Additional concern was stated regarding waste management for the fish processing proposed by the applicant. Support was forwarded for regular fecal coliform testing. Further support was forwarded for the continued enjoyment of the foreshore by residents and visitors.

Jack Julseth, Port Renfrew, stated that tonight's comments have focused on larger community concerns regarding servicing and the environment and that a separate informal community forum may be required to discuss opportunity to work together as a community to address these concerns. Jack Julseth stated support for providing options for accommodation and activities to draw tourists to the community.

A member of the public stated support for prioritizing tourism promotion after servicing infrastructure is in place to support increased tourism activity. The member of the public stated support for developers providing greater amenities and noted that the community cannot get excited over the prospect of another restaurant when the community does not have a grocery store.

Janice Hiles stated support for an OCP review.

Peter Hovey stated support for opportunities to allow residents to invest and work in the community that they live in.

The meeting adjourned at 7:20 p.m.

Hi I am Janice Hiles. My husband Ken and I have a residence in beach camp. We have always loved Port Renfrew.

If anyone would like a copy of my more technical speech that refers each of my points to the OCP please see me later.

We are here tonight to discuss bylaw 4096, the Pacific Gateway Marina policies. I do believe however that the additional 17 cabins that are listed on the PGM website are notable and apparently currently under a separate subdivision application as they do not require a rezone. I will refer to the upper 17 cabins or townhouses as the upland development.

I appreciate seeing folks out to this meeting 2 weeks before Christmas. I can see locals, business owners and cabin owners and summer residents all in attendance as well as members from the CRD There are many people who care about this community.

In 2003 a group of Port Renfrew citizens along with planners from the Juan de Fuca Capital regional District created an official community plan for Port Renfrew which I will refer to as the OCP. The OCP is an official and legal document which lays out the land use management and planning.

That plan helps to guide services and their costs to residents, and to inform those in the plan area about the type of land use activities that are likely to occur in their neighbourhood.

This information allows residents of the planning area to play a role in determining how and when their community will develop or not.

Bylaw 4096 being the amendment before us states that the PGM policies should support the economic, social and cultural well-being of the Port Renfrew community.

The desires and concerns of the resident's makeup much of the official community plan.

The number one goal listed in the OCP is protection and preservation of the natural eco-system, which impacts upon the special character of Port Renfrew

The number one objective listed in this plan is to preserve the natural amenities of the major watercourse and their tributaries, wetland areas steep hill sides and the marine foreshore.

Clearly in 2003 long before climate change concerns, the people of Port Renfrew valued their environment. The residents that I know still value their beaches, the forests and streams and the beauty all around us here.

Infrastructure is a significant concern.

The development policies in the OCP state we should encourage growth and development based upon the capacity of the community's infrastructure capabilities. These are some of my concerns

1) Sewage, and lack of any referral to it on this amendment.

2) Water, do we really have enough, what study proves this.

3) Drainage, and the lack of any referral to it in this amendment.

4) Roads, the accesses are on curves and sketchy.

5) Sidewalks, if you have ever walked with a child and your dog on Parkinson Road you know what I mean.

6) Fire Protection, how can our fire Department continue to have the volunteers to staff and service the area when the only housing we create is for tourists?

7) One way bridges

8) Internet, telephone and lack of cell phone coverage.

9) Affordable housing and rental housing.

This development further stresses our entire infrastructure!

Currently this Property is Zoned Community Residential One which would allow each property to have a duplex and a cabin. There appears to be only two buildable properties but because maps provided in this document are different from each other it is difficult to even know how many properties there are.

The amendment before us is not clear about what is intended. It states there will be year round accommodation, vacation properties, commercial tourism recreation and Marina services. This includes hotels, motels food services, fish plants, retail establishments, tourist facilities.

How can we really know what or how much construction is going to happen because it seems like they have covered their bases to do just about anything.

This amendment seems to provide two amenities. The first being increased water capacity. Clearly the development of this property needs that extra capacity to support its own growth.

The second is a path. Please note however that there is no mention of that path being along the waterfront.

Now I would like to speak to you about what has been done.

Pacific Gateway Marina was issued a temporary permit by the CRD in May of 2013.

These were the conditions of that permit.

a. The impacts to any of the existing land uses are kept to a minimum.
b. It does not involve the construction or erection of a new building.
c. It does not involve numerous delivery trucks travelling to the site on a daily basis.
d. The activity serves the needs of the community or is a part of the tourism sector.
e. The activity will be carried out wholly within the principal building.

Clearly most of us know what this resulted in.

They have built an enclosed building with a year round restaurant, have had regular deliveries, the mountains were blown up and the vegetation decimated and they have erected numbered RV sites along the waterfront for camping.

In 2013 the people of Port Renfrew were invited to comment or attend a meeting in Sooke regarding this Temporary permit. 16 people wrote letters. That is nearly a tenth of the population who had concerns.

I must question why these contraventions of the temporary permit have not been addressed.

I would also like to bring attention to the fact that no development permit has been asked for in this amendment.

Our own OCP states the CRD will assist the applicable Provincial and Federal ministries in protecting the ecosystem along the foreshore area and estuaries in regards to:

1) Buildings in the foreshore area

2) Removal or addition of fill in the marine foreshore area

3) Retention of foreshore vegetation

A development permit would require an independent study by a qualified environmental professional. This study would look at the foreshore and the streams as well as the remaining vegetation and trees.

I would like to know why a development permit is not being required for both the Pacific Gateway lands and the upland lot.

To summarize I believe that the people of Port Renfrew and many businesses recognize the importance of our natural environment and want to preserve it as best we can. We have concerns about infrastructure, our roads, sewer, water, drainage.

The proposal before us seems to present an unknown amount of development, but most certainly a huge increase in density. The CRD has not held the Pacific Gateway accountable in regards to the terms of the temporary permit, and lastly they have not asked for an independent environmental study.

I have spent many hours studying these bylaws, amendments and zoning documents I cannot identify how amendment 4096 supports the economic, social and cultural wellbeing of this community.

People tell me you cannot fight big business. I am not asking for a fight. I am asking that the rules that were laid out in Port Renfrew's Official Community Plan be adhered to and that the CRD enforces them.

Thank you for listening.

jdf info

From: John Wells
Sent: Saturday, December 15, 2018 10:52 AM
To: jdf info
Subject: Pacific Gateway Project

I'm in full support of this development moving forward. This is great news for our community.

It's not just the employment opportunity's , but the social well being of this community I see the benefits of keeping our young people in town.
The way to do this is supply employment & affordable property where those who wish to stay full time can.
Ownership of your own property is a great motivator.

Pacific Gateway has shown to pay good wages, so those local young members can live here.

I understand we are short on local affordable housing.

I would like to work with CRD on helping to elevate this issue. I believe it's a team (town) effort to help.

For the future growth of our community and social well being this project is what's needed.

Thank you for your time

John Wells

jdf info

From: Ken and Janice Hiles
Sent: Monday, December 17, 2018 8:03 AM
To: jdf info
Subject: Fw: Port renfrew meeting.

Sent: Monday, December 17, 2018 8:00 AM

Thank you for the information meeting On December 11th.
I would like to voice some concerns I have.

1) there should be unit restrictions on each of the zones that the Purdy group has asked for.
2) they stated at the meeting that there would be no camping on part D but show it on their maps on their display boards as having camping.
3) they stated at the meeting that there would be a water front trail but this is not written or shown in any documentation.
4) they show no boat trailer parking so are the locals going to continue to be able to launch boats.
5) in Mill Bay the Purdy group promised to replace our boat launch when they destroyed the existing one when they developed but years later we still don't have one.
6) it is difficult to trust what this group says, we need everything we are willing to agree to extremely clearly written and examined by a number of professionals.

I believe this project should not move forward until we have a new OCP. This project along with the Purdy uplands seems to house about 90 living units. The residents and home owners in Port Renfrew deserve more of a say in the development of their community.

Wendy Miller

From: Wendy Miller
Sent: Tuesday, December 18, 2018 10:11 AM
To: Wendy Miller
Subject: FW: Purdy Group zoning amendment 2018

From: Ken Hiles [mailto
Sent: Monday, December 17, 2018 5:53 PM
To: Ken and Janice Hiles
Cc: jdf info <jdfinfo@crd.bc.ca>
Subject: Re: Purdy Group zoning amendment 2018

On Mon, Dec 17, 2018, 2:20 PM Ken Hiles wrote:

Hello I am writing this email in regard to the 2018 Pacific Gateway Marina rezone amendment. I feel that the PGM (Purdy Group) are not giving near enough ammenities for the upgrade in zoning they are asking for. I own property in Beach Camp and I therefore would like to see the boat launch at the PGM property be covenanted to remain for public use and at no charge. I also have a home in Cobble Hill near in Mill Bay. When the Purdy Group (Mill Bay Marine Group) purchased the Mill Bay Marina in 2010 Andrew Purdy after removing the boat launch on the property promised that he would build a new boat launch and parking for pubic use if the CVRD gave him the go ahead on the marina and condo development. To this day Dec. 17 th 2018 ,no boat launch has been built and the area residents have no means to launch in this area. The nearest boat launch is 12 kilometers north of Mill Bay. Please don't let this happen in Port Renfrew. I would also like to see a covenanted trail along waters edge from the CRD property at the edge of Beach Camp and along the foreshore of the PGM property to the marina. This is where the residents of Port Renfrew have always been able to walk unrestricted.
Thank you for this consideration.
Ken Hiles

Wendy Miller

From: Wendy Miller
Sent: Friday, January 18, 2019 10:20 AM
To: Wendy Miller
Subject: Port Renfrew Pacific gateway proposal

From: Cam Hamilton
Sent: Thursday, January 17, 2019 12:36 PM
To: 'jdinfo@crd.bc.ca'
Cc:
Subject: Port Renfrew Pacific gateway proposal

To whom it may concern,

I am writing this letter for my concerns on the Pacific gateway proposal. I am a concerned home owner with a house in this area, and a volunteer firefighter with another small town ,my concern is with the expansion comes more people and not enough people that live in the town year round for fire fighters , they are hard to get volunteers when there is not enough people living there to pull from. My other concern is not enough water supply for fighting any fire which may arise from this expansion, there is fuel on site and wooden structures that would need protection and not enough water supply. I know they are stating they are going to donate$ 500,000 dollars to help expand the water system but that is probably only half enough for these upgrades .

Yours Truly
Cam Hamilton
Deputy Chief Youbou Fire Dept.

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6. Delegation – Juan de Fuca Community Planning

a) Comprehensive Community Plan Amendment Application - RZ000242

That Part of Section 97, Renfrew District as Shown Coloured Red on Plan 344R (PID: 009-592-342);

Lot 1, Section 97, Renfrew District, Plan EPP24972 (PID: 028-991-125) (17110 Parkinson Road);

That Part of District Lot 17, Renfrew District Shown Outlined in Red on Plan 347R (PID: 009-575-006) (6598 Baird Road); and

Those Parts of Block A and B, District Lot 751, Together with Unsurveyed Crown Foreshore or Land Covered by Water Being Part of the Bed of Port San Juan, All Within Renfrew District, Shown Outlined in Red on Licence V905027, Containing 3.86 Hectares, More or Less

Iain Lawrence spoke to staff report to the Juan de Fuca Land Use Committee and the request to redesignate the subject properties from Marine Protection (M) and Residential (R) to a new Pacific Gateway Marina (PGM) designation, and to rezone the subject properties from Marine (M) and Community Residential – One (CR-1) to a new Pacific Gateway Marina Comprehensive Development (PGM-CD) zone, in order to permit a mix of community uses, year-round residential accommodation, vacation properties, and commercial tourism, recreation and marina services to the general public. Iain Lawrence provided an overview of the six development areas proposed by the PGM-CD zone.

Iain Lawrence responded to questions from the Commission confirming that:
- the current marina is operated under a temporary use permit issued by the CRD
- Bylaw No. 4017, "Capital Regional District Regional Growth Strategy Bylaw No.1, 2016" (RGS) designates the marina properties as an Urban Containment Policy Area
- Section 445 of the *Local Government Act* requires that all bylaws adopted by a regional district board after the Board has adopted a RGS, be consistent with the RGS
- as the application proposes an amendment to the Port Renfrew Official Community Plan (Schedule A, Bylaw No. 3109, "Comprehensive Community Plan for Port Renfrew Bylaw No. 1, 2003"), the bylaw will be referred to the CRD Board for a determination of consistency prior to first reading
- the CRD is reviewing the sewer and water services proposed by Bylaw No. 4096

Iain Lawrence directed attention to Section 4.5.1 of Bylaw No. 4096 which proposes construction of a public trail and staircase providing connection between the Juan de Fuca Community Parks trail on Lot 64 and Baird Road.

Commission comments included:
- stairs at Baird Road are in poor condition
- concern for maintenance costs related to the staircase
- the development will want to keep the staircase in good condition as the focus of the proposal is to draw tourists to the community
- there is a roughed-in trail that has been used by residents that connects to Godman Road
- support for considering locating a trail with guard rails on higher land to avoid pedestrian and boat trailer conflicts
- a trail on the higher land would continue to provide water views

- the buildings proposed by the application have not been built
- the proposed higher land trail may not have the same water views once these structures are built
- the dominant user of the waterfront trail may be limited to the users of the marina
- the public generally desires continued access to and along the waterfront

Iain Lawrence responded to a question from the Commission, confirming that the Commission previously considered park dedication requirements for the 6-lot bareland strata subdivision (SU000687) on Lot 1, Plan EPP24972. It was advised that the CRD Board supported the Commission's recommendation that parkland dedication be received in the form of cash-in-lieu for application SU000687 and that the trail and staircase proposed by Bylaw No. 4096 are amenity provisions.

In response to Commission concerns related to trail standards, Don Closson noted that staff will be working with the developer as proposed Bylaw No. 4096 outlines the requirement that provision of a public walking trail and staircase are to be constructed in a location and to a standard approved by Juan de Fuca Electoral Area Community Parks and Recreation.

MOVED by Commissioner Braunschweig, **SECONDED** by Commissioner Sloan that the Commission accept the amenity in the form of a continuous statutory right-of-way, trail and stairway from Lot 64 to Baird Road which is open to the public with the trail and staircase maintained by the development.

CARRIED

b) Subdivision Application SU000697 - Subdivision of Lot 93, Renfrew District, Except Part in Plan 23812 – West Coast Road

Regina Robinson spoke to staff memo to the Commission and the referral received from the Ministry of Transportation and Infrastructure (MoTI) for a proposed 3-lot subdivision of Lot 93 on West Coast Road. It was confirmed that no park dedication is required for the application; however, Section 75(c) of the *Land Title Act* requires that if land to be subdivided borders on a body of water, the bed of which is owned by the Crown, access must be given by highways 20 m wide to the body of water at distances not greater than 200 m between centre lines, or, in a rural area where the parcels into which the land is subdivided all exceed 0.5 ha, at distances not greater than 400 m between centre lines. A Memorandum of Understanding (MoU) between the CRD and the MoTI allows that subdivision applications that require access to water in accordance with Section 75 will be referred to the Commission prior to issuance of preliminary layout approval. It was further confirmed that the applicant submitted a request to the CRD and the MoTI to waive the statutory requirement to provide access to water.

Don Closson stated that:

- there is a provincial access to water to the east of Fossil Bay Resort, which is located between proposed Lot 1 and proposed Lot 2
- the subject property is steep and benched
- there is little sign of public historic use of the subject property
- should the waiver not be supported, the applicant has proposed that the water access be located at the west end of proposed Lot 2

Appendix G: Environmental Report

Cascadia Biological Services

Cascadia Biological Services
772 Goldstream Ave
PO Box 27034
Victoria, BC
V9B 5S4

March 10th 2019

CRD Planning – Port Renfrew
Attn: Senior Planner

Environmental Impact Assessment
6598 Baird Road/17086 Parkinson Road
Capitol Regional District (CRD) – Juan de Fuca Electoral Area
Port Renfrew BC

Purpose

This report is in response to a request by the CRD (Juan de Fuca Electoral Area) for an Environmental Assessment of potential impacts resulting from proposed disturbances associated with a municipal residential land development located in the community of Port Renfrew. The civic addresses for the proposed development are located at 6598 Baird Road and 17086 Parkinson Road (refer to Attachment I). Specifically, the disturbances are associated with a proposed residential development including a stormwater outfall and walking path required to satisfy requirements of the Preliminary Lot Approval (PLA) issued by the CRD. This letter report will therefore accompany and form an addendum to the development permit application (DPA) or equivalent. The DPA is required as the development and associated infrastructure trigger the DPA at the time of development. Located approximately 700m west of the Port Renfrew town centre, the two parent property(s) being developed measures approximately 4.0 hectares and has approximately 575m of marine shoreline.

Typical site photographs are presented following this letter report in Attachment II.

Background

At the request of the owner, Cascadia Biological Services was retained to conduct an overview environmental impact assessment of proposed works associated with a residential development on parent lot(s) located at 6598 Baird Road and 17086 Parkinson Road located in the Community of Port Renfrew. The proposed disturbances include land alterations and disturbances to 1 hectare of land as shown in Attachment III. These areas are currently in a somewhat natural state and have been left undisturbed from previous development stages within the subject property(s). As a result, Cascadia

Cascadia Biological Services

Biological Services was charged with conducting an overview environmental assessment of the proposed disturbed area. The assessment was completed over a four-day period in January and February of 2019. Prior to the field visit, an overview search of existing environmentally significant areas was conducted including a search of the British Columbia Conservation Data Centre (BC CDC) rare element occurrences of which none were documented.

Environmental Assessment Findings

1) **Land Use –** The proposed disturbed area including the marine riparian zone along the foreshore of the subject properties have been utilized for residential and industrial purposes for many years. Most of the native vegetation in and around the subject property has been replaced by lawns and ornamental gardens comprised primarily of introduced species or by larger areas of crushed rock used for levelling of future building pads. Larger industrial uses are historic and sporadic along the foreshore environment. Some smaller older second-generation polygons do exists in and around the surrounding area however, have been severely fragmented due to urban encroachment. Other environmentally significant features within 500m of the subject property include the steep coastal bluffs/cliffs. Land Use within the marine environment along the subject and adjoining properties is primarily limited to docks, gangways and erosion control platforms extending into and along the water. Most of these structures extend no more than 30m into the harbour waters.
2) **Subject Property** - The potential development permit area within the subject property measures approximately 560m (length along foreshore) X 15m (development permit area width) for a total area of 8400 m^2 and has been previously disturbed (>80%) except for two small polygons located along both the eastern and western sections of the property (refer to Attachment III). Existing vegetation within the proposed disturbed area associated with the new residential development will include disturbances to most of the remaining natural state polygons. Approximately 10 larger trees (older second generation) will be cut within the within the proposed disturbed areas
3) **Rare Plants/Wildlife/Ecosystems** – From our assessment, there are no environmentally significant polygons/attribute along the proposed disturbed area associated with the proposed residential areas. From our assessment, several larger older second-generation Douglas fir and spruce trees will be removed from the natural state area. These trees have been surveyed with drones and spotting scopes as well as assessed on the ground to determine if any raptor nests, nesting cavities or blue heron rookeries were present. None were observed during our assessment of the property (s). No rocky outcrops, wildlife trees/dens, stick nest or other environmentally significant attributes including sensitive ecosysterns were noted along the proposed disturbed area of the property. The Provincial rare element occurrences program which documents the potential for existing rare elements including rare vegetation, ecosystems and wildlife is presented in Attachment IV. Existing mapping shows the potential occurrences of both a

Cascadia Biological Services

vascular plant named nodding semaphonegrass as well as the potential in the area for the northern red-legged frog. Both of the rare elements listed above were not observed on the subject property(s) nor are expected to occur on site given the previous disturbances as well as existing conditions.

Conclusions

From my assessment of the site in January and February of 2019, I have come up with the following conclusions;

1) The subject property(s) along the marine environment and immediate upland areas of the property has been previously disturbed to over 90% of the total property area;
2) No environmentally significant attributes were noted along the proposed natural state areas;
3) No raptor nest, nesting cavities or heron rookeries were observed during our assessment

Options and Recommendations

It is in my opinion that the proposed disturbed area as shown (refer to Attachments III) for the subject property located at 6598 Baird Road and 17806 Parkinson Road in the Community of Port Renfrew will not negatively impact the area at a community scale if the following recommendations are adhered to:

1) All works will be monitored by the designated Qualified Environmental Professional (QEP). The QEP will periodically visit the site during the construction period to ensure the impacts to the environment are negligible. It is anticipated that one site visit each week or even bi-monthly will be sufficient depending on what time of year the disturbances take place. Any contraventions will be forwarded by the on-site biologist to the appropriate agencies;
2) Sediment fencing should be installed immediately outside of the proposed disturbed areas. The designated QEP will advise the appropriate agencies that the sediment fencing is in place and that the proposed works may proceed;
3) All equipment required for the proposed works including backhoes and excavators etc. need to be fuelled outside of the 15m marine foreshore area unless the fuel stations are confined to an absorbent bath containment system. QEP to designate safe fuelling area and/or best management practices directly to the builder;
4) As a result of the proposed disturbed areas near the marine foreshore, Cascadia Biological Services recommends that 2 nesting boxes be erected at select locations within the subject property to improve upon existing passerine nesting cavities. QEP to erect the nesting boxes and notify the appropriate agencies once activities are deemed complete and the nesting boxes are in place;

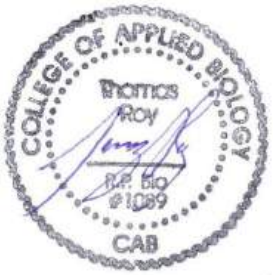
Cascadia Biological Services

5) All trees (approximately 10 in total) to be removed within 30m of the marine foreshore area, must be replaced at a 2:1 ratio on-site within those same areas. QEP to determine where they are to be re-planted;
6) All tree removal should take place outside of the bird nesting season which begins mid-April and ends mid-July.

If you have any questions regarding this assessment, please do not hesitate to contact me by means below.

Thanks for your time.

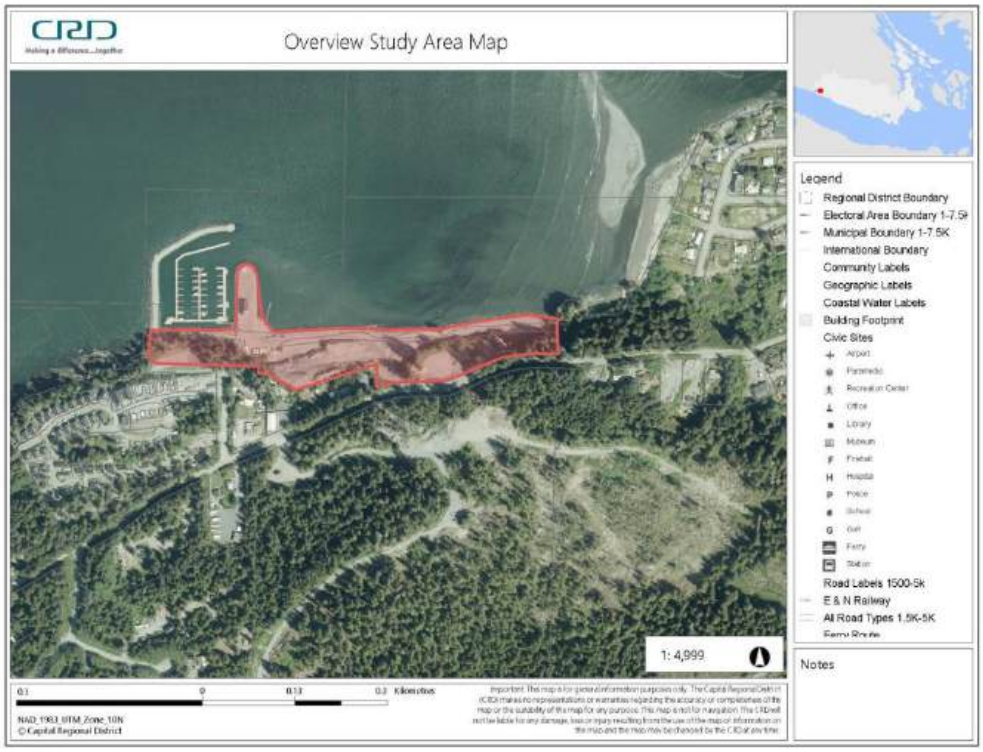




Thomas Roy, R.P. Bio., QEP
Cascadia Biological Services

Cascadia Biological Services

Attachment I – Overview Map of Site



Cascadia Biological Services

Attachment II – Typical Site Photographs



Plate #1. Typical view of the subject property(s)

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Plate #2. Typical view of the subject property(s)

Cascadia Biological Services



Plate #3. Typical view of the subject property(s)

Cascadia Biological Services



Plate #4. Typical view of the subject property(s)

Cascadia Biological Services

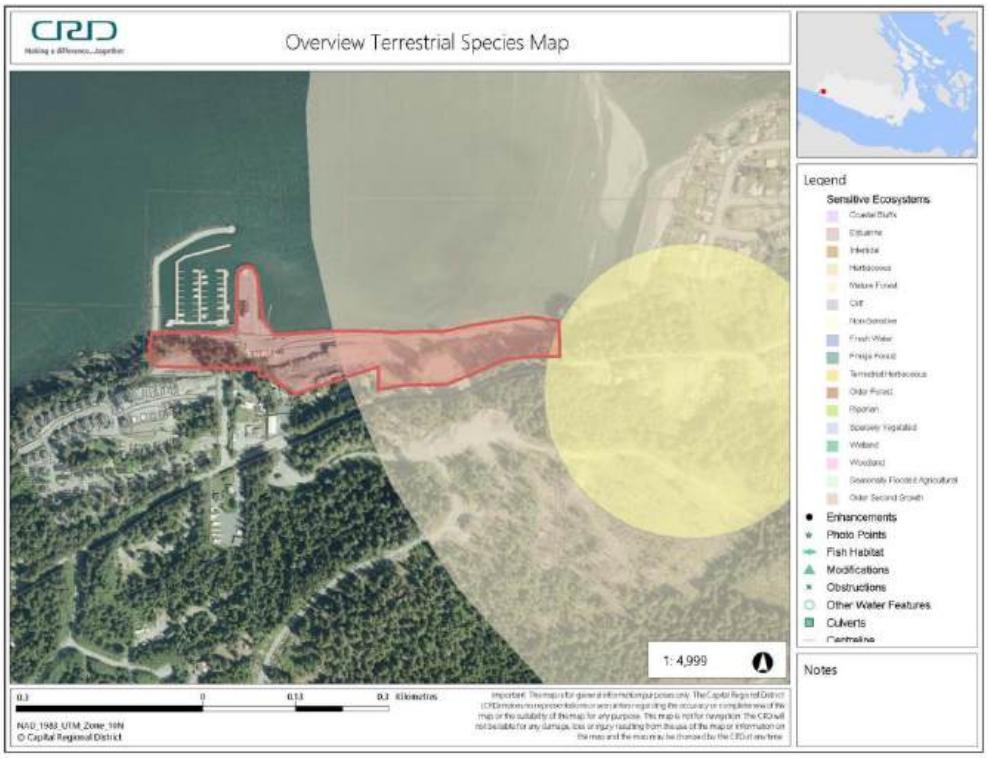
Attachment III – Proposed Disturbed Area(s)



Note: Maps are reduced scale

Cascadia Biological Services

Attachment IV – Rare Elements Occurrence Map



Note: Maps are reduced scale

b) Public hearings are scheduled for rezoning and OCP amendment application RZ000267:

Date: Monday, September 21, 2020
Time: 7pm
Place: Juan de Fuca Local Area Services Building
3–7450 Butler Road, Otter Point, BC

6. Comprehensive Community Development Plan Amendment Application

a) RZ000242 - That Part of Section 97, Renfrew District as Shown Coloured Red on Plan 344R (PID: 009-592-342);

Lot 1, Section 97, Renfrew District, Plan EPP24972 (PID: 028-991-125) (17110 Parkinson Road);

That Part of District Lot 17, Renfrew District Shown Outlined in Red on Plan 347R (PID: 009-575-006) (6598 Baird Road);

and Those Parts of Block A and B, District Lot 751, Together with Unsurveyed Crown Foreshore or Land Covered by Water Being Part of the Bed of Port San Juan, All Within Renfrew District, Shown Outlined in Red on Licence V905027, Containing 3.86 Hectares, More or Less

Iain Lawrence reported that the application is to redesignate the subject properties from Marine Protection (M) and Residential (R) to a new Pacific Gateway Marina (PGM) designation, and to rezone the subject properties from Marine (M) and Community Residential – One (CR-1) to a new Pacific Gateway Marina Comprehensive Development (PGM-CD) zone, in order to permit a mix of community uses, year-round residential accommodation, vacation properties, and commercial tourism, recreation and marina services to the general public.

The application was scheduled to be considered by the LUC at its June 16, 2020, meeting. At that meeting, the LUC considered a letter included on the supplementary agenda from Pacheedaht First Nation received the day of the meeting. At that meeting, the LUC resolved to table consideration of the proposal to its September 15, 2020, in order to provide time to respond to Pacheedaht's concerns, including a review of the Port Renfrew OCP, and consultation and decision making processes generally, and site servicing, and areas of cultural and archaeological significance within the area subject to the application.

Iain Lawrence directed attention to the June 16, 2020, staff report. The staff report includes the referral comments received from agencies in response to the LUC's referral of the application on September 18, 2018, to agencies and to a Public Information Meeting in Port Renfrew. Iain Lawrence summarized the referral comments as included in the staff report and advised that the proposal was considered at a Public Information Meeting in Port Renfrew on December 11, 2018, as well as by the Juan de Fuca Electoral Area Parks and Recreation Advisory Commission on January 29, 2019.

Iain Lawrence directed attention to the September 15, 2020, supplementary staff report, which provided additional information and a revised recommendation as result of the correspondence received from Pacheedaht on June 16, 2020. The recommendation has been revised to require the applicant to register a covenant on the title of the lands prior to bylaw adoption in favour of the CRD securing the Archaeological Impact Assessment (AIA) and geotechnical reports as submitted by the applicant. The proposed bylaw continued to reflect the requirement for provision of water and sewer amenities.

Iain Lawrence directed attention to the September 15, 2020, amended supplementary staff report, which provides further additional information and a revised bylaw as result of the correspondence received from the Pacheedaht on September 8, 2020.

Iain Lawrence advised that the proposed revised bylaw reflects removal of the property known as "Little Renfrew" and removal of Development Areas E and F. Iain Lawrence outlined the bylaw as included in the amended supplementary staff report.

Iain Lawrence reported that staff also recommends that the proposed bylaw be further amended to remove the residential portion of Lot 1, Section 97, Renfrew District, Plan EPP24972. It was advised that "Little Renfrew" and the residential portion of Lot 1 are known areas of cultural and archaeological significance.

Iain Lawrence reported that, since the time that the supplementary agenda was circulated, additional correspondence from the Pacheedaht was received stating that the proposed revised bylaw does not address the concerns set out in the September 8, 2020, letter.

The Chair confirmed that the applicant was present.

Iain Lawrence responded to questions from the LUC advising that:
- the property identified as Community Use (Lot 64) on Plan No. 2 of proposed Bylaw No. 4096 is not included in the area subject to the application
- the area subject to the application includes the areas identified on Plan Nos. 1 and 2 of proposed Bylaw No. 4096 minus the residential portion of Lot 1, Section 97, Renfrew District, Plan EPP24972
- with the removal of "Little Renfrew" and the residential portion of Lot 1, no caves are in the area subject to the application

At the request of the Chair, Iain Lawrence highlighted the revised area subject to the application.

The applicant confirmed that the revised area is correct.

The Chair requested comment from Kristine Gatzke, Referrals Coordinator, Pacheedaht First Nation; and Kelsey McDermott, Associate, Mandell Pinder, legal representative for Pacheedaht First Nation.

Kristine Gatzke thanked membership for the invite to the meeting and thanked Director Hicks for reaching out directly this afternoon.

Kristine Gatzke's comments included:
- in Pacheedaht's opinion, consultation/meaningful dialogue has not started
- it had been hoped that the CRD would have scheduled a meeting with the Pacheedaht prior to tonight's meeting as requested in the letter dated June 16, 2020 to address concerns and development recommendations regarding the proposal
- the recommendations presented in the most recent report were developed without direct input from the Pacheedaht
- Pacheedaht does not agree with the covenant recommendation
- Pacheedaht does not agree with the removal of Lot 1 from the subject area as removal does not encompass all archaeological sites including the foreshore leading to the cave entrance and the cave entrance

Kelsey McDermott advised that she will be speaking to Pacheedaht's letter dated September 8, 2020, and the letter received in response from Iain Lawrence dated July 31, 2020.

Kelsey McDermott's comments included:
- Pacheedaht and the CRD were both involved in the provincial licence of occupation process for the water lot for the marina
- the marina and the uplands are located in two different areas
- the two areas are different and should be considered separately
- there are operational concerns regarding the established marina that require multi-agency input
- the upland residential areas have yet to be established
- the clarification received this evening regarding the area subject to the application is appreciated
- the issues related to the application remain complicated and difficult to discuss when dialogue is limited to making representation as a member of the public
- consultation/meaningful dialogue can start with this application
- the AIA has limitations
- it is understood that there is a network of caves and that not all caves have been found
- Pacheedaht and Port Renfrew community members have knowledge regarding the caves
- Pacheedaht considers the caves to have ongoing cultural importance with the hope to use them for ceremonial purposes
- the geotechnical report included in the AIA references one study addressing limestone caves in England
- Pacheedaht questions whether the geotechnical report is relevant to the caves in Port Renfrew
- environmental information is limited to the Environmental Impact Assessment (EIA) prepared by Cascadia Biological Services
- Pacheedaht was not given opportunity to make comment on the environment or the EIA
- Pacheedaht requests that the application not proceed this evening
- Pacheedaht requests that consideration of the application continue on two tracks, one for the marina and the other for the uplands
- Pacheedaht wishes to develop processes for working with the CRD
- Pacheedaht looks forward to opportunity to participate in the process for updating the Port Renfrew Official Community Plan

The Chair's comments included:
- the membership is being asked this evening to decide if the proposal should proceed
- he would never want jeopardize the caves
- the proposal has been revised to remove cave areas
- no caves are in the area subject to the application
- the covenant will guide development regardless of ownership
- the public trail amenity is supported by the Juan de Fuca Electoral Area Parks and Recreation Advisory Commission and the community of Port Renfrew
- the water tank amenity has been provided
- a land based community sewer system to the satisfaction of the Ministry of Environment is required
- application has been in progress for four years
- application has merit to move forward to the CRD Board for consideration

The Chair asked Iain Lawrence to read allowed the revised recommendation which reflects removal of the caves from the area subject to the application.

Iain Lawrence read aloud an amendment to recommendation d), i) and new recommendation e).

MOVED by Director Hicks, **SECONDED** by Roy McIntyre that the Land Use Committee recommends to the Capital Regional District (CRD) Board:

a) That the referral of proposed Bylaw No. 4096, "Comprehensive Community Development Plan for Port Renfrew, Bylaw No. 1, 2003, Amendment Bylaw No. 13, 2020" to a Public Information Meeting in Port Renfrew, the Juan de Fuca Electoral Area Parks and Recreation Advisory Commission; CRD departments; BC Hydro; Cowichan Valley Regional District; Department of Fisheries and Oceans; District of Sooke; Island Health; Ministry of Environment and Climate Change Strategy; Ministry of Forests, Lands and Natural Resource Operations; Ministry of Transportation and Infrastructure; Pacheedaht First Nation; RCMP; Sooke School District #62 be approved and the comments received;
b) That proposed Bylaw No. 4096, "Comprehensive Community Development Plan for Port Renfrew, Bylaw No. 1, 2003, Amendment Bylaw No. 13, 2020" be introduced and read a first time and read a second time;
c) That in accordance with the provisions of Section 469 of the *Local Government Act*, the Director for the Juan de Fuca Electoral Area, or Alternate Director, be delegated authority to hold a public hearing with respect to Bylaw No. 4096; and
d) That prior to adoption of the bylaws, the applicant:
    i. Register a covenant on the title of the lands pursuant to Section 219 of the *Land Title Act* in favour of the CRD securing the Archaeological Impact Assessment prepared by Duncan McLaren, PhD, dated July 31, 2018, and the geotechnical report prepared by Bruce Dagg, P.Eng., dated November 19, 2015, and require that any land alteration requiring blasting or excavation within 100 m of a sea cave be reviewed and monitored by a geotechnical engineer and monitored by a representative from the Pacheedaht;
e) That Plan Nos. 1 and 2 of Bylaw No. 4096 be amended to remove a part of Lot 1, Section 97, Renfrew District, Plan EPP24972 prior to public hearing.

Opposed: Ron Ramsay
CARRIED

7. Adjournment

The meeting adjourned at 7:54 pm.

_____
Chair

Making a difference...together

REPORT TO JUAN DE FUCA WATER DISTRIBUTION COMMISSION
MEETING OF TUESDAY, OCTOBER 06, 2020

SUBJECT **Bylaw No. 4379: Juan de Fuca Water Distribution Loan Authorization Bylaw No. 5, 2020**

ISSUE SUMMARY

A Capital Regional District (CRD) Board resolution is required to approve loan authorization Bylaw No. 4379 for the purpose of financing the Juan de Fuca Water Distribution system five year 2021-2025 capital plan.

BACKGROUND

The last loan authorization for the Juan de Fuca Water Distribution service was under Bylaw 3981, to finance capital spending over 2015 to 2020. A loan authorization is typically prepared every five years, or as debt is required.

The Juan de Fuca Water Distribution capital plan (the "Capital Plan") includes planned replacement and improvements totaling $49.7 million and will require borrowing of $14.8 million from the Municipal Finance Authority of British Columbia (MFABC).

This borrowing will occur as required to meet cash flow needs for implementation of Commission-approved capital projects. Under the *Local Government Act*, participating area approval is required for the loan authorization and can be obtained through the Alternative Approval Process (AAP), which is the most efficient process regarding time and cost.

The following bylaw is proposed:

Service Area	Action	Purpose	Bylaw
2.680	Loan Authorization Bylaw	To create a loan authorization bylaw to permit long-term borrowing related to the capital plan for this service.	4379 Juan de Fuca Water Distribution Facilities Loan Authorization Bylaw No. 5, 2020

ALTERNATIVES

Alternative 1
The Juan De Fuca Distribution Commission recommends to the Capital Regional District Board:
1. That Bylaw No. 4379, Juan de Fuca Water Distribution Facilities Loan Authorization Bylaw No. 5, 2020, be introduced and read a first, second, and third time;
2. That elector assent for Bylaw No. 4379 in the entire service area be obtained via alternative approval process, according to section 345 of the *Local Government Act*, and if successful, referred to the Inspector of Municipalities for approval.

Alternative 2
That Bylaw No. 4379 be referred back to staff for additional information.

IMPLICATIONS

Legislative Implications

It is recommended that approval be obtained by AAP. The AAP can be initiated when the loan authorization bylaw has received third reading.

Financial Implications

Long-term borrowing (i.e. loans with a term of more than 5 years) cannot be undertaken without the loan authorization bylaw being approved by the Inspector of Municipalities after the bylaw is given three readings by the local government. In addition, in accordance with the *Local Government Act*, elector approval is required in order to approve the loan authorization bylaw by either consent on behalf of the service's participating areas or by AAP.

The loan authorization for the provisional Capital Plan is $14.8 million and will support the planned five year capital plan expenditures commencing in January 2021. The estimated debt servicing costs for the borrowing are included in the 2021–2025 five-year operating budget. Capital funds on hand will provide additional funds as required.

This loan authorization covers planned spending contained within the next five years of the capital plan. Actual borrowings in each of the next five years will be based on the cash flow requirements for the year, subject to the availability of funds from consumption revenue (net of operating expenditures).

To ensure optimization of interest and timing of long term debt, issuance of a temporary borrowing will be proposed if the AAP proves successful and Ministerial Approval is obtained. The timing of the debt issuance will be based on the timing of expenditures and will be dependent on prevailing interest rates at the time. Before long term debt issuance can be exercised, a security issuing bylaw will be brought forward for approval. The term of any debt issuances under such loan authorization will be 15 years.

CONCLUSION

Capital program work on the Juan de Fuca water distribution system is planned for 2021 and ongoing. The work will be funded through a combination of capital funds on hand and borrowed funds. Access to the borrowed funds in 2021 is critical to meet capital program needs. A Capital Regional District (CRD) Board resolution is required to approve loan authorization Bylaw No. 4379 for the purpose of financing the Juan de Fuca Water Distribution system five year 2021-2025 capital plan. An Alternative Approval Process will be undertaken to obtain elector approval and can be initiated once the loan authorization bylaw has received third reading.

RECOMMENDATION

The Juan de Fuca Water Distribution Commission recommends to the Capital Regional District Board:

1. That Bylaw No. 4379, "Juan de Fuca Water Distribution Facilities Loan Authorization Bylaw No. 5, 2020", be introduced and read a first, second, and third time;
2. That elector assent for Bylaw No. 4379 in the entire service area be obtained via alternative approval process, according to section 345 of the *Local Government Act*, and if successful, referred to the Inspector of Municipalities for approval.

Submitted by:	Rianna Lachance, BCom, CPA, CA, Senior Manager, Financial Services
Concurrence:	Nelson Chan, MBA, CPA, CMA, Chief Financial Officer
Concurrence:	Ted Robbins, B. Sc., C. Tech., General Manager, Integrated Water Services
Concurrence:	Kristen Morley, J.D., General Manager, Corporate Services & Corporate Officer
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT

Appendix A: Bylaw 4379, "Juan de Fuca Water Distribution Facilities Loan Authorization Bylaw No. 5, 2020"

CAPITAL REGIONAL DISTRICT

BYLAW NO. 4379

****

A BYLAW TO AUTHORIZE THE BORROWING OF FOURTEEN MILLION EIGHT HUNDRED THOUSAND DOLLARS ($14,800,000) FOR THE PURPOSE OF ACQUIRING, DESIGNING AND CONSTRUCTING WATER DISTRIBUTION FACILITIES IN THE WESTERN COMMUNITIES OF THE JUAN DE FUCA DISTRIBUTION

****

WHEREAS:

A. Under Bylaw No. 2538, "Water Distribution Local Service Area Establishment Bylaw No. 1, 1997", as amended, the Capital Regional District established a local service for the purpose of distributing water in the Regional District;

B. It is deemed desirable to fund works relating to the acquiring, designing and constructing water distribution facilities in the Western Communities of the Juan de Fuca distribution system, and the work shall include the planning, study, public consultation, site selection, design, land and material acquisition, construction, supply and installation of all material, equipment and components and all construction necessary for the preparation and works relating to the acquiring, designing and constructing water distribution facilities in the Western Communities of the Juan de Fuca distribution system;

C. The estimated cost of acquiring land, designing and constructing the water works facilities including expenses incidental thereto, is the sum of Fourteen Million Eight Hundred Thousand Dollars ($14,800,000);

D. Pursuant to sections 345, 403, and 407 of the *Local Government Act*, required elector approval shall be obtained by alternative approval process, after which the bylaw will be referred to the Inspector of Municipalities for review and approval; and

E. The financing is to be undertaken by the Municipal Finance Authority of British Columbia;

NOW THEREFORE the Capital Regional District Board in open meeting assembled hereby enacts as follows:

1. The Board is hereby empowered and authorized to undertake and carry out or cause to be carried out the acquisition of land, planning, study, design and construction of buildings, plant, mains, dams, and other water works facilities and equipment herein before described and to do all things necessary in connection therewith and without limiting the generality of the foregoing:

    a) to borrow upon the credit of the Capital Regional District a sum not exceeding Fourteen Million Eight Hundred Thousand Dollars ($14,800,000); and

    b) to acquire all such real property, easements, rights-of-way, leases, licenses, rights or authorities as may be requisite or desirable for or in connection with the acquisition of land, planning, study, design and construction to add, replace,

upgrade water works facilities and all related ancillary works, studies and equipment deemed necessary in connection with construction of the said facilities.

2. The maximum term for which debentures may be issued to secure the debt intended to be created by this bylaw is 15 years.

3. This Bylaw may be cited as “Juan de Fuca Water Distribution Facilities Loan Authorization Bylaw No. 5, 2020”.

READ A FIRST TIME THIS	__th	day of	202_
READ A SECOND TIME THIS	__th	day of	202_
READ A THIRD TIME THIS	__th	day of	202_
APPROVED BY ALTERNATIVE APPROVAL PROCESS PER S.345 OF THE *LOCAL GOVERNMENT ACT* THIS	__th	day of	202_
APPROVED BY THE INSPECTOR OF MUNICIPALITIES THIS	__th	day of	202_
ADOPTED THIS	__th	day of	202_

CHAIR

CORPORATE OFFICER