



Notice of Meeting and Meeting Agenda Regional Parks Committee

Wednesday, January 27, 2021

10:00 AM

6th Floor Boardroom
625 Fisgard St.
Victoria, BC V8W 1R7

R. Mersereau (Chair), G. Young (Vice Chair), G. Holman, B. Isitt, R. Martin, J. Ranns, D. Screech,
L. Seaton, M. Tait, N. Taylor, C. Plant (Board Chair, ex officio)

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 Agenda

3. Adoption of Minutes

3.1. [21-100](#) Minutes of the November 25, 2020 Regional Parks Committee meeting

Recommendation: That the minutes of the Regional Parks Committee meeting of November 25, 2020 be adopted as circulated.

Attachments: [Minutes - November 25, 2020](#)

4. Chair's Remarks

5. Presentations/Delegations

In keeping with directives from the Province of BC, this meeting will be held by Live Webcast without the public present.

To participate electronically, complete the online application for "Addressing the Board" on our website. Alternatively, you may email the CRD Board at crdboard@crd.bc.ca.

5.1. [21-104](#) Delegation - Corey Burger; Representing Greater Victoria Cycling Coalition: Re: Agenda Item 6.3.: Regional Trails Widening Study

5.2. [21-105](#) Delegation - Elise Cote; Resident of Saanich: Re: Agenda Item 6.3. Regional Trails Widening Study

6. Committee Business

- 6.1. [21-089](#) 2021 Regional Parks Committee Terms of Reference
- Recommendation:** That the Regional Parks Committee receive the 2021 Terms of Reference, attached as Appendix A.
- Attachments:** [Staff Report: 2021 Regional Parks Committee Terms of Reference](#)
 [Appendix A: Terms of Reference](#)
- 6.2. [21-087](#) CRD Regional Trails Visitor Use Survey – 2019
- Recommendation:** The Regional Parks Committee recommends to the Capital Regional District Board:
 That this report be received for information.
- Attachments:** [Staff Report: Regional Trails Visitor Use Survey 2019](#)
 [Appendix A: Regional Trails Survey Report](#)
- 6.3. [21-084](#) Regional Trails Widening Study
- Recommendation:** The Regional Parks Committee recommends to the Capital Regional District Board:
 1. That the Regional Trails Widening Study be received for information;
 2. That staff be directed to conduct public engagement on the 6.5 m separated use
 pathway design with lighting and implementation priorities as recommended; and
 3. That staff report back to a future committee meeting with further recommendations.
- Attachments:** [Staff Report: Regional Trails Widening Study](#)
 [Appendix A: Regional Trails Widening Study Report](#)
- 6.4. [21-079](#) CRD Regional Parks and Trails - 2020 - Year in Review
- Recommendation:** The Regional Parks Committee recommends to the Capital Regional District Board:
 That the CRD Regional Parks and Trails - 2020 Update be received for information.
- Attachments:** [Staff Report: CRD Regional Parks and Trails - 2020 Update](#)
 [Appendix A: Presentation - CRD Regional Parks & Trails 2020 - Year in Review](#)
- 6.5. [20-629](#) South Island Transportation Strategy
- Recommendation:** [On November 18, 2020, the Capital Regional District Board approved a
 recommendation from the Planning, Transportation and Protective Services Committee
 to refer the South Island Transportation Strategy to the Regional Parks Committee. On
 November 25, 2020, the Regional Parks Committee postponed consideration of this
 item to the following meeting:]
 That the South Island Transportation Strategy be received for information.
- Attachments:** [Staff Report: South Island Transportation Strategy](#)
 [Appendix A: South Island Transportation Strategy](#)
 [Appendix B: Summary Analysis – SITS and the RTP](#)
 [Appendix C: Recent & Planned Transportation Projects](#)

7. Notice(s) of Motion

8. New Business

9. Adjournment

The next meeting is February 24, 2021.

To ensure quorum, please advise Tamara Pillipow (tpillipow@crd.bc.ca) if you or your alternate cannot attend.

Meeting Minutes

Regional Parks Committee

Wednesday, November 25, 2020

10:00 AM

6th Floor Boardroom
625 Fisgard St.
Victoria, BC V8W 1R7

PRESENT

Directors: B. Isitt (Chair), D. Screech (Vice Chair), F. Haynes (10:03 am), J. Loveday, C. McNeil-Smith (EP), R. Martin (EP), R. Mersereau, J. Ranns, L. Seaton, M. Tait, G. Young, C. Plant (Board Chair, ex-officio)(EP)

Staff: L. Hutcheson, General Manager, Parks and Environmental Services; J. Leahy, Senior Manager, Regional Parks; B. Schultz, Manager Planning, Resource Management and Development, Regional Parks; T. Moss, Visitor Services & Community Development Manager, Regional Parks; M. Lagoa, Acting Deputy Corporate Officer; T. Phillipow, Committee Clerk (Recorder)

EP - Electronic Participation

The meeting was called to order at 10:01 am.

1. Territorial Acknowledgement

Chair Isitt provided a Territorial Acknowledgement.

2. Approval of Agenda

MOVED by Director Seaton, **SECONDED** by Director Tait,
That the agenda for the November 25, 2020 Regional Parks Committee meeting
be approved.
CARRIED

3. Adoption of Minutes

3.1. [20-759](#) Minutes of the October 28, 2020 Regional Parks Committee Meeting

MOVED by Director Mersereau, **SECONDED** by Director Loveday,
That the minutes of the Regional Parks Committee meeting of October 28, 2020
be adopted as circulated.
CARRIED

Director Haynes joined the meeting at 10:03 am.

4. Chair's Remarks

The Chair stated it was an honour serving as Chair of this committee. He thanked staff for all their hard work.

5. Presentations/Delegations

**MOVED by Director Ranns, SECONDED by Director Tait,
That Alon Soraya be added as a delegation to the agenda to speak to item 6.1.
CARRIED**

5.1. Delegation - Alon Soraya; Representing the South Island Mountain Bike Society: Re: Agenda Item
6.1.: CRD Regional Parks Revenue Generation Strategy - 2021-2024

Alon Soraya spoke against the parking fees option on Item 6.1.

6. Committee Business

6.1. [20-745](#) CRD Regional Parks Revenue Generation Strategy - 2021-2024

J. Leahy spoke to item 6.1.

Discussion ensued on the following:

- implications of increased fees and introduction of fees
- the criteria for determining which parks qualify for parking fees
- staff providing reports that outline the expected maintenance costs of land being considered for purchase
- the public consultation process
- implementing various levels of parking and camping fees
- sharing the parking revenue with host municipalities
- businesses using parks without appropriate permits
- that Mt. Work parking fees be applied only to the Hartland Landfill lot

**MOVED by Director Isitt, SECONDED by Director Ranns,
That the Committee refer the matter to staff, to report back to the committee with revised recommendations with lower fee increases for:**

- Parking
- Camping

CARRIED

**MOVED by Director Plant, SECONDED by Director Isitt,
That the motion be amended to add the words "and or extended implementation timelines" after the words "lower fee increases...".**

CARRIED

**MOVED by Director Plant, SECONDED by Director Isitt,
That the motion be further amended to add the words "And ask staff to provide options for short-term paid parking" as a bullet below "camping".**

CARRIED

**MOVED by Director Plant, SECONDED by Director Isitt,
That the motion be further amended to add the words "Direct staff to have conversations with Central Saanich about paid parking at Island View Beach" as a bullet.**

CARRIED

**MOVED by Director McNeil-Smith, SECONDED by Director Screech,
That the motion be further amended to add the words "That staff consider what**

the implication would be on revenue if year round paid parking is considered" as a bullet.

CARRIED

OPPOSED: Tait, Young

MOVED by Director Isitt, **SECONDED** by Director Young,
That the motion be further amended to add the words "That other revised recommendations as recommended by staff" as a bullet.

CARRIED

MOVED by Director McNeil-Smith, **SECONDED** by Director Haynes,
That the motion be further amended to add the words "That staff provide options for considering acceleration of paid parking at the three parks in the report" as a bullet.

CARRIED

MOVED by Director Isitt, **SECONDED** by Director Ranns,
That the Committee refer the matter to staff, to report back to the committee with revised recommendations with lower fee increases and or extended implementation timelines for:

- Parking
- Camping
- And ask staff to provide options for short-term paid parking
- Direct staff to have conversations with Central Saanich about paid parking at Island View Beach
- That staff consider what the implication would be on revenue if year round paid parking is considered
- Other revised recommendations as recommended by staff
- That staff provide options for considering acceleration of paid parking at the three parks in the report

CARRIED

6.2. [20-629](#) South Island Transportation Strategy

MOVED by Director Isitt, **SECONDED** by Director Screech,
That this item be referred to the Regional Parks Committee at the next regular meeting.

CARRIED

7. Notice(s) of Motion

There were no Notice(s) of Motion.

8. New Business

There was no new business.

9. Motion to Close the Meeting

9.1. [20-761](#) Motion to Close the Meeting

MOVED by Director Loveday, **SECONDED** by Director Tait,
That this item be referred to the Regional Parks Committee at the next regular meeting.

CARRIED

10. Adjournment

MOVED by Director Screech, **SECONDED** by Director Tait,
That the November 25, 2020 Regional Parks Committee meeting be adjourned at
11:24 am.
CARRIED

Chair

Recorder

**REPORT TO REGIONAL PARKS COMMITTEE
MEETING OF WEDNESDAY, JANUARY 27, 2021**

SUBJECT **2021 Regional Parks Committee Terms of Reference**

ISSUE SUMMARY

This report is to provide the 2021 Terms of Reference for the Committee's review.

BACKGROUND

Under the *Local Government Act* and the Capital Regional District (CRD) Board Procedures Bylaw, the CRD Board Chair has the authority to establish Standing Committees and appoint members to provide advice and recommendations to the Board.

On December 9, 2020, the Regional Board approved the 2021 Standing Committee Terms of Reference. Terms of Reference (TOR) serve to clarify the mandate, responsibilities and procedures of standing committees and provide a point of reference and guidance for the committees and members.

This year, there were no changes to the defined purpose of the Committee's TOR. Minor housekeeping changes were made to the pro-forma provisions of the TOR, including updates to the language under committee composition to clarify that all Board Members can attend all committees, but not vote unless a member; and, clarification to the provision regarding creation of the committee agenda, to reinforce that Board Members may raise items for the agenda through the notice of motion process.

At the January 13, 2021 Board meeting, the Terms of Reference for all CRD Standing Committees were amended to allow for First Nations member participation.

The TOR are being provided for review by the committee. Any proposed revisions to the TOR will require ratification by the Board.

CONCLUSION

Terms of Reference serve to clarify the mandate, responsibilities and procedures of committees and provide a point of reference and guidance for the committees and their members.

RECOMMENDATION

That the Regional Parks Committee receive the 2021 Terms of Reference, attached as Appendix A.

Submitted by:	Jeff Leahy, RPF, Senior Manager, Regional Parks
Concurrence:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services
Concurrence:	Kristen Morley, J.D., General Manager, Corporate Services & Corporate Officer
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT

Appendix A: 2021 Regional Parks Committee Terms of Reference



REGIONAL PARKS COMMITTEE

PREAMBLE

The Capital Regional District (CRD) Regional Parks Committee is a standing committee established by the CRD Board and will oversee and make recommendations to the Board regarding regional parks.

The Committee's official name is to be:

Regional Parks Committee

1.0 PURPOSE

- a) The mandate of the Committee includes overseeing and making recommendations to the Board regarding the following functions:
 - i. Regional parks and trails, including land acquisition, management, operations and programs
 - ii. Regional Parks Strategic Plan, Land Acquisition Strategy

2.0 ESTABLISHMENT AND AUTHORITY

- a) The Committee will make recommendations to the Board for consideration; and
- b) The Board Chair will appoint the Committee Chair, Vice Chair and Committee members annually.

3.0 COMPOSITION

- a) Committee members will be appointed CRD Board Members;
- b) All Board members are permitted to participate in standing committee meetings, but not vote, in accordance with the CRD Board Procedures Bylaw; and
- c) First Nation members are permitted to participate in standing committee meetings at their pleasure, in accordance with the CRD Procedures Bylaw, where the Nation has an interest in matters being considered by the committee.

4.0 PROCEDURES

- a) The Committee shall meet on a monthly basis, except August and December, and have special meetings, as required;
- b) The agenda will be finalized in consultation between staff and the Committee Chair and any Committee member may make a request to the Chair to place a matter on the agenda through the Notice of Motion process;
- c) With the approval of the 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
- d) A quorum is a majority of the Committee membership and is required to conduct Committee business.

5.0 RESOURCES AND SUPPORT

- a) The General Manager of Parks & Environmental Services will act as liaison to the committee; and
- b) Minutes and agendas are prepared and distributed by the Corporate Services Department.

Approved by CRD Board January 13, 2021

REPORT TO REGIONAL PARKS COMMITTEE MEETING OF WEDNESDAY, JANUARY 27, 2021

SUBJECT CRD Regional Trails Visitor Use Survey – 2019

ISSUE SUMMARY

To provide information on the outcomes of the Capital Regional District (CRD) Regional Trails Visitor Use Survey – 2019.

BACKGROUND

Regional Parks has developed an in-house social science survey program to document public opinion about the regional parks and trails system. This program involves conducting a resident survey every five years, in conjunction with canvassing seven to eight regional parks and trails yearly through a visitor use survey. These two levels of information gathering – at a regional and local scale – allow Regional Parks staff to gather up-to-date information on visitor use, monitor public opinion and determine how local trends relate to the broader patterns concerning the region.

The first resident survey under this program was conducted in 2017 and the results were submitted to the Regional Parks Committee at its meeting of February 21, 2018. This was followed by presenting visitor use surveys conducted in 10 regional parks in 2018 and 2019 to the Regional Parks Committee at its meeting of February 26, 2020. Because of the differences between use patterns of visitors to the regional parks versus the regional trails, a separate report was presented about the regional trail visitor use survey conducted on the E&N Rail Trail – Humpback Connector, Galloping Goose and Lochside regional trails in 2019.

There were 854 questionnaires filled out by regional trails visitors in 2019: 227 for the E&N Rail Trail-Humpback Connector, 378 for the Galloping Goose Regional Trail and 249 for the Lochside Regional Trail. Data collection was performed on randomly selected days and times at 11 sites along the regional trails for a total of 236 hours of surveying. This methodology was chosen to maximize the diversity of respondents to the survey. The survey report documents the input received from participants (Appendix A).

IMPLICATIONS

Social Implications

The visitor use surveys offer a point-in-time snapshot of visitor use patterns. Only the views of people visiting the regional trails at the time of the survey who were willing to participate are represented in this report. The data obtained are not statistically representative and cannot be generalized to a broader population, hence the need to consider the results of the survey cautiously.

For all three trails, the general satisfaction rating was high for overall experience and outdoor recreation (80% or higher). Respondents described the regional trails as one of the most important aspects of the region and recognized the positive impacts these corridors had on their

life, including improving their physical and emotional well-being, and fostering environmental values and appreciation for nature. Respondents expressed the desire for more recreation and active transportation connectivity in the CRD.

The survey results provide valuable visitor demographics. Of note, the majority of visitors lived in the region, with most of them living in Saanich, Victoria and Langford for the Galloping Goose Regional Trail; in Saanich and Victoria for the Lochside Regional Trail; and Victoria and View Royal for the E&N Rail Trail-Humpback Connector. Respondents to the survey tended to have an older age distribution in all three regional trails (45-65+). These results parallel the 2013 Regional Trails Survey results.

Respondents used the Galloping Goose and Lochside regional trails mostly for commuting, while the E&N Rail Trail-Humpback Connector for fitness reasons. Respondents mainly biked on the three trails, followed by walking and running. Like the 2013 Regional Trails Survey, respondents used the three trails year-round for less than one hour to up to two hours each visit. Respondents stated that increased connectivity between regional trails and municipal trail networks encouraged them to access all three trails more frequently in the past five years, as travelling through the downtown core was perceived to be safer on the trails.

Service Delivery Implications

The information gathered by the visitor use surveys, combined with the visitation data, can help inform regional trails service delivery. For example, the visitors surveyed expressed the following concerns about all three trails: increase in traffic and speeding, lack of separation between trail users, poor trail etiquette, presence of motorized vehicles, unsafe road crossings, limited signage and lighting, illegal activity and limited facilities. Respondents suggested addressing those issues by expanding the regional trails network, improving regional connectivity, widening or twinning the trails, strengthening trail etiquette, establishing and enforcing a speed limit, improving dog management, improving road crossings, providing additional lighting, facilities and signage. The survey data offers a better understanding of the visitor use pressures regional trails are undergoing in relation to demand for services and offers direction for the future management of these trails network.

Financial Implications

Consistent with the trail counts, which show an increase in visitation from 3 million visits in 2015 to 3.8 million in 2019 (+21%), the majority of respondents stated they increased their use of all three trails over that period, highlighting the important role these active transportation and recreation routes are playing and will play in the future for climate change mitigation in the CRD. As use continues to grow, increased pressures on the trails infrastructure is expected to rise, as well as demand for services. Addressing the concerns expressed by visitors will require additional service delivery.

Alignment with Board & Corporate Priorities

The survey program supports the 2019-2022 CRD Corporate Plan Board Priority 6a-1 by providing a better understanding of parks user groups and demands on park infrastructure.

Alignment with Existing Plans & Strategies

The program aligns with the Regional Parks Strategic Plan 2012-2021 strategic priorities of undertaking resident and visitor use surveys to strengthen community involvement and partnerships.

CONCLUSION

The Regional Parks Strategic Plan 2012-2021 identified conducting visitor use surveys as a strategic action to strengthen community involvement and partnership. The 2019 CRD Regional Trails Visitor Use Survey summarizes key responses provided by respondents regarding their use of, and experiences on, the regional trails. The survey results will help guide staff in planning for the future management of the regional trails and identify emerging visitor use trends, as well as provide a baseline for subsequent surveys.

RECOMMENDATION

The Regional Parks Committee recommends to the Capital Regional District Board:

That this report be received for information.

Submitted by:	Jeff Leahy, RPF, Senior Manager, Regional Parks
Concurrence:	Steve May, P.Eng., Acting General Manager, Parks & Environmental Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT

Appendix A: CRD Regional Trails Visitor Use Survey – 2019

CRD Regional Trails Visitor Use Survey – 2019

Regional Parks

Capital Regional District | January 2021



Table of Contents

Executive Summary	3
Survey Methodology.....	4
Summary Report Results	4
Summary of Survey Responses	7
Section 1: Demographics.....	7
Section 2: Trail Values.....	9
Section 3: Visitation Trends	12
Section 4: Trails Navigation.....	15
Section 5: Dogs	16
Section 6: Carnivores	18
Section 7: Visitor Satisfaction	20
Section 8: Trails Management.....	23
Section 9: Communication.....	28
Section 9: Additional Comments.....	29
Appendix.....	30

Prepared by:

Capital Regional District, Regional Parks Office

Executive Summary

The Capital Regional District (CRD) has developed a broad survey program aimed at documenting public opinion regarding regional parks and trails. The survey program supports the 2019-2022 CRD Corporate Plan Board Priority 6a-1 by providing a better understanding of park user groups and demands on park infrastructure. The program aligns with the 2012-2021 Regional Parks Strategic Plan strategic priorities of performing resident and visitor use surveys to strengthen community involvement and partnerships.

Visitor use surveys enable CRD Regional Parks staff to understand what is happening on individual regional trails and identify emerging visitor use trends. The visitor use surveys offer a point-in-time snapshot of visitor use patterns. This document summarizes the results of the visitor use surveys conducted in the summer of 2019 at the following regional trails:

- Galloping Goose Regional Trail
- Lochside Regional Trail
- E&N Rail Trail-Humpback Connector

This report provides a summary of park user values, characteristics, use patterns, level of satisfaction, sightings of carnivores, and opinions about regional trails management. It also offers qualitative insights provided by respondents in regard to their use of, and experiences in, the regional trails surveyed.

SURVEY METHODOLOGY

A survey with a standardized set of questions was administered to visitors of the three regional trails canvassed in 2019. Data collection was performed on randomly selected days and times at key locations along the regional trails. Data collection took place from May 27, 2019 to September 15, 2019 on weekdays and weekends. This methodology was chosen to maximize the diversity of respondents for the survey because it allows engagement with people using the trails on different days and at different times. A detailed description of the methodology used is provided in Appendix 1.

This report represents the views of those who visited the regional trails listed and who were willing to participate in the survey. People not visiting the regional trails system are not represented in this data sample. Due to the methodology used to conduct this survey, the data obtained are not statistically representative and cannot be generalized to a broader population, hence the need to consider the results cautiously.

SUMMARY REPORT RESULTS

There were 854 questionnaires completed by trail visitors in 2019:

- Galloping Goose Regional Trail: 378 surveys
 - Lochside Regional Trail: 249 surveys
 - E&N Rail Trail-Humpback Connector: 227 surveys
- **Socio-demographics:** Respondents to the survey tended to be in an older age distribution (45 to 65+) in all three regional trails. Respondents to the survey tended to live in Saanich, Victoria and Langford for the Galloping Goose Regional Trail; in Saanich and Victoria for the Lochside Regional Trail; and Victoria and View Royal for the E&N Rail Trail-Humpback Connector.
- **Reasons for use:** Respondents used the Galloping Goose and Lochside regional trails mostly for commuting, and the E&N Rail Trail-Humpback Connector for fitness. Respondents mainly biked on the three trails, followed by walking and running.

Value of regional parks and trails system: Nearly all respondents agreed that the regional parks and trails system is of value for its own sake, offers a sense of peace and well-being, and needs to be protected for future generations. The majority of respondents also agreed that the primary purpose of the regional parks and trails system is for both outdoor recreation and environment/species protection, that outdoor recreation opportunities should be maximized, and some areas should be set aside for conservation purposes. About half of the respondents agreed that the regional parks and trails system generates regional financial benefits and jobs, and that outdoor recreation should not be allowed if it negatively affects natural environments and species. A five-point scale ranging from “strongly agree” to “strongly disagree” was used to measure respondents’ value orientations toward regional parks and trails. Few respondents agreed that visitors should be limited in the regional parks and trails system for conservation purposes; that parks and trails have no value without people; and that outdoor recreation is more important than environment/species.

- **Use patterns:** The most common time spent on the three trails ranged from less than one hour to up to two hours per visit. Respondents were mostly frequent users, using the three trails year-round. Half or more of respondents used their experience and/or knowledge to navigate the three trails. The majority of respondents had increased their use of all three trails over the past five years. Changes in use were due to the construction on the Galloping Goose Regional Trail, the lack of pavement in some sections of the Lochside Regional Trail, and the recent completion of the E&N Rail Trail-Humpback Connector. Respondents also specified that proximity to home or work was the most influential factor in determining use frequency and which regional trail they accessed, followed by improved fitness, which resulted in respondents’ ability to access regional trails more frequently and for longer durations, having acquired an e-bike (which allowed for faster commuting), and commitment toward active transportation. Users of all three trails stated that increased connectivity between regional trails and municipal trail networks in the past five years encouraged them to access all three trails more frequently, as travelling through the downtown core was perceived to be safer on the trails.
- **Dogs:** Most respondents did not own a dog. Those who did had one to two dogs. Most respondents expressed a neutral opinion when asked if dogs affected their experiences on the trails. The most observed dog-related behaviour by respondents was dog owners not collecting their dog’s waste on the trails, followed by dogs on the wrong side of the trails. Many respondents noted that the majority of dog owners have their dog on-leash, per the regional trail regulations.

- **Carnivores:** The majority of respondents had not observed carnivores on the regional trails, were aware of what causes human-carnivores conflicts and had not prepared for a possible encounter with such species.
- **Satisfaction:** Most respondents were satisfied with experiences, safety, outdoor recreation, and other visitors' use of the trails. For facilities, about half of respondents were satisfied with the benches, drinking water fountains and garbage cans provided. Less satisfaction was expressed with parking lots and toilets for all trails. For services, satisfaction with maintenance scored the highest for all three trails, and enforcement of bylaws and education/park nature program the lowest. Regarding information about trails, about half or more respondents were satisfied with signs, maps and the regional trails content on the CRD website.
- **Management:** For the Galloping Goose Regional Trail, the main perceived impacts were dog waste and garbage/litter. For the Lochside Regional Trail, the main perceived impacts were horse manure and lack of facilities. For the E&N Rail-Trail Humpback Connector, the main perceived impacts were lack of facilities and dog waste. When specifically asked about what issue they experienced on the trails, respondents pointed out for all three trails: traffic and speed, lack of separation between trail users, poor trail etiquette, e-bikes and other motorized transportation methods, dog-user conflicts, unsafe road crossings, lack of signage and lighting, illegal activity and limited facilities. Respondents offered the following suggestions to address those issues: expanding the regional trails network, improving regional connectivity, widening the trails or twinning the trails, strengthen trail use etiquette, establishment and enforcement of a speed limit, improve dog management, improve road crossings, provide additional lighting, facilities and signage, and develop a mobile app of the CRD Bike Map.
- **Communication:** Respondents used mostly Google, word-of-mouth from family and friends, and the CRD website to get information about the three regional trails.
- **Additional Comments:** Respondents described the regional trails as one of the most important aspects of the region in regards to the impact these corridors had on their life, including physical and emotional well-being, improved accessibility and the fostering of environmental values and appreciation of nature. Respondents expressed the desire for more recreation and active transportation opportunities in the CRD.

The results reported above parallel the 2013 Regional Trails Survey results, showing consistency in user patterns and trends, and reaffirming visitor experiences in, and service demand for, the three regional trails.

Summary of Survey Responses

Section 1: Demographics

QUESTION: IN WHICH AGE CATEGORY DO YOU FALL?

Respondents to the survey tended to have an older age distribution in all three regional trails (Figure 1). This result is especially evident for the Lochside Regional Trail, where 37% of respondents were over 65 years of age.

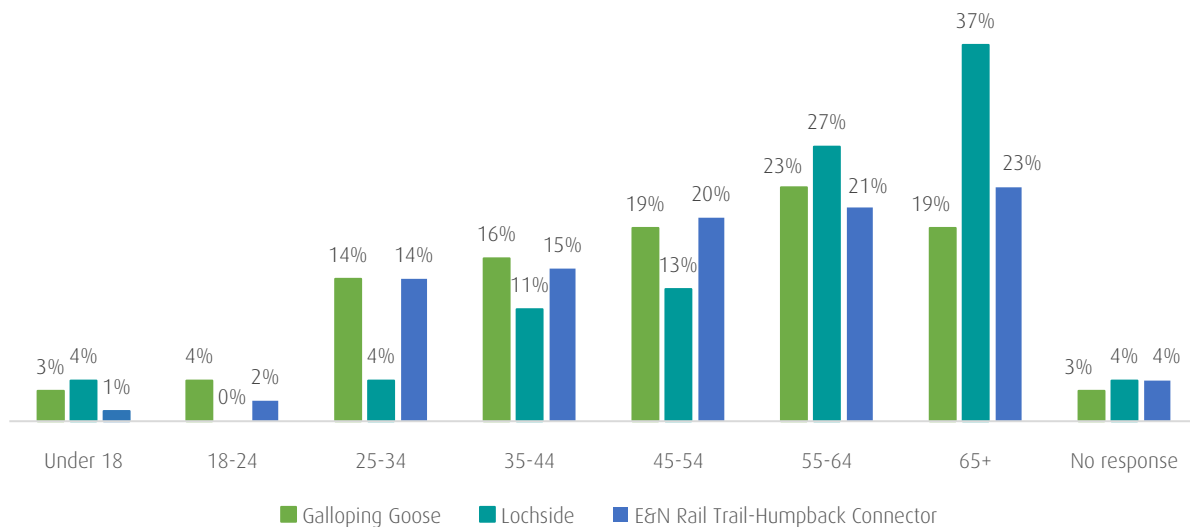


Figure 1: Age distribution of those who took the survey

QUESTION: WHERE DO YOU LIVE?

Respondents to the survey tended to live in varied locations based on the regional trails they were using (Table 1):

- Galloping Goose Regional Trail: Saanich, Victoria and Langford
- Lochside Regional Trail: Saanich and Victoria
- E&N Rail Trail-Humpback Connector: Victoria and View Royal.

Table 1: Residency of those who took the survey

Municipality of Residence	Galloping Goose Regional Trail	Lochside Regional Trail	E&N Rail Trail-Humpback Connector
Central Saanich	3%	7%	1%
Colwood	4%	1%	3%
Esquimalt	4%	2%	12%
Highlands	1%	0%	0%
Juan de Fuca Electoral Area	1%	0%	0%
Langford	12%	1%	12%
Metchosin	2%	0%	1%
North Saanich	1%	1%	1%
Oak Bay	4%	3%	4%
Saanich	24%	50%	9%
Sidney	3%	0%	0%
Sooke	5%	0%	1%
Victoria	17%	15%	27%
View Royal	7%	1%	22%
Other	11%	12%	3%

Section 2: Trail Values

QUESTION: WHAT IS YOUR MAIN REASON FOR USING THIS TRAIL?

Respondents to the survey used the Galloping Goose and Lochside regional trails mostly for commuting, and the E&N Rail Trail-Humpback Connector for fitness (Figure 2).

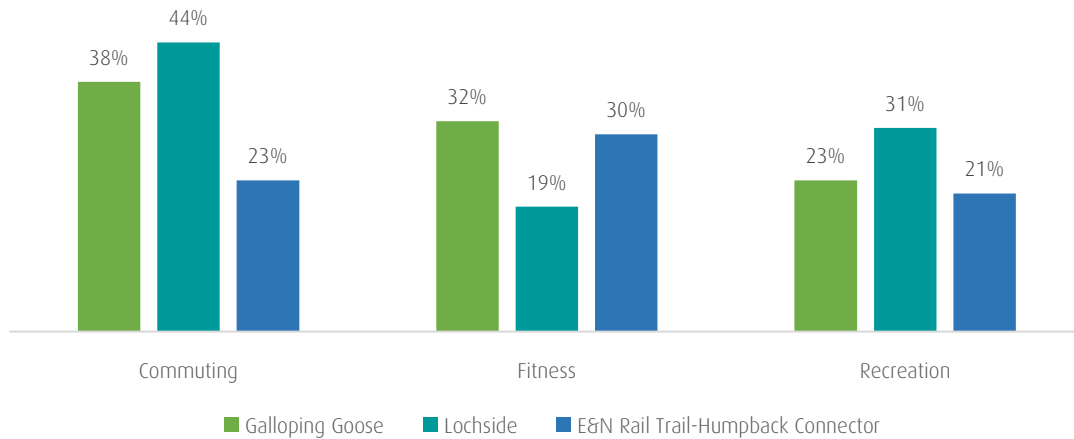


Figure 2: Percentage breakdown of respondents' reasons to use the regional trails

QUESTION: WHAT IS THE PRIMARY ACTIVITY YOU ARE DOING ON THIS TRAIL TODAY?

Respondents mainly biked on the three trails, followed by walking (Figure 3).

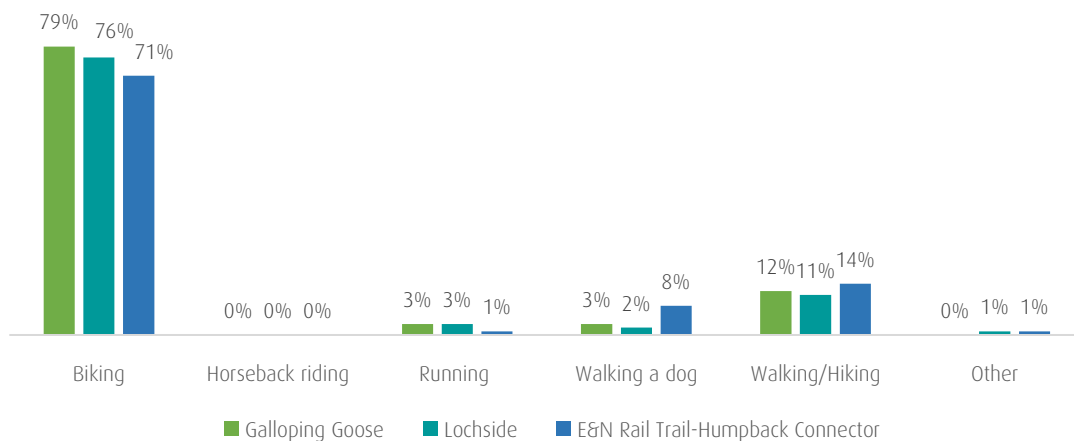


Figure 3: Percentage breakdown of respondents' primary activity on the regional trails

QUESTION: TO WHAT EXTENT DO YOU AGREE OR DISAGREE WITH EACH OF THE FOLLOWING VALUE STATEMENTS FOR THE REGIONAL PARKS AND TRAILS SYSTEM?

A value orientation scale was developed for the regional parks and trails system. Nearly all respondents agreed that the regional parks and trails system is of value for its own sake, offers a sense of peace and well-being, and needs to be protected for future generations (Figure 4). The majority of respondents also agreed that the primary purpose of the regional parks and trails system is both outdoor recreation and environment and/or species protection. Additionally, they agreed that outdoor recreation opportunities should be maximized in some areas, and some areas should be set aside for conservation purposes. About half of the respondents agreed that the regional parks and trails system generates regional financial benefits and jobs, and that outdoor recreation should not be allowed if it negatively affects natural environments and species. A five-point scale ranging from “strongly agree” to “strongly disagree” was used to measure respondents’ value orientations toward regional parks and trails. Few respondents agreed that visitors should be limited in the regional parks and trails system for conservation purposes; that parks and trails have no value without people; and that outdoor recreation is more important than environment/species.

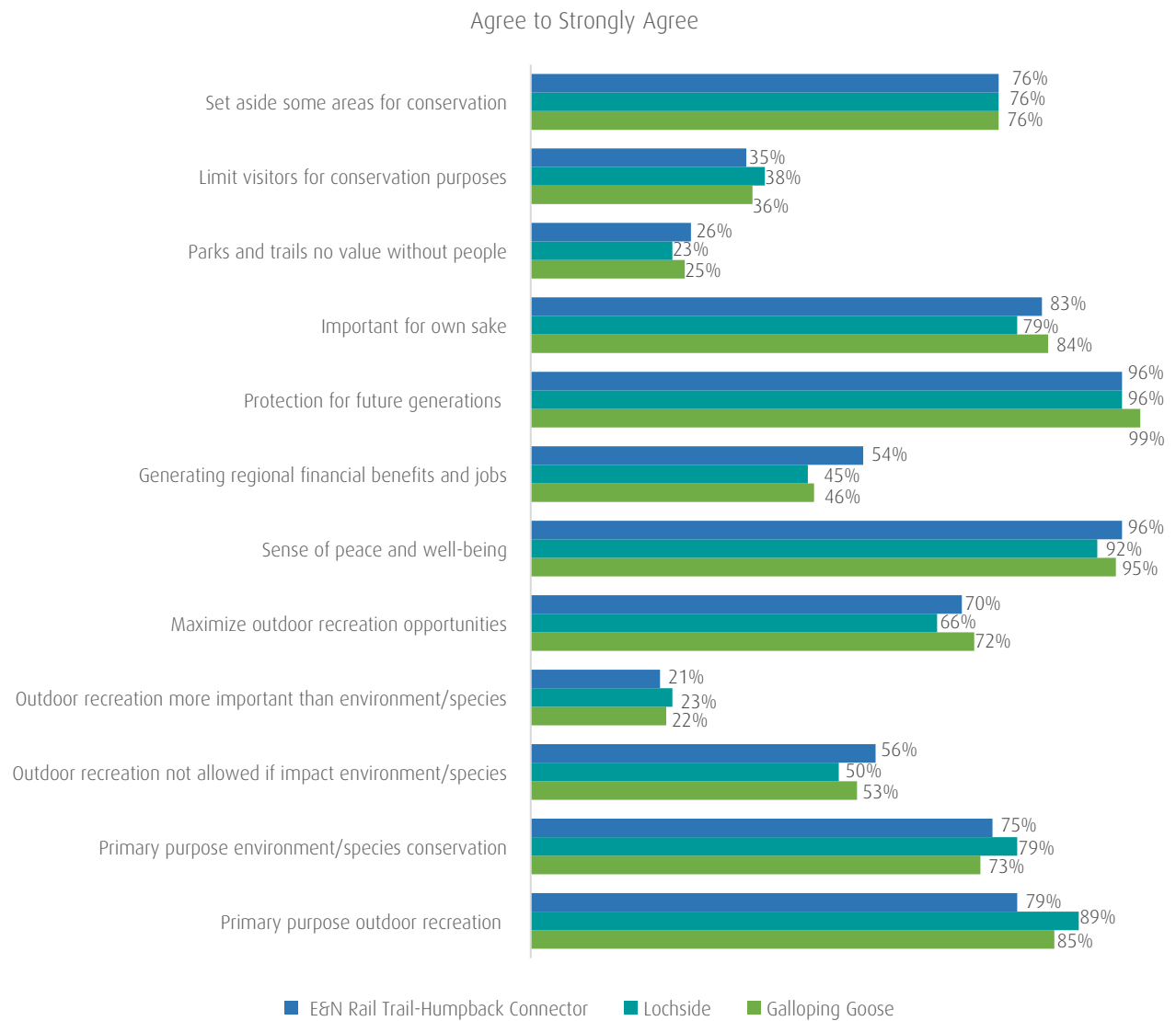


Figure 4: Percentage breakdown of respondents' value orientation toward regional parks and trails

Section 3: Visitation Trends

QUESTION: APPROXIMATELY HOW LONG WILL YOU BE ON THIS TRAIL?

Respondents to the survey used the three regional trails mostly for less than 1 hour to 1-2 hours per visit (Figure 5). Users spent less time on the E&N Rail Trail-Humpback Connector, a pattern most likely related with the length and location of the trail.

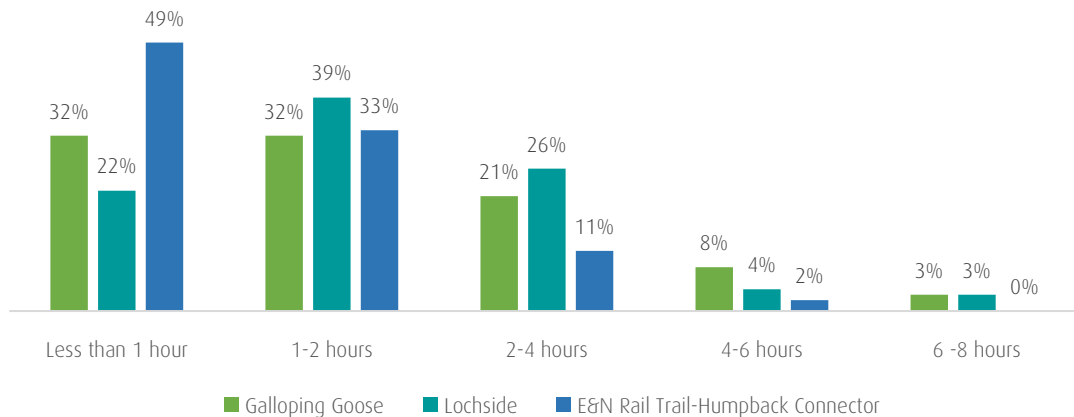


Figure 5: Percentage breakdown of respondents' time spent on the regional trails per visit

QUESTION: APPROXIMATELY HOW OFTEN DO YOU USE THIS TRAIL BETWEEN OCTOBER-APRIL?

Most respondents used the regional trails more than 10 times between October and April (Figure 6).

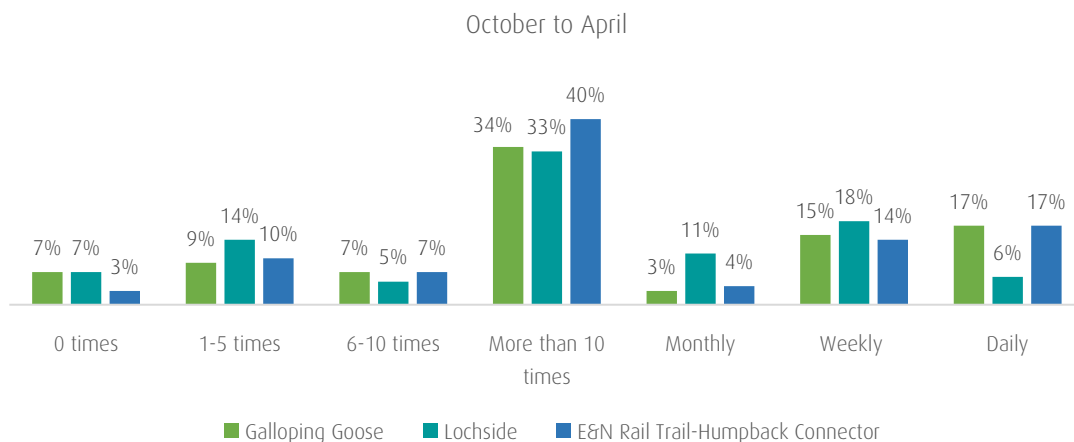


Figure 6: Percentage breakdown of respondents' frequency of use of the regional trails between October and April

QUESTION: APPROXIMATELY HOW OFTEN DO YOU USE THIS TRAIL BETWEEN MAY-SEPTEMBER?
Most respondents used the regional trails more than 10 times between May and September (Figure 7).

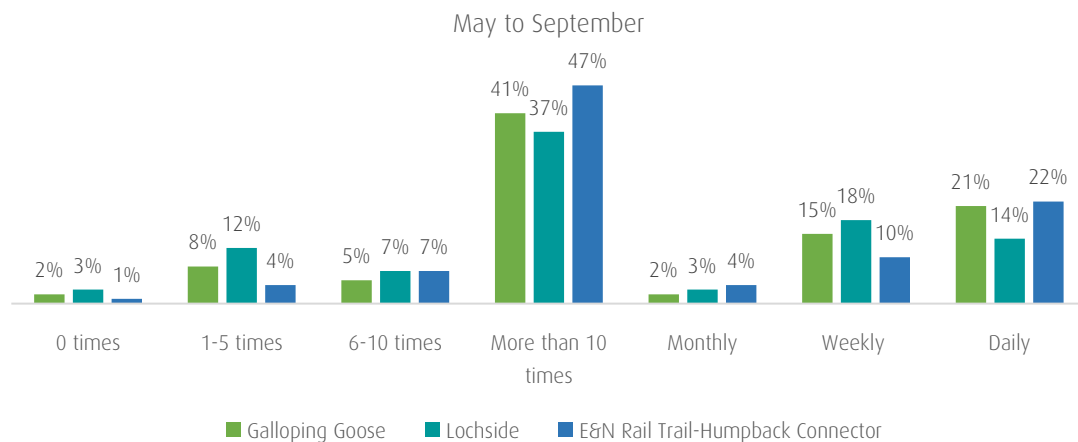


Figure 7: Percentage breakdown of respondents' frequency of use of the regional trails from May to September

QUESTION: HAVE YOU CHANGED HOW OFTEN YOU USE THE REGIONAL TRAILS OVER THE PAST 5 YEARS?

Most respondents stated they have increased their use of the three regional trails over the past five years (Figure 8).

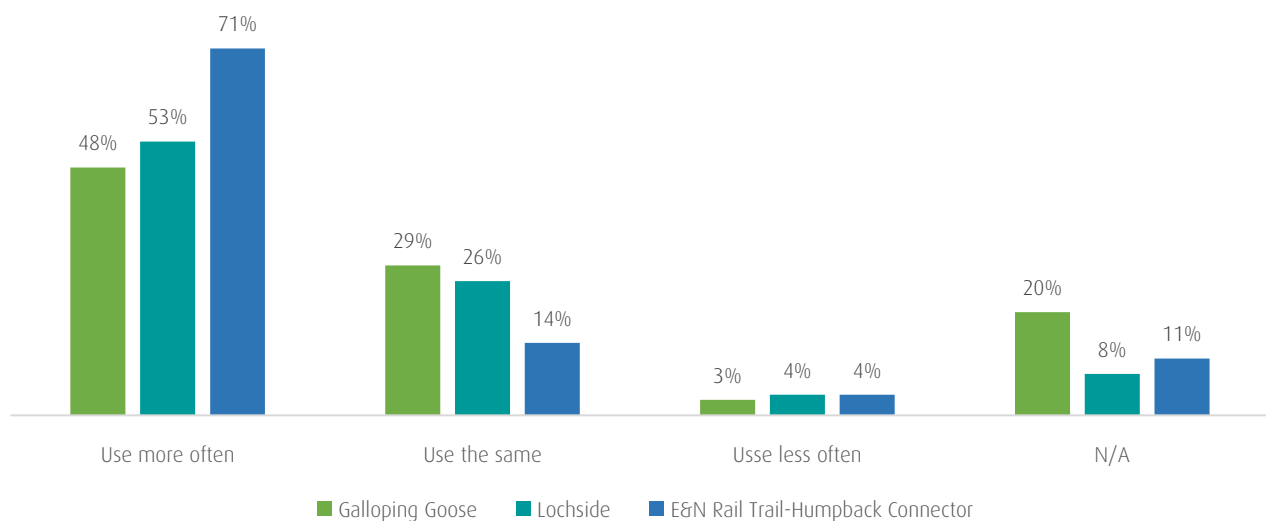


Figure 8: Percentage breakdown of respondents change in use frequency of the regional trails over the past five years

QUESTION: WHY HAVE YOU CHANGED HOW OFTEN YOU USE THE REGIONAL TRAILS?

Respondents specified that proximity to home or work was the most influential factor in determining use frequency and which regional trails they accessed. The second most influential factor was improved fitness, which resulted in increases in the respondent's ability to access regional trails more frequently and for longer durations. Third, some respondents indicated that having acquired an e-bike allowed for faster commuting. Lastly, respondents indicated a conscious commitment toward active transportation, motivating their increased use of the regional trails. Users of all three trails stated that increased connectivity between regional trails and municipal trail networks in the past five years encouraged them to access all three trails more frequently, as travelling through the downtown core was perceived to be safer on the trails. Specific comments on use patterns for each of the three trails are listed below.

- **Galloping Goose Regional Trail** users stated that the highway construction had dissuaded them to access this trail and, when possible, they preferred using the E&N Rail Trail-Humpback Connector to access the Western Communities. Some users felt that the Galloping Goose Regional Trail was too close to the highway and consequently less scenic and/or relaxing than the E&N Rail Trail-Humpback Connector.
- **Lochside Regional Trail** users pointed out that the lack of paving on some sections of this trail dissuaded some participants from using it for commuting. However, most users still preferred the Lochside Regional Trail over cycling along Highway 17, due to safety concerns.
- **E&N Rail Trail-Humpback Connector** users stated that the recent completion of some sections of the trail increased accessibility and convenience for users who previously did not access regional trails or who previously used the Galloping Goose Regional Trail to access the Western Communities. Users describe the E&N Rail Trail-Humpback Connector as more scenic, more direct and in better condition than the Galloping Goose Regional Trail.

Section 4: Trails Navigation

QUESTION: ONCE ON THE TRAIL, WHAT DO YOU USE TO NAVIGATE THE TRAIL?

Half or more respondents used their experience/knowledge to navigate the three trails (Figure 9).

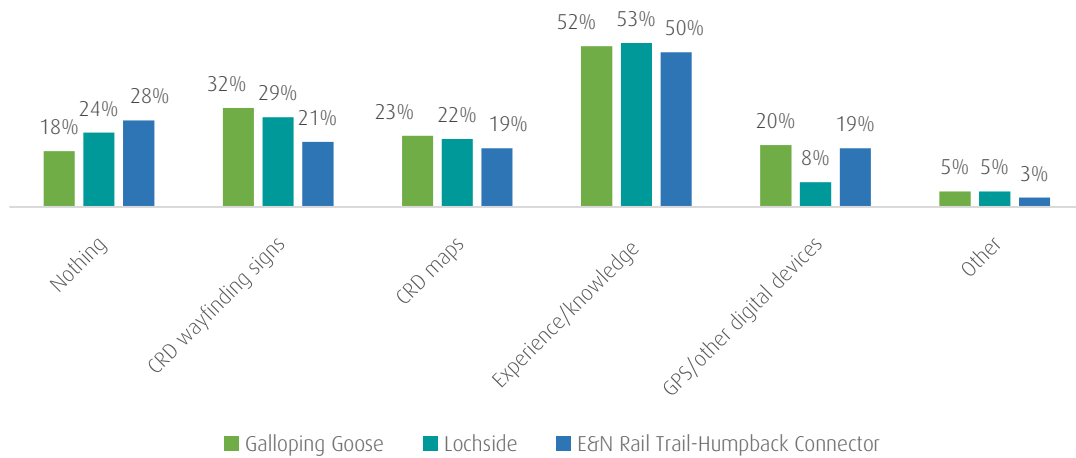


Figure 9: Percentage breakdown of the tools used to navigate the regional trails

Section 5: Dogs

QUESTION: ARE YOU VISITING THIS TRAIL WITH A DOG TODAY?

Most respondents did not own a dog. Those who did own a dog, had one to two dogs (Figure 10).

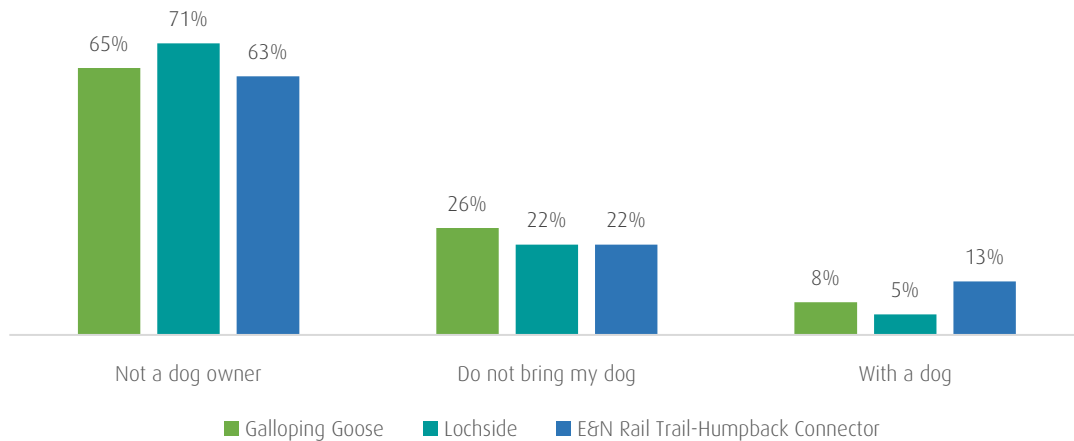


Figure 10: Percentage breakdown of respondents with and without dogs on the regional trails

QUESTION: IS YOUR EXPERIENCE AFFECTED BY THE PRESENCE OF DOGS ON THE TRAIL?

Most respondents expressed a neutral opinion when asked if dogs affected their experiences on the trails (Figure 11).

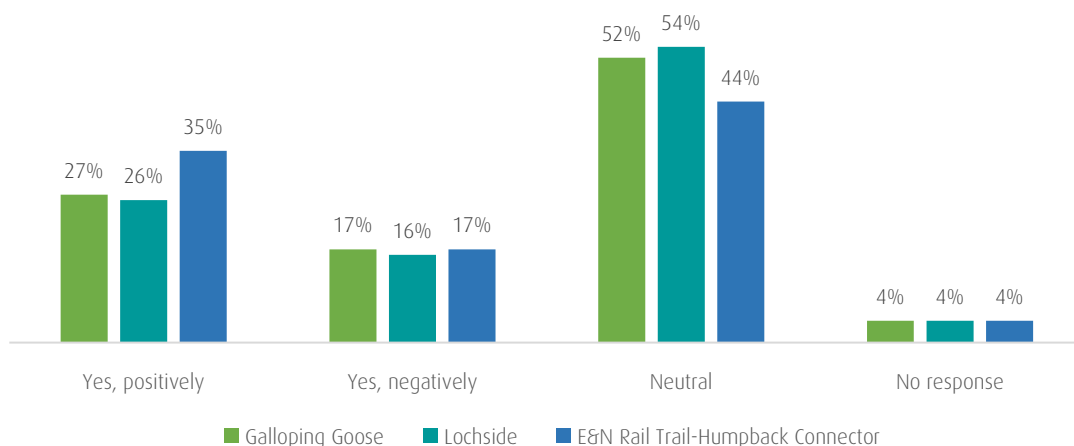


Figure 11: Percentage breakdown of respondents experience with dogs on the trails

QUESTION: HAVE YOU OBSERVED ANY OF THE FOLLOWING DOG-RELATED BEHAVIOURS ON THIS TRAIL?

Most respondents observed dog owners not collecting their dog's waste on the trails, followed by dogs on the wrong side of the regional trails (Figure 12).

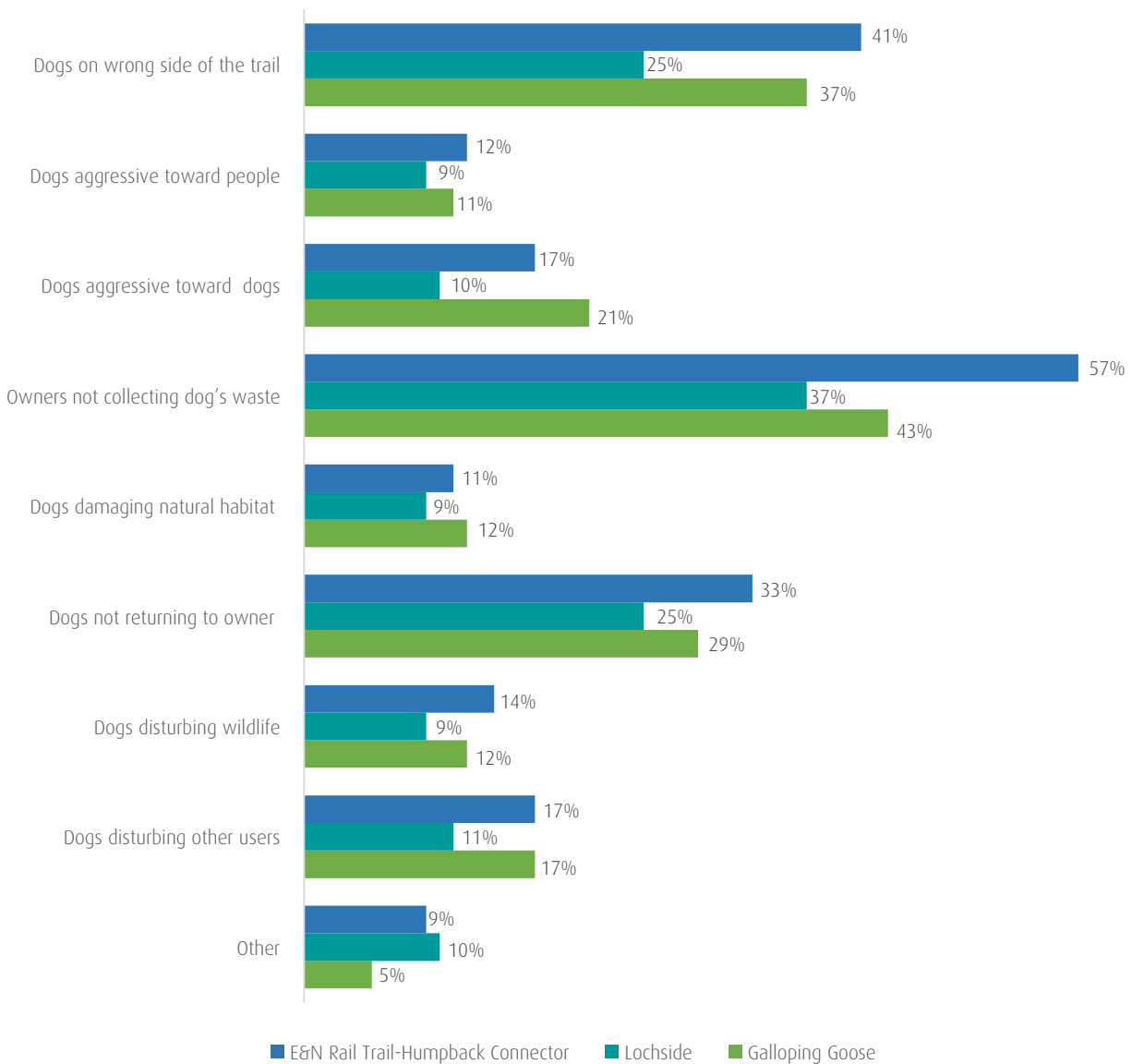


Figure 12: Percentage breakdown of respondents' observations about dog-related behaviours on the trails

Section 6: Carnivores

QUESTION: HAVE YOU EVER SEEN A COUGAR, BEAR AND/OR WOLF ON THIS REGIONAL TRAIL?
The majority of respondents had not observed cougars, bears and/or wolves on the regional trails (Figure 13).

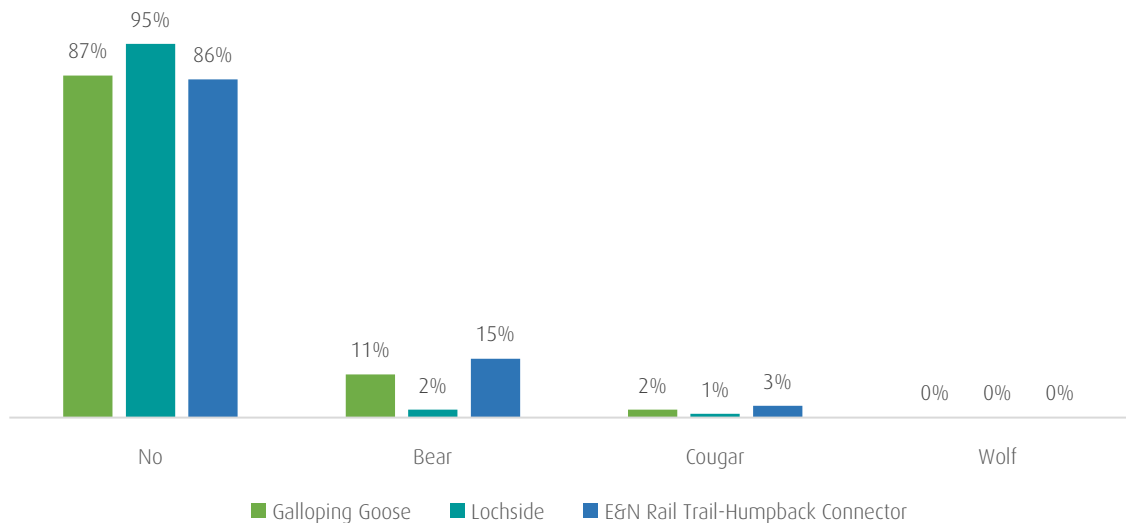


Figure 13: Percentage breakdown of respondents sighting of carnivores on the trails

QUESTION: WHAT ARE THE ACTIVITIES YOU THINK CAN CAUSE HUMAN-WILDLIFE CONFLICT ON THIS REGIONAL TRAIL?

Respondents were aware of most of the activities causing human-carnivore conflicts (Figure 14).

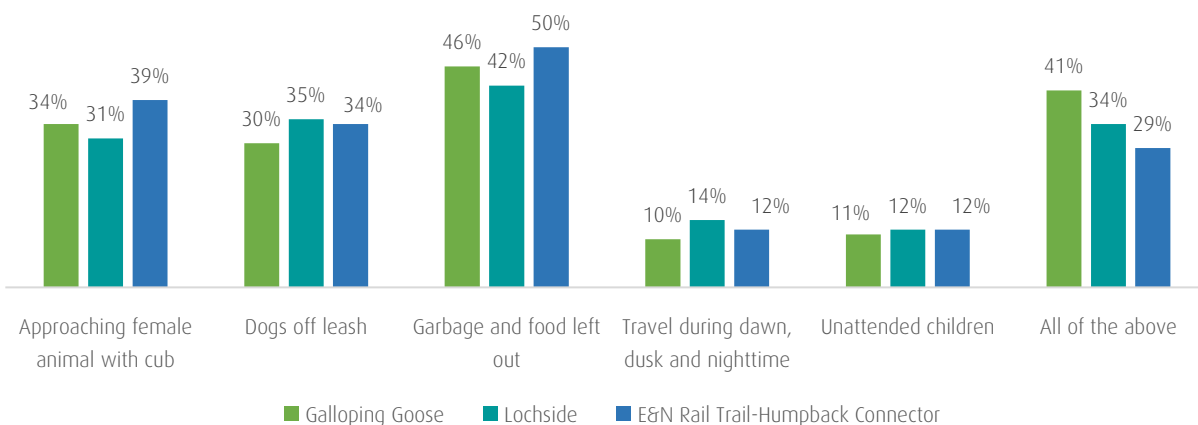


Figure 14: Percentage breakdown of respondents' perceptions of what causes human-carnivore conflicts

QUESTION: WHAT HAVE YOU DONE TO PREPARE FOR POSSIBLY ENCOUNTERING COUGARS, BEARS AND WOLVES?

Most respondents did not prepare for the possibility of encountering cougars, bears and/or wolves on the regional trails (Figure 15).

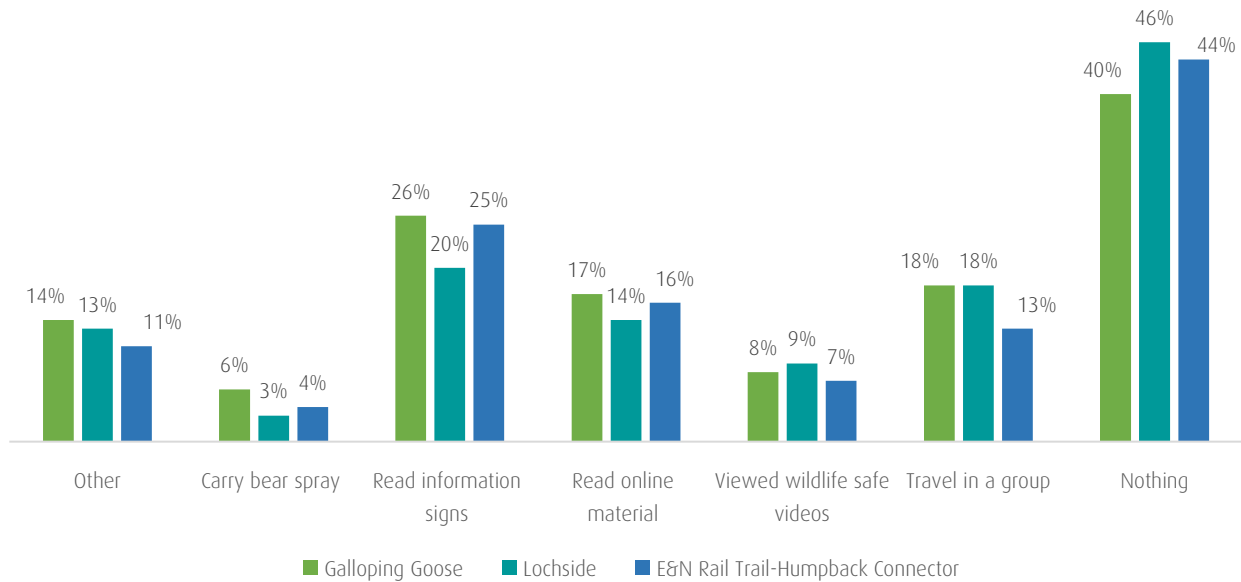


Figure 15: Percentage breakdown of respondents' preparedness to encounter carnivores on the regional trails

Section 7: Visitor Satisfaction

QUESTION: OVERALL, HOW SATISFIED ARE YOU WITH THE TRAIL?

The majority of respondents were very to completely satisfied with their experience, safety while using the regional trails, outdoor recreation opportunities, and how other visitors used the three regional trails (Figure 16).

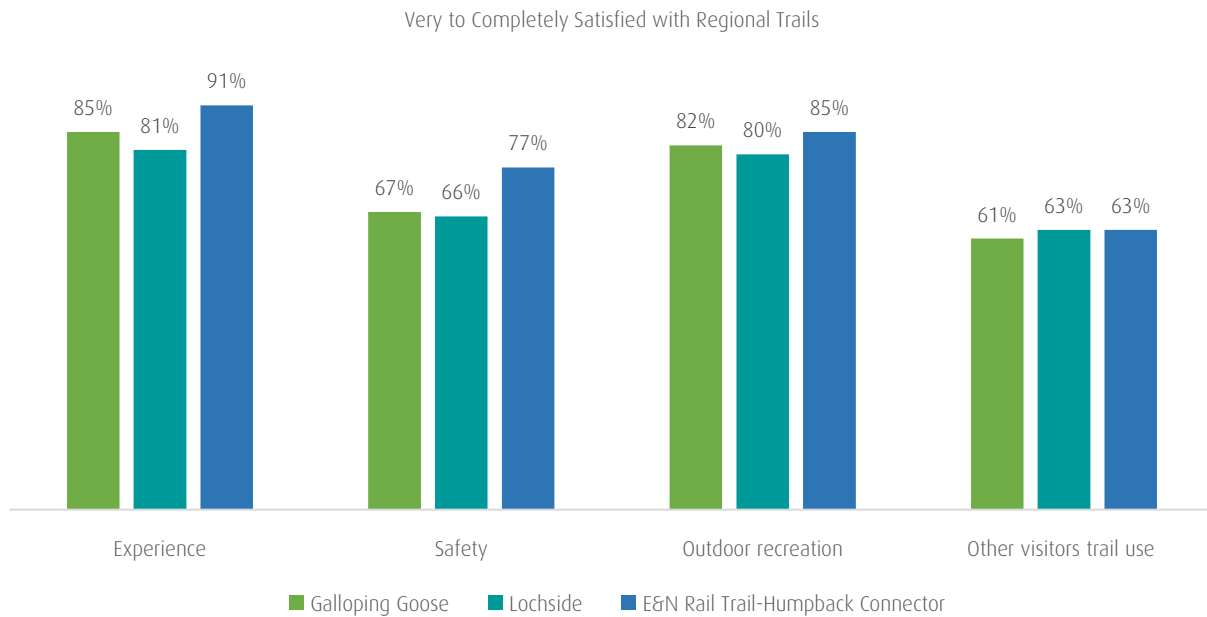


Figure 16: Percentage breakdown of respondents' satisfaction with the regional trails

QUESTION: OVERALL, HOW SATISFIED ARE YOU WITH TRAIL FACILITIES?

Respondents' satisfaction varied when asked about facilities, with toilets scoring the lowest on all three regional trails (Figure 17).

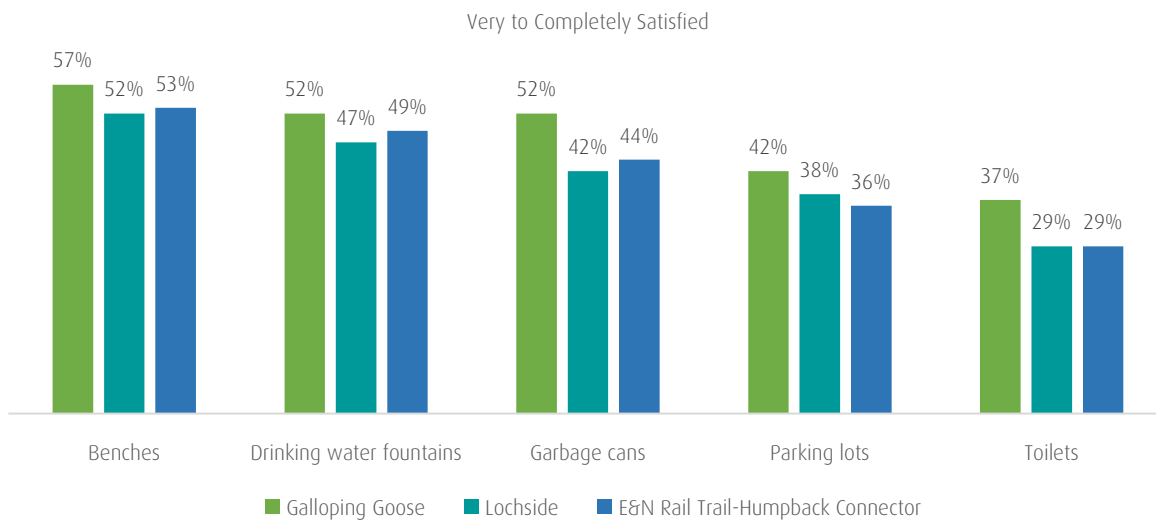


Figure 17: Percentage breakdown of respondents' satisfaction in regard to facilities on the regional trails

QUESTION: OVERALL, HOW SATISFIED ARE YOU WITH THE SERVICES OFFERED ON THE TRAIL?

Respondents' satisfaction varied when asked about services, with overall maintenance scoring the highest in all three regional trails, and enforcement of bylaws and education/park nature program the lowest (Figure 18).

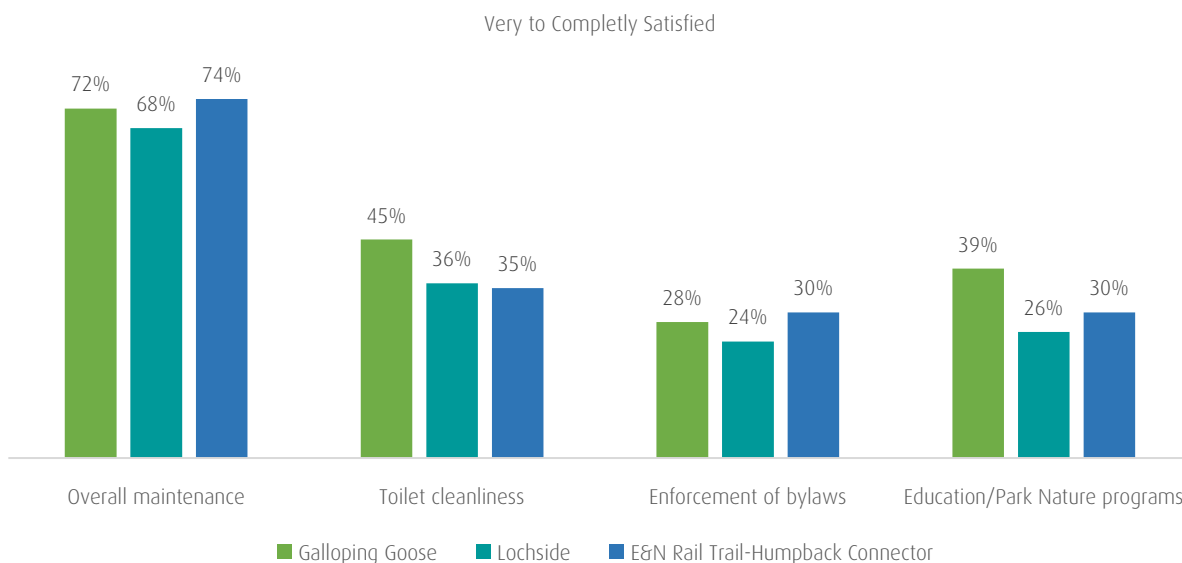


Figure 18: Percentage breakdown of respondents' satisfaction in regard to services offered on the regional trails

QUESTION: OVERALL, HOW SATISFIED ARE YOU WITH THE INFORMATION OFFERED ON THE TRAIL?

Around half of the respondents were very to completely satisfied with the information offered on all three regional trails (Figure 19).

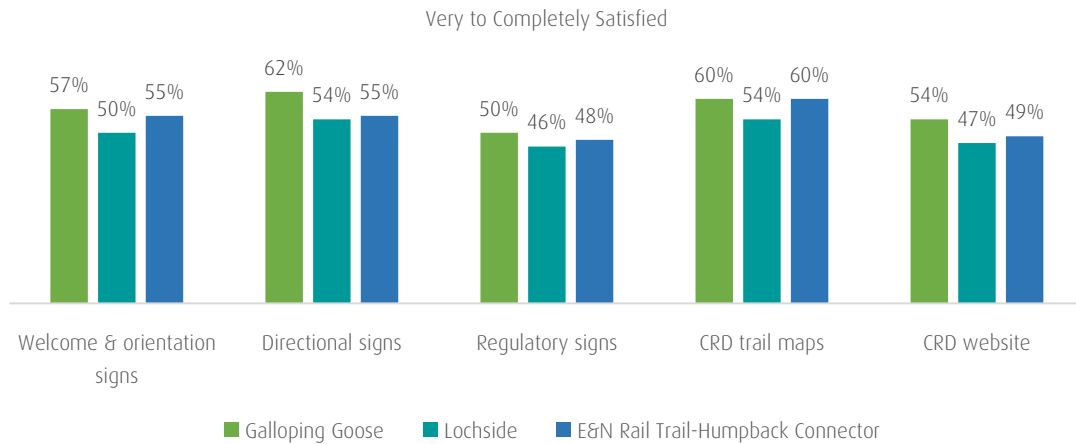


Figure 19: Percentage breakdown of respondents' satisfaction in regard to information offered on the regional trails

Section 8: Trails Management

QUESTION: WERE YOU NEGATIVELY IMPACTED BY ANY OF THE FOLLOWING EVENTS ON THE TRAIL?

Respondents were impacted by different events on the regional trails (Figure 20). For the Galloping Goose Regional Trail, the main perceived impacts were dog waste and garbage/litter. For the Lochside Regional Trail, the main perceived impacts were horse manure and lack of facilities. For the E&N Rail-Trail Humpback Connector, the main perceived impacts were lack of facilities and dog waste. Many respondents pointed out that the majority of dog owners had their dog on-leash as per the regional trails regulation.

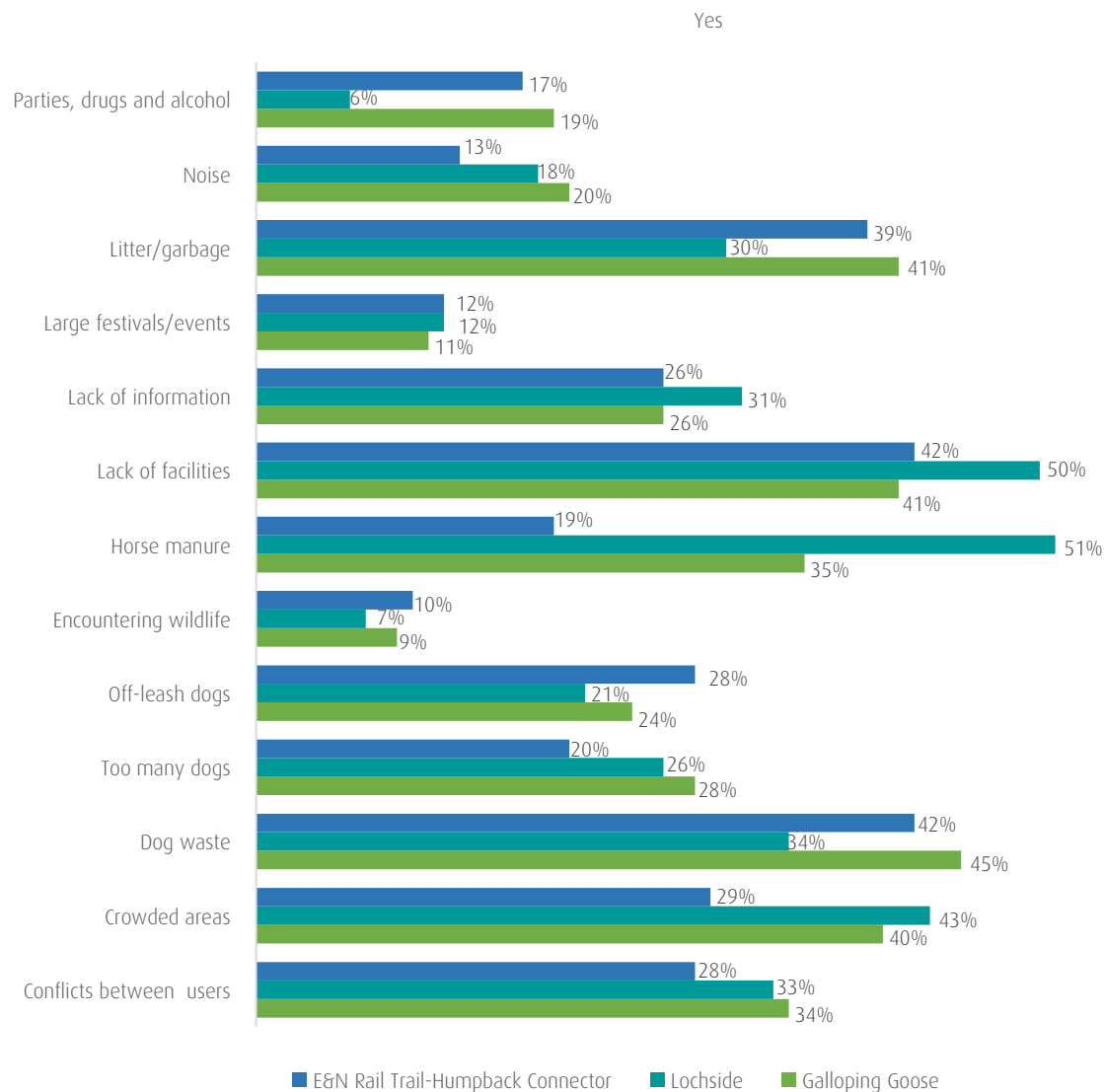


Figure 20: Percentage breakdown of respondents' experiencing a series of impacts on the regional trails

QUESTION: WHAT ARE THE MOST SIGNIFICANT ISSUES YOU EXPERIENCE ON THIS TRAIL?

Respondents' perceptions of issues affecting the three trails can be summarized in the following themes, which were consistent among all three trails:

- **Increase in regional trails traffic and speed:** Respondents reported that the regional trails are increasingly busy and there are cycling 'rush hours' due to the number of active commuters using them. Another significant issue identified by users was the high speeds that cyclists, including commuters, athletes, and e-bike users, reached on all three regional trails. High speeds were described as exceeding roughly 20 km per hour.
- **Lack of separation between trail uses:** Maintaining the regional trails as shared-use trails is perceived as unsafe, as recreational users are described as slower moving and desiring a more relaxed trail experience, while commuters are described as speeding and enjoying a more tightly-controlled flow of traffic to efficiently navigate the trail corridors. Some respondents specified they feel unsafe when sharing the trail with cyclists travelling at high speeds, as any collisions that occur at that speed could result in serious injury.
- **Poor trail etiquette:** Respondents pointed out that other users did not adhere to trail right-of-way etiquette. Cyclists were described as passing pedestrians in risky ways, quickly and without warning, sometimes splitting the lane. Some bikers were described as aggressive and overbearing, especially when commuting or training. Pedestrians were described as distracted, since they were wearing headphones and using both the right and left lanes. Several respondents described situations of trail obstruction, with users blocking oncoming traffic, and/or not accommodating oncoming traffic to allow for safe passing distances.
- **Increase of e-bikes:** Speeding was the most common issue mentioned by respondents in relation to e-bikes, along with passing too closely and without warning. E-bikes were perceived as allowing cyclists to achieve speeds beyond their skill level and without having developed the necessary safety skills. Also, the potential impact of a crash with these heavier and faster bikes was seen as significantly higher.
- **Other motorized transportation methods:** The presence of motorized bikes/motorcycles/scooters that do not require active pedaling in order to engage the motor were identified as an issue. Speed seemed to contribute the most to respondents concern, though noise and the smell of fuel was also mentioned as a drawback caused by these motorized bikes/motorcycles/scooters.
- **Dog-user conflicts:** Several respondents specified that they enjoyed encountering on-leash dogs that were under control, behaved safely near cyclists and other users, and were properly

cleaned-up after. Dogs were also described as enhancing their owners' physical and mental well-being through active and regular outdoor activities and socialization. Yet two main dog management-related concerns were expressed by survey respondents: hazardous off-leash and/or out-of-control dogs and uncollected dog waste. Off-leash and/or out-of-control dogs were defined as dogs not clearly restrained by a leash, not staying within the trail or on the right side of the trail, and approaching other trail users without being encouraged to do so. Off-leash dogs were perceived as a concern on all three regional trails, with users specifying their support for the on-leash policy. It is important to acknowledge that most users recognized that owners, not the dogs themselves, were at fault for dog-user conflicts.

- **Unsafe road crossing:** Respondents noted that some road crossings lack clear right-of-way signage, crossing indicators (including flashing lights and/or zebra lines on the pavement), or sightlines for vehicles and cyclists when approaching road crossings. Respondents noted that some intersections are difficult to navigate, and that it is not clear where the regional trails connect on the other side of the intersection.
- **Limited signage:** Signage clearly outlining trail etiquette was perceived as missing, as well as additional road signage for vehicles to increase awareness about the presence of the regional trail crossings.
- **Limited lighting:** Lack of visibility was reported as increasing the chance of collisions, and detracted from overall feelings of safety while on the trail. While headlights on bikes helped slightly, some users reported that oncoming headlights can cause temporary blindness and may actually increase the chance of collision.
- **Illegal activity:** Several respondents reported encountering illegal camping or other activities on the regional trails on a semi-regular basis.
- **Facilities:** Respondents suggested adding rest stations with washrooms or water fountains at key access points. Cyclists felt that most bridges/trestles located along regional trail routes had an uncomfortable and bumpy surface that was difficult to ride and damaged bikes, especially in icy winter conditions. While users recognized that ongoing trail maintenance required significant effort, they still wished to see the trails consistently cleared and de-iced in the winter, and repaired from tree roots or other damaging elements.

QUESTION: BASED ON YOUR RESPONSES ABOVE, WHAT ACTIONS WOULD YOU SUGGEST THE CRD UNDERTAKE IN THE NEXT 5 YEARS TO MAINTAIN OR IMPROVE YOUR SATISFACTION?

Respondents' perceptions of actions to be undertaken on the three regional trails over the next 5 years can be summarized in the following themes, which were consistent among all three trails:

- **Expanding the regional trail network, and improving regional connectivity:** Via trail networks, was a popular suggestion to address traffic and trail crowding.
- **Widening the trails or twinning the trails:** Particularly along the busiest sections of the trails, was also frequently suggested to allow recreational users and commuters to use the trail separately. Such an approach would facilitate separation of high-speed traffic and lower-speed traffic.
- **Strengthen trails etiquette:** In addition to the current trail etiquette guidelines, respondents suggested banning the use of headphones or other sound-blocking devices. Users also recommended adding signage inviting people to walk or ride in single file during peak periods. Additional education about, and enforcement of, trail regulations, especially related to speed limits, dogs on-leash, and motorized vehicles, was also suggested.
- **Establishment and enforcement of a speed limit:** On the regional trails of roughly 20-25 km/h. Trail users would like to see this speed limit and other trail regulations clearly posted.
- **Improve dog management:** During peak periods of high traffic, trail users suggested that owners should maintain strict control over their dogs, including keeping them on a shorter leash and ensuring that they remain clearly on the right-hand boundary side of the trail. Some users suggested providing additional garbage cans along the trails in order to facilitate dog waste removal, and additional education and enforcement to ensure conflicts between dog owners and other trail users are minimized in the future.
- **Improve road crossing:** Where possible, overpasses or underpasses were suggested to reduce vehicle/trail interactions. Where road crossings were not avoidable, users recommended clearly marking and signing crossings, and developing crossing standards, in conjunction with other jurisdictions (e.g., zebra stripes or similar markings, clear right-of-way signage, clearly marked bike lines, pedestrian-activated lights and cautionary signage).
- **Provide additional lighting:** Additional lighting was recommended by some respondents along the regional trails to ensure visibility is adequate in the evenings.
- **Provide additional facilities:** Trail users recommended upgrading trail and bridge surfaces to ensure safe and comfortable use. Some users suggested to improve maintenance in winter

for trails to remain a viable active transportation route in snowy or icy conditions. Respondents suggested the addition of washrooms, garbage cans and water stations, where possible.

- **Provide additional signage:** Additional navigational signage was suggested, including full-sized maps with details and distances between facilities.
- **Develop a mobile app:** Development of a mobile app version of the CRD Bike Map was proposed.

Section 9: Communication

QUESTION: WHAT IS THE MAIN SOURCE OF INFORMATION YOU USE TO FIND OUT ABOUT THE REGIONAL TRAILS YOU VISIT?

Respondents used mostly Google, word-of-mouth, the CRD website and family and friends to get information about the three regional trails (Figure 21).

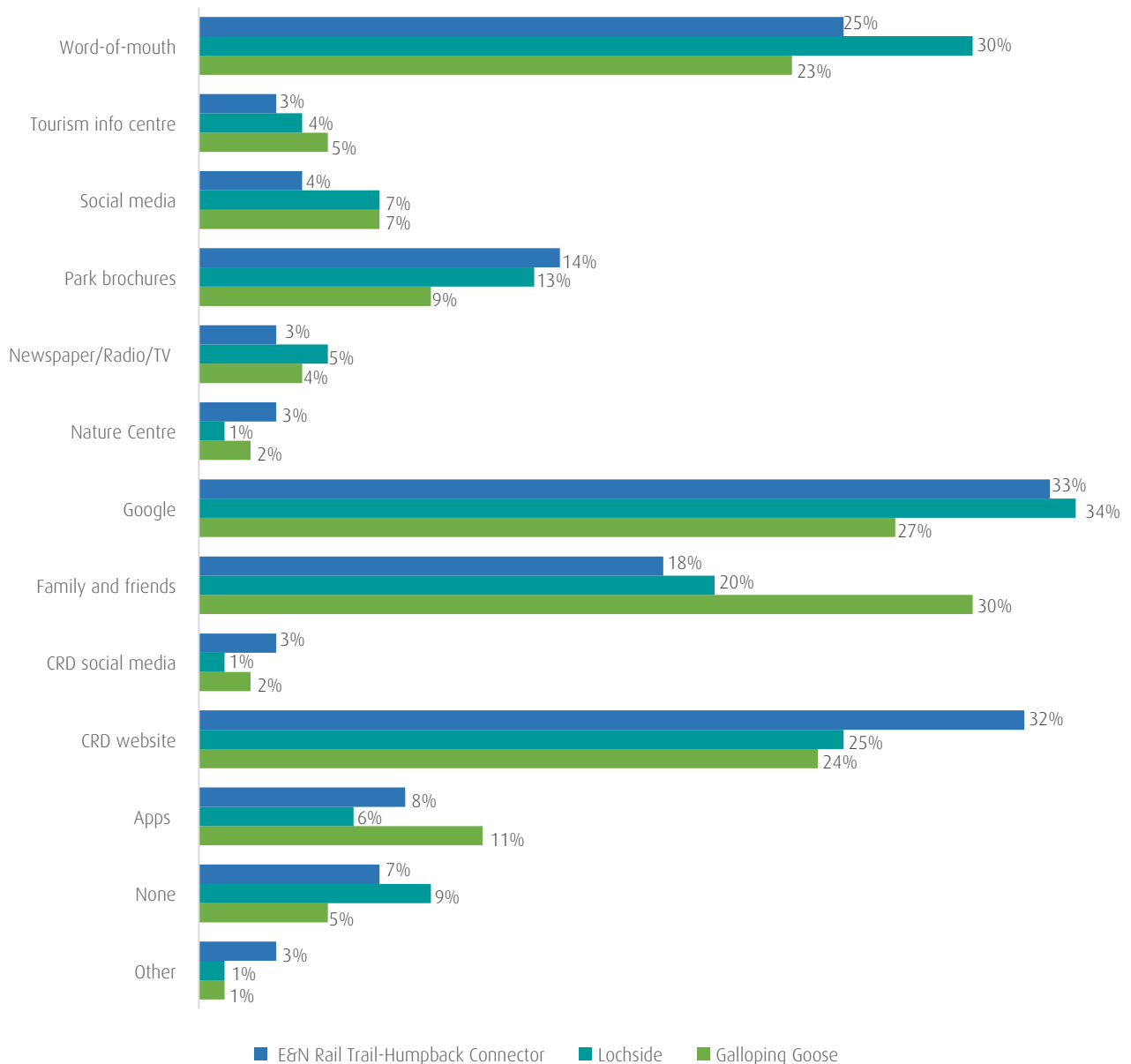


Figure 21: Percentage breakdown of respondents' information sources used to learn more about the regional trails

Section 10: Additional Comments

QUESTION: DO YOU HAVE ANY OTHER COMMENTS ABOUT YOUR REGIONAL TRAILS?

Survey respondents were thankful to CRD staff for the upkeep of regional trails, and for seeking public feedback on regional trails. A number of respondents described the regional trails as one of the most important aspects of the region, and stressed the quality-of-life improvements facilitated by accessible trails. Many respondents described the impact that the trails experience had on them, including improvement of physical and emotional well-being, and the fostering of environmental values and appreciation for nature. Respondents wished for more recreation and active transportation opportunities in the CRD.

Appendix 1

SURVEY METHODOLOGY

A structured questionnaire was administered by an interviewer or self-completed online by visitors who used the Galloping Goose Regional Trail, Lochside Regional Trail and E&N Rail Trail-Humpback Connector from May 27 to September 15, 2019. Both in-person and online opportunities were provided. Details about how this methodology was implemented are described below.

SAMPLING STRATEGY

Surveys were administered to people visiting the regional trails (Table 2). Survey site selection was premised on the assumption that these areas may provide somewhat different experiences for visitors and that visitors of these areas may be somewhat unique, and reflected previous survey locations for consistency.

Table 2: Data collection location chosen along the Galloping Goose Regional Trail, Lochside Regional Trail and E&N Rail Trail-Humpback Connector

Regional Trail	Code	Name	Latitude (N)	Longitude (W)
Galloping Goose Regional Trail		Roche Cove		
	GGRT1	Regional Park	48.37446	-123.633214
	GGRT2	Luxton – Fairground	48.429221	-123.530923
	GGRT3	Atkins Road Parking Lot	48.45988	-123.457347
Lochside Regional Trail	LSRT1	Switchbridge	48.45645	-123.377875
	LSRT2	Blenkinsop	48.475962	-123.359664
	LSRT3	Fowler Park	48.53498	-123.377469
	LSRT4	Bevan Ave at Mary Whisper Centre	48.648473	-123.406289
	LSRT5	Mount Newton Crossroad	48.593467	-123.397754
E&N Rail Trail – Humpback Connector	ENRT1	Veterans	48.447388	-123.49477
	ENRT2	Portage Park	48.451997	-123.431444
	ENRT3	Hereward	48.434274	-123.394019

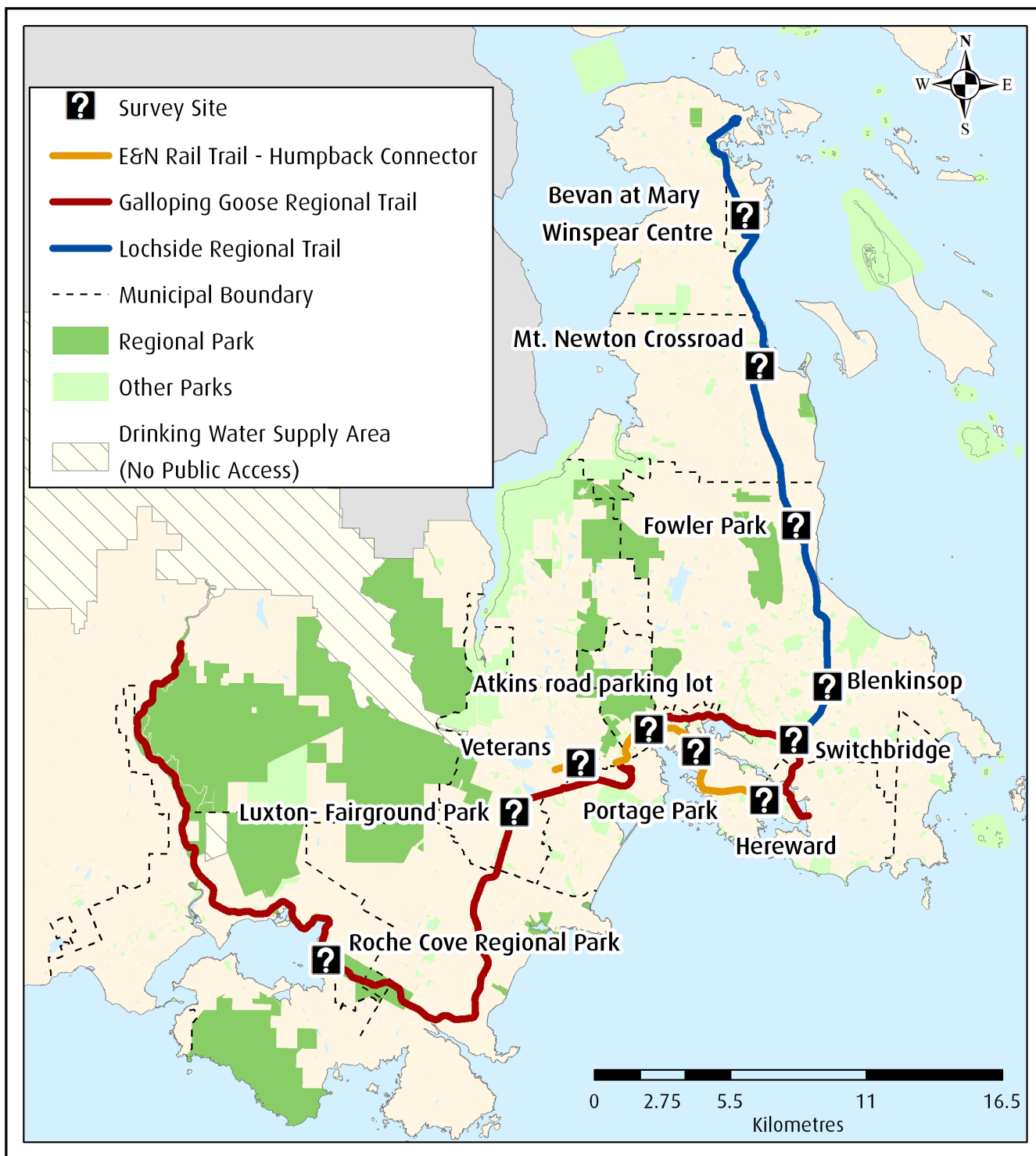


Figure 22: 2019 Regional Trail Survey sites

The sampling strategy employed a “balanced randomization” method that allowed for sampling to occur on randomly selected days and at randomly selected times between May 27 and September 15, 2019. Since data collection was being conducted simultaneously at three regional trails, each area received 19-20 four-hour sampling sessions over this period. Sampling sessions were divided into three time slots: 8:30-12:30, 12:30-16:30 and 16:30-20:30. This technique allowed for reasonable coverage between the different sites at different times of day and on different days of the week (Table 3). Differences in the randomized sampling outcomes were due to rearranging data collection based on weather or other conditions (i.e., wildfire smoke) that made some time periods unsuitable for data collection.

Table 3: Balanced randomization sampling method overview

Times slots	Galloping Goose Regional Trail	Lochside Regional Trail	E&N Rail Trail- Humpback Connector
8:30-12:30	5	6	5
12:30-16:30	10	10	11
16:30-20:30	4	4	4
Total	19	20	20
Weekdays	11	12	12
Weekends	8	8	8
Total	19	20	20

SAMPLING METHOD

For all sampling areas, the intercept survey method was used. This method involves the surveyor interacting with participants at their home address or in a public space, requesting the selected individual to participate in the survey (Vaske et al 2008). In this case, people were interviewed as they passed through the data collection locations. Because of the high interest shown for the survey and trail users being in transit while passing the data collection station, participants were not intercepted by the interviewer, rather they approached the data collection station voluntarily. Participants were also offered the opportunity to take the survey online. A postcard with the URL of the survey was provided to visitors to allow them to fill out the survey at their convenience.

QUESTIONNAIRE DESIGN

A survey with a standardized set of questions was administered to visitors to the study area. The main areas of focus for the questionnaire were: values, attitudes, use patterns, satisfaction and

management. Questions about participants' demographic characteristics (i.e., age, residency) were also added to the questionnaire to better understand who visits regional parks and trails. Due to the similarity between the Regional Trails Visitor Use Survey 2019 and the survey conducted in 2013 (see https://www.crd.bc.ca/docs/default-source/parks-pdf/regionaltrailssurveyreportmarch2014.pdf?sfvrsn=4d96cca_2), no pre-test of the questionnaire was performed.

The survey consisted of closed-ended quantitative questions and open-ended qualitative questions. Closed-ended questions were used to reduce the response burden for participants. Open-ended questions were included to allow respondents to offer additional comments and clarify their responses if they wished. All responses in the survey were voluntary, thus participants had the freedom to skip any question they did not wish to answer. All information was collected in compliance with the *Freedom of Information and Protection of Privacy Act* (see <https://www.crd.bc.ca/freedom-of-information>).

QUANTITATIVE VERSUS QUALITATIVE DATA

Quantitative and qualitative data are collected through this survey for different purposes. Quantitative data are collected to measure a specific fact in a numerical form that can be reported in categories, rank orders or measured in units (Dillman et al 2014). Such data allow for quantifiable patterns and trends of a behavior to be documented, such as how long visitors spend in a park, what type of activities they do, etc. Qualitative data are non-numerical in nature and are used to characterize a behavior and/or patterns (Dillman et al 2014). They are collected to develop an initial or in-depth understanding of such behavior and/or patterns. For example, why are visitors spending that amount of time in the park and why are they doing that specific activity? Hence, quantitative data defines a behavior and/or patterns, whereas qualitative data describes it.

COMPLETION TIME

The survey included 28 questions, many of which had multiple statements to be answered. The survey was designed to take 10 to 15 minutes to complete.

DATA ENTRY AND ANALYSIS

Upon retrieval of each survey, the surveyors reviewed the questionnaire to ensure completeness of data and all hard copy surveys were entered and coded. Providing an identifying code on the hard copy allowed for the checking of errors or the entering of missing data when necessary. Responses on each questionnaire were entered directly onto an Excel spreadsheet in numeric

form. Open-ended responses were typed in as text, quoting directly the response provided. This dataset was merged with the data obtained through the online survey and exported to the IBM SPSS 20 software for analysis. Qualitative data were coded to identify the main themes mentioned by participants and to reduce the possibility of respondents to be recognized through personal information. For more information about the statistical approach used, please consult the following source: "Survey Research and Analysis. Application in Parks, Recreation and Human Dimension" by Jerry J. Vaske (2008)

REFERENCES

Dillman D.A., Smyth J.D., & Christian L.M (2014). Internet, phone, mail, and mixed-mode (4th Eds). Hoboken, NJ: John Wiley & Sons.

Vaske J. J. (2008). Survey research and analysis: Applications in parks, recreation and human dimensions. Pennsylvania: Venture Publishing Inc.

**REPORT TO REGIONAL PARKS COMMITTEE
MEETING OF WEDNESDAY, JANUARY 27, 2021**

SUBJECT Regional Trails Widening Study

ISSUE SUMMARY

To receive the Regional Trails Widening Study and seek direction to conduct public engagement on the preferred option for widening, separating and lighting priority sections of the Galloping Goose and Lochside regional trails.

BACKGROUND

The 55 km multi-use Galloping Goose Regional Trail, established in 1987 along a former railway corridor, experiences nearly 2 million recorded visits per year. The 29 km Lochside Regional Trail was established in 2001, also within a former railway corridor, and has approximately 1 million recorded visits per year. The urban sections of these trails have a 3.0-4.0 metre wide paved surface with a dual direction flow for cyclist and pedestrian uses, and are classified as *Bike and Pedestrian Trails* in the 2016 Capital Regional District (CRD) Regional Trails Management Plan (RTMP) for both recreation and active transportation corridors.

The RTMP provides direction to conduct a comparative study to assess the engineering feasibility and cost/benefits of widening and separating the urban portions of the regional trails and to study whether to install lighting along the corridors. The CRD retained consultant services in 2019 to conduct the Regional Trails Widening Study. The study considered options to widen and separate trail users and potentially light the 6.6 km portions of the Galloping Goose Regional Trail between the Selkirk Trestle and Grange Road (adjacent McKenzie Avenue) and the Lochside Regional Trail between the Switch Bridge and McKenzie Avenue/Borden Street. Urban Systems and PBX Engineering (the “Consultants”) were retained for the project and submitted a report (the “Report”) with recommendations and conceptual design drawings to Regional Parks in 2020 (see Appendix A).

The consultants evaluated three design options for widening and separating the regional trails based on an analysis of the current trail conditions, projected user volumes and best practices. The options include: a widened 5.0 m multi-use pathway; a 6.5 m separated use pathway; and an 8.5 m separated use pathway with centre boulevard.

The Report recommends, and trail user numbers support, a separated use pathway design that is a 4.0 m dual-direction bicycle path and a 2.5 m adjacent, dual-direction pedestrian path separated by line painting. This represents an increase of approximately 1.0-3.5 m width along much of the corridor. Hard-wired, LED, pedestrian-scale lighting is also recommended at 40 m intervals along the trail corridors, except for the segment of Lochside adjacent to Swan Lake Nature Sanctuary, where reflective markings are suggested. Solar lighting is not recommended because estimated capital costs are approximately twice as high as hardwired options, lighting levels are difficult to achieve in winter months, and LED luminaires have low energy requirements.

The Report acknowledges that the recommended trail reconfiguration represents a long-term build out and improvements will likely be completed in sections as funding becomes available.

The highest priority area identified for improvement is the 1.6 km section of the Galloping Goose between Selkirk Trestle and Culduthel Road, near Uptown, due to it having the highest trail user volumes and narrowest trail widths of the sections considered in this report.

ALTERNATIVES

Alternative 1

The Regional Parks Committee recommends to the Capital Regional District Board:

1. That the Regional Trails Widening Study be received for information;
2. That staff be directed to conduct public engagement on the 6.5 m separated use pathway design with lighting and implementation priorities, as recommended; and
3. That staff report back to a future committee meeting with further recommendations.

Alternative 2

That this report be referred back to staff for additional information.

IMPLICATIONS

Financial Implications

Order of magnitude 'Class D' cost estimates were developed for each of the trail configuration and lighting options reviewed in the Report. Cost estimates were derived in 2020 costs, assuming total removal of existing pathway and stripping to design width of new pathway for comparative purposes. The total construction cost estimate provided by the consultant of constructing the separated use pathway for the entire 6.6 km study area is estimated to be \$14.2 million, including \$1.2 million for lighting and 33% contingency. The total project cost is estimated at \$17.8 million when all other costs are included, such as further detailed design work, permits, environmental studies and project management.

Opportunities for cost reduction have been analyzed for both the trail configuration and lighting components that may represent reasonable compromises yet still achieve the increased trail capacity and safety as outlined in the Report. Opportunities explored for cost reduction include: reuse of existing pavement and subgrade, realignment of some trail sections to avoid rock slopes and reduce trail width in constrained areas, retain the existing 5.5 m trail width (as recently reconstructed) through McKenzie Interchange area, and only light priority areas. Staff believe that a reasonable estimate of the magnitude of potential cost savings could lower the cost-per-metre from \$2,670 to approximately \$2,000, resulting in a total estimated project cost of \$13.2 million. These cost reductions have been provided by the consultant and are deemed by staff to be reasonable based on recent similar CRD projects.

Funding to support widening, separating and lighting the regional trails is limited and will require innovative cost-sharing approaches, partnerships and successful grant applications to acquire the necessary funds to support implementation, which is anticipated to be in a phased approach over a number of years.

Social Implications

The 2019 Regional Trails Visitor Use Survey results highlight a year-round use of the trails for commuting and recreation. Cyclists comprise the largest user group. A high satisfaction was expressed by survey respondents about their experiences on the trails. Respondents reported the following perceived issues on the regional trails: increase in user volumes and speed, lack of separation between trail uses, poor trail etiquette, lack of lighting, safety concerns at intersections, and crime. Widening or twinning the trails and providing lighting, among other suggestions, were proposed as actions the CRD could undertake to improve satisfaction.

The Report offers recommended trail design configurations based on user volumes, speed differential, user safety, personal security, traffic intersections, etiquette, changes in technology, as well as forecasted use trends, best practices and trail design standards. The recommended separated use pathway with lighting is proposed to address many of the concerns noted in the Visitor Use Survey and RTMP.

Stakeholders and the public should be engaged next to validate the recommended facility design, lighting and implementation priorities suggested. Staff recommend a medium-to-high effort engagement process and propose developing an engagement plan that ensures adequate and diverse opportunities in 2021 for public, local government and First Nations input and involvement.

Environmental & Climate Implications

The CRD Board Priorities for 2019-2022 identify green and affordable multi-modal transportation and reduced greenhouse gas emissions as desired outcomes. The Board declared a climate emergency in 2019, committing to prioritizing climate action initiatives, including mitigating the environmental impacts of transportation by providing opportunities for active transportation. The proposal to create a separated-use pathway and install lighting in the urban portions of the regional trails aligns with the initiatives in the Regional Trails Master Plan and Regional Climate Action Strategy.

Service Delivery Implications

Critical infrastructure on the regional trails within the 6.6 km study area identified for potential repairs or replacement in the next five years includes the Interurban Bridge, the Swan, Brett and Selkirk trestles, and some trail resurfacing on the Lochside Regional Trail. In 2021, \$70,000 is budgeted for resurfacing a section near Swan Lake and, in 2025, \$80,000 is budgeted for resurfacing a section between Swan Trestle and Quadra Avenue. Overall, the paved trail surfaces are deemed to be in good condition, with a projected lifespan of 25-30 years remaining. The asphalt replacement value of the entire 22 km of paved sections of the Galloping Goose and Lochside regional trails is approximately \$11.7 million.

Wider pathways with increased paved surface and more pavement markings would require incrementally more effort to maintain and upkeep over time. New electrical infrastructure, such as lampposts, would require ongoing preventative maintenance (i.e., cleaning, graffiti removal) and although LED luminaires require minimal maintenance, replacement may be required in 10-20 years.

Intergovernmental Implications

The implementation of the recommendations requires collaboration and coordination among government agencies and community partners. In particular, the segments of regional trails in the study area are owned by the Province (Ministry of Transportation & Infrastructure) and road crossings are within the City of Victoria and District of Saanich jurisdictions.

CONCLUSION

The Regional Trails Widening Study, completed in 2020, addresses a priority action in the Regional Trails Management Plan and supports the Board's climate action initiatives. Three conceptual design options for widening, separating and lighting a 6.6 km section of the Galloping Goose and Lochside regional trails were evaluated and, based on factors such as current trail conditions, user volumes and best practices, the recommended design is a 6.5 m wide separated-use pathway with hardwired LED lighting, with the highest priority area identified for improvement being the 1.6 km section of the Galloping Goose between Selkirk Trestle and Culduthel Road. The total estimated project cost for the entire 6.6 km study area could be reduced from \$17.8 to \$13.2 million, if a number of cost saving measures are utilized, such as reusing existing pavement and subgrade where feasible, strategic trail realignments, and only lighting priority areas, such as intersections and underpasses. Staff recommend conducting public engagement next on the separated-use pathway design with lighting opportunities and priority sections for implementation, as presented, and report back to a future committee meeting with further recommendations.

RECOMMENDATION

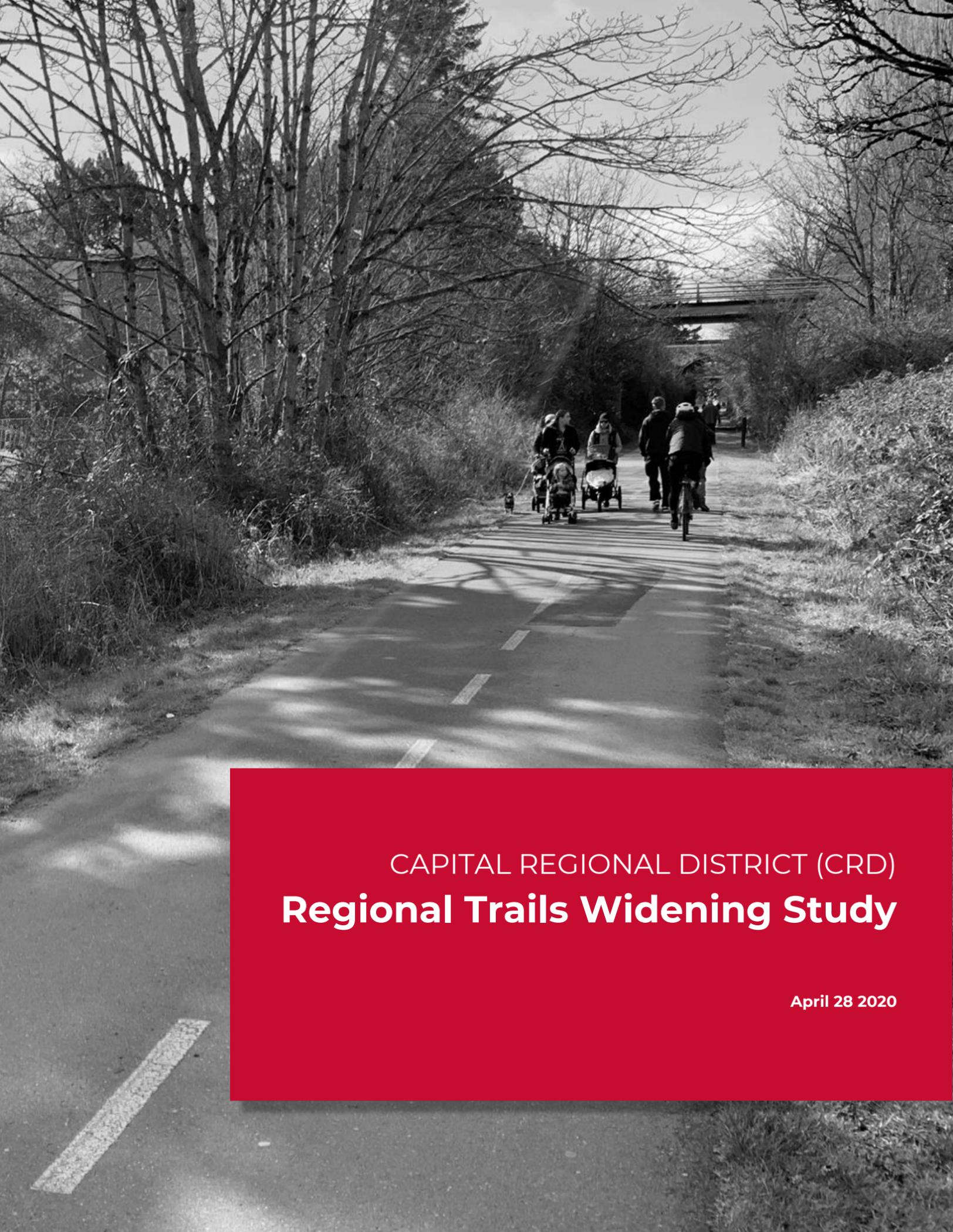
The Regional Parks Committee recommends to the Capital Regional District Board:

1. That the Regional Trails Widening Study be received for information;
2. That staff be directed to conduct public engagement on the 6.5 m separated use pathway design with lighting and implementation priorities as recommended; and
3. That staff report back to a future committee meeting with further recommendations.

Submitted by:	Jeff Leahy, RPF, Senior Manager, Regional Parks
Concurrence:	Steve May, P.Eng., Acting General Manager, Parks & Environmental Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT

Appendix A: Regional Trails Widening Study Report – Urban Systems (April 2020)



CAPITAL REGIONAL DISTRICT (CRD)
Regional Trails Widening Study

April 28 2020

Report for

Capital Regional District

625 Fisgard Street
Victoria, BC V8W 1R7

April 28 2020

Prepared by

Urban Systems

312, 645 Fort Street
Victoria, BC V8W 1G2



In association with

PBX Engineering

2612 Bridge Street
Victoria, BC V8T 4S9

Contact

Dan Casey, RPP MCIP
dcasey@urbansystems.ca

File no. 001692.0049.01

This report is prepared for the sole use of the Capital Regional District. No representations of any kind are made by Urban Systems Ltd. or its employees to any party with whom Urban Systems Ltd. does not have a contract. Copyright © 2020.

Contents

1.0	Introduction	1
1.1	Background	1
1.2	Purpose.....	1
1.3	Overview.....	2
1.4	Study Area.....	2
1.5	Jurisdiction	4
2.0	Current Condition	5
2.1	Design Parameters.....	5
2.2	User Volumes	10
2.3	Operating Characteristics.....	15
2.4	Key Issues	20
3.0	Best Practices Review	22
3.1	Research + Guidelines	22
3.2	Representative Trails.....	33
4.0	Trail Improvement Options	39
4.1	Trail Widening / Reconfiguration Options.....	39
4.2	Trail Lighting.....	44
5.0	Options Evaluation	49
5.1	Evaluation Criteria.....	49
5.2	Evaluating Options.....	52
6.0	Recommendations	54
6.1	Trail Facilities	55
6.2	Lighting.....	58

Appendix A.

Trail User Volumes Methodology

Appendix B.

Precedent Trail Facilities Feature Sheets

Appendix C.

Conceptual Design Plans

Appendix D.

Detailed Option Evaluation

1.0 Introduction

1.1 Background

The Galloping Goose and Lochside Regional Trails have steadily increased in popularity since being constructed in the late 1980s (Galloping Goose) and early 2000s (Lochside). The increase in user volumes and conflicts in urban trail sections have been identified as challenges for years. The Capital Regional District (CRD) manages the Galloping Goose and Lochside Regional Trails as part of the Regional Parks service and is seeking to ensure both trails continue to provide a safe, comfortable user experience in consideration of both existing conditions and possible future changes in trail user volumes and travel modes. Lighting is also an important opportunity to improve safety and comfort among trail users, recognizing that trail use is not limited to daylight hours. Possible impacts of trail lighting, such as impacts on adjacent properties, must also be considered.

The 2016 *Regional Trails Management Plan* (RTMP) identifies assessing the feasibility of separating or widening the Galloping Goose between Selkirk Trestle and McKenzie Avenue / Highway 1 (Section 3.5, 3), as well as to assess widening the Lochside between the Switch Bridge and McKenzie Avenue (Section 4.5, 4) as a short-term need. The RTMP also identifies the need to study the possibility of adding lighting along regional trails.

1.2 Purpose

The purpose of this study is to identify and recommend conceptual designs for separating or widening two segments of CRD Regional Trails based on an analysis of the engineering feasibility, costs, benefits and best practices. The project also includes an assessment and recommendations for lighting the segments of trail. Both items are in pursuit of identified action items from the 2016 RTMP.

While this study is focused specifically on the trail segments identified in *Section 1.4*, the research and recommendations may have application when considering trail widening and lighting elsewhere in the regional trail system.

1.3 Overview

This study includes the following general components:

1. A review of existing trail conditions, including user volumes, trail width and constrained locations that may impact design options;
2. A review of research and best practices for trail widening, separating and lighting based on available technical guidelines documents and a review of precedent trails in other communities;
3. Identification of opportunities and challenges for three trail widening and reconfiguration options with supporting design concepts and cost estimates, including lighting concepts for each;
4. Research and recommendations on whether to light the identified trails sections and a long-term approach to trail lighting; and
5. A recommended trail widening or separation option supported by a multi-criteria evaluation of three options.

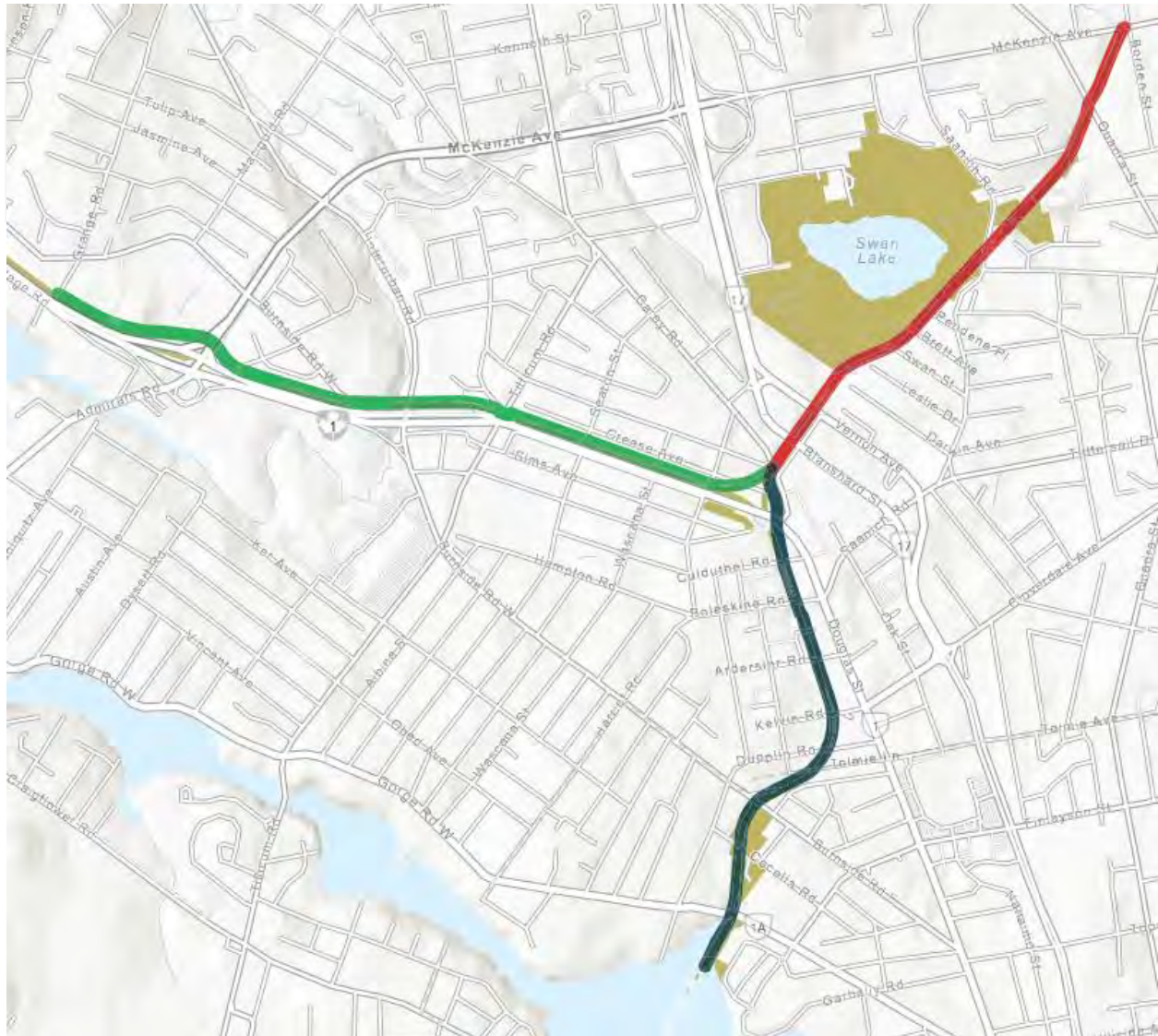
1.4 Study Area

The study considers a total of 6.6km of the Galloping Goose and Lochside Regional Trails. The study area includes three distinct trail sections that are referenced throughout this study, as summarized below and identified on **Map 1**:

- **Section A.** Galloping Goose Regional Trail between the Selkirk Trestle and Switch Bridge (2.0km);
- **Section B.** Galloping Goose Regional Trail between the Switch Bridge and Grange Road (2.6km); and
- **Section C.** Lochside Regional Trail between the Switch Bridge and McKenzie Avenue (2.0km)

The regional trail sections that are the focus of this study are urban and generally experience the highest level of use in the regional trails system. The section of the Galloping Goose Regional Trail south of the Selkirk Trestle is under the City of Victoria's jurisdiction and has not been included in the detailed investigations contained in this report.

Map 1. Study Area



Trail Sections

- Section A.** Galloping Goose, Selkirk Trestle to Switch Bridge
- Section B.** Galloping Goose, Switch Bridge to Grange Rd
- Section C.** Lochside Trail, Switch Bridge to McKenzie Ave

1.5 Jurisdiction

The regional trail corridors are owned by the Province. The CRD Regional Parks service manages the trails under a licence of occupation.

Intersections with adjacent roadways, as well as select infrastructure along the corridors (i.e., bridges, underpasses), are generally under the local municipal (District of Saanich, City of Victoria) or Ministry of Transportation + Infrastructure's (MoTI) jurisdiction, thereby limiting the CRD's direct influence over these facilities.

2.0 Current Condition

2.1 Design Parameters

The following is a brief summary of existing conditions and key trail parameters that may dictate the feasibility of trail widening and lighting options.

2.1.1 Trail Classification

The classification of the sections of the Galloping Goose and Lochside Regional Trails that are the focus of this study are the starting point for identifying the intended function of the trail and the trails users that can be anticipated. These trail sections are classified in the *Regional Parks Strategic Plan* as “Bike and Pedestrian Trails”. The definition given to these facilities is as follows:

Regional trails that are designated primarily to accommodate a high volume of users for recreational and commuting cycling, and for walking and running. Non-motorized vehicle transportation corridors for commuters, they are the arterial cycling trails in the region. These trails have major infrastructure and a paved surface.

The RTMP provides further guidance on trail use and management, noting specifically that in high-use, urban areas the transportation role of trails is to be given primary consideration in trail planning and management.

2.1.2 Trail Dimensions

Rights-of-Way

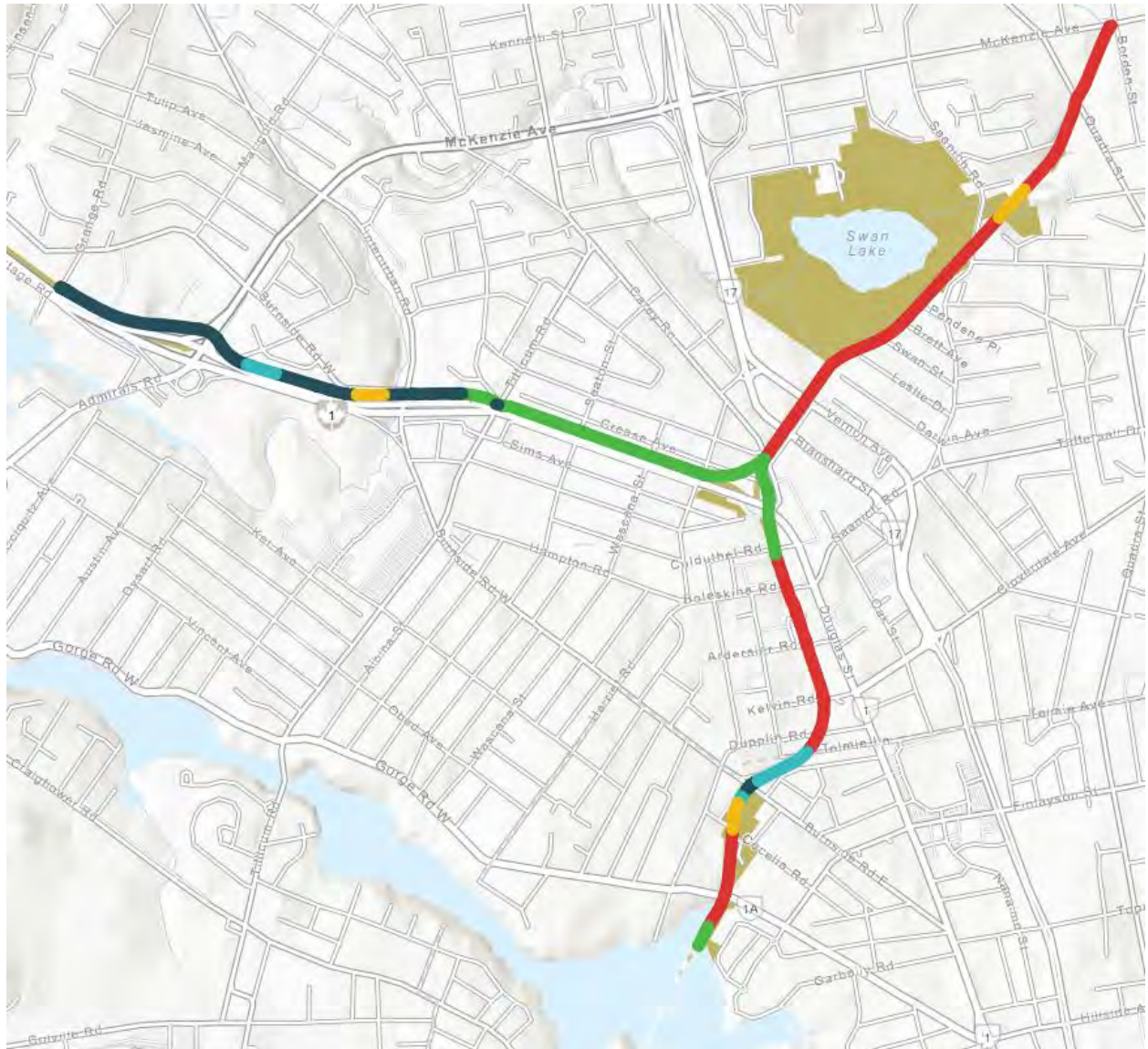
The trail rights-of-way vary significantly along their entire length. Widths are typically in the range of 15.0 to 20.0m, and as low as 10.0m in their narrowest locations.

The trail rights-of-way will be wide enough in all locations to accommodate possible widening or reconfiguration options and are not a constraint that need to be considered in this study.

Trail Width

The existing trails are multi-use facilities that accommodate pedestrians, cyclists and other trail users in a shared space. Directional travel is separated by a painted centre line (either dashed or solid) in most locations. Generally, the trails widths are 3.0 – 4.0m wide throughout the study area. The Lochside Regional Trail (Section C) is 3.0 – 3.5m along its entire length, whereas the portion of the Galloping Goose Regional Trail is approximately 4m wide, with increased width west of Interurban Road as part of recent upgrades associated with the McKenzie Interchange. A full inventory of the trails widths is included in **Map 2**.

Map 2. Existing Trail Widths



Trail Width

- > 5m
- 4.5 – 5m
- 4 – 4.5m
- 3.5 – 4m
- 3 – 3.5m

2.1.3 Corridor Constraints

Physical “pinch points” such as bridges, trestles and underpasses are unlikely to change in width as part of any trail widening / reconfiguration due to the prohibitive cost of alterations and in some cases the CRD’s lack of jurisdiction over the structures. This includes five overpasses (i.e., bridges / trestles) and six underpasses. Each has been catalogued below in **Table 1**. Some consideration is given in subsequent sections to trestles that are known to require significant investment and/or replacement by the CRD in the next twenty years and where future widening may be considered.

Beyond physical infrastructure constraints, the corridors present challenges with the trail elevation relative to adjacent lands, largely a result of the corridors initially being established and constructed as railway lines. Rock cut and corridor drainage facilities result in constrained widths on the Galloping Goose Regional Trail between Gorge Road and Tolmie Avenue, as well as the Lochside Regional Trail between Switch Bridge and Darwin Avenue. Areas where the trail bed is elevated relative to surrounding areas is also a challenge to trail widening, particularly on the Galloping Goose west of Crease Avenue and on the Lochside north of Darwin Avenue. These locations are considered in detail in the concept design options in **Section 4** below in terms of both the costs associated with potential widening, as well as the impacts on adjacent areas.

Table 1. Summary of Infrastructure Constraint Locations

Location		Available Width	Jurisdiction
Section A	Gorge Road (underpass)	8.5m	City of Victoria
	Burnside Road (underpass)	5.4m	City of Victoria
	Boleskine Road (underpass)	6.7m	District of Saanich
	Switch Bridge (overpass)	4.0m	MoTI
Section B	Interurban Road (overpass)	4.0m	CRD
	McKenzie Interchange (overpass)	5.5m	MoTI
Section C	Carey Road (underpass)	6.0m	District of Saanich
	Blanshard Street (underpass)	7.8m	MoTI
	Vernon Avenue (underpass)	5.8m	MoTI
	Brett Trestle (overpass)	3.5m	CRD
	Swan Lake Trestle (overpass)	3.5m	CRD

2.1.4 Trail Surface

The majority of the trail surface within the study area is asphalt with exceptions where the trails pass over a bridge or trestle, as follows:

- Concrete surface on the Switch Bridge and McKenzie Overpass structures;
- Wooden deck planks on the bridge over Interurban Road; and
- Wooden deck planks that were recently capped on the Swan Lake and Brett trestles.

The CRD Trail Development Guidelines for Bike and Pedestrian Trails (RTMP, Appendix 3) clarify that the trail sections that are the focus of this study are to be paved surface and intended to allow for cycling, walking, running, skateboarding and rollerblading.

2.1.5 Lighting

The CRD has no existing lighting on regional trails and electrical infrastructure in the study area is limited to installations by other jurisdictions. The following is a summary by trail section.

Section A, Galloping Goose Regional Trail, Selkirk Trestle to Switch Bridge

- Small street lighting junction box exists adjacent to bridge abutment on south end of Selkirk Trestle (west side).
- The City of Victoria has lighting at accesses to Waterfront Park (at Selkirk Waterfront, south of Gorge Road).
- The City of Victoria has light junction boxes and conduit over approximately 400m from Cecilia Ravine Park to Tolmie Avenue (COV lighting at accesses on both sides of the Galloping Goose at accesses to Cecilia Ravine Park between Washington Avenue and Cecilia Road).
- The District of Saanich has a single streetlight at the Barbon Place / Galloping Goose Regional Trail crossing (immediately south of Boleskine Road).

Section B, Galloping Goose Regional Trail, Switch Bridge to Grange Road

- Lighting on Highway 1 between Harriet Road and Tillicum Road, approximately 750m (spacing 50.0 to 90.0m), owned and installed by MoTI.

- Pedestrian scaled lighting on the Galloping Goose over approximately 500m between McKenzie Avenue to 150m east of Grange Road, owned by MoTI and installed as part of the McKenzie Interchange project. Spacing is generally 35.0m when no highway lighting contribution.

Section C, Lochside Regional Trail, Switch Bridge to McKenzie Avenue

- Vernon Avenue / Ravine Way underpass – Two luminaires adjacent to the walkway on the adjacent south abutment. These luminaires are not on the regional trail corridor and contribute very little light to the Lochside Trail.

2.2 User Volumes

Trail volumes are used when considering appropriate trail widths, possible separation of users, and considering and prioritizing lighting on trails. Measures of trail user volumes are typically expressed as average daily traffic (ADT) and hourly traffic in best practices research and when comparing facilities in different communities. The following is an overview of both existing and projected future trail user volumes.

2.2.1 Current Volumes

The CRD undertakes trail user counts at key regional park and trail locations, including locations on the Galloping Goose and Lochside trail sections within the study area. While the available data has some limitations, it is considered to be reliable for the sake of establishing approximate trail user volumes and pedestrian-to-cyclist ratio for the purpose of comparing to trail facilities in other communities and applying guidelines and best practices.

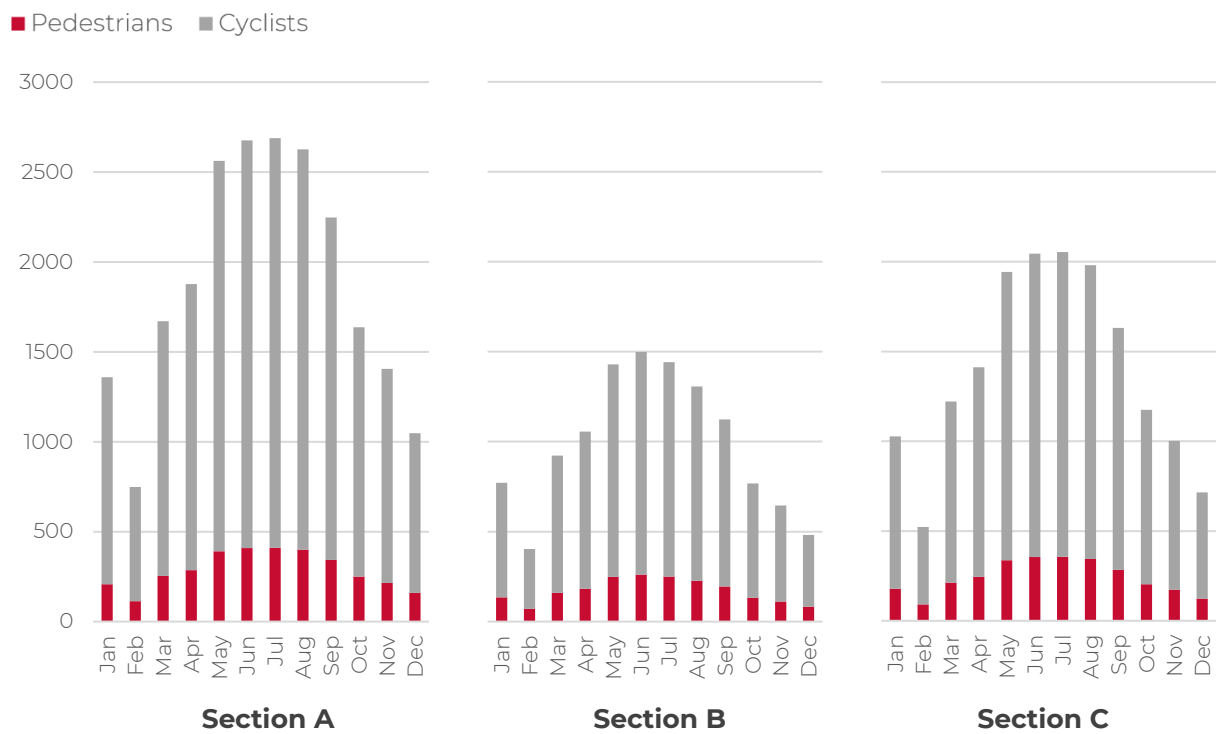
Estimated trail user count data is presented in **Table 2** as the average daily user volume for the busiest month of the year, based on the methodology described in **Appendix A**. The results indicate that average daily volumes are approximately 2,700 trail users in the busiest section (Section A) and 1,500 in the least busy section (Section B). Average daily trail user volumes on the Lochside Regional Trail (Section C) are approximately 2,000 trail user per day.

Figure 1 shows the monthly variation in average daily trail user volumes for each of the three sections. While there is some variation between the three count locations in terms of the month with the highest user volumes, volumes are generally at or approaching their peak between May and August. Overall trail user volumes are split approximately 80% cyclists and 20% pedestrians.

Table 2. Existing Average Daily Trail User Volumes, Busiest Month (based on 5-year average¹)

	Average Daily User Volumes (Two-Way)			Busiest Month
	Total	Pedestrians ²	Cyclists	
Section A	2,689	410 (18%)	2,279 (82%)	July
Section B	1,499	260 (21%)	1,239 (79%)	June
Section C	2,054	356 (21%)	1,697 (79%)	July

Figure 1. Monthly Variation in Average Daily Trail User Volumes, by Section (based on 5-year average³)



¹ See **Appendix A** for methodology

² Pedestrian count data calculated based on a comparison of multiple data sources (see **Appendix A**)

³ See **Appendix A** for methodology

Figure 2 shows the hourly variation in average daily trail user volumes based on the busiest month for each of the three sections. Each section shows a similar trend, with overall user volumes peaking during the morning and afternoon commute periods. Cyclist volumes follow this commute pattern closely, while pedestrian volumes are more evenly spread out during the day; in fact, peak pedestrian volumes occur around noon in Section A and Section C.

Figure 2. Hourly Variation in Average Daily Trail User Volumes, by Section (busiest month, based on 5-year average⁴)

■ Pedestrians ■ Cyclists



2.2.2 Projected Volumes

Recommendations for trail width, separation and lighting are to accommodate future levels of trail use. The user volume data presented above has therefore been factored to represent a 20-year horizon (2040) with consideration of the factors that may influence pedestrian and cyclist use in future. The following is a summary of factors that were considered:

- Historic growth in volumes on regional trails.
- The impact that potential widening, separating and/or lighting may have on activity levels on regional trails.
- Active transportation infrastructure improvements on parallel corridors, either by municipalities (Saanich, Victoria) or the Ministry of Transportation + Infrastructure, that may divert pedestrians or cyclists away from regional trails.
- The likelihood that electric bicycles continue to decrease in cost, potentially making cycling an attractive and attainable travel mode for a broader range of the population.
- 20-year regional population projections suggest an increase of approximately 22%.
- Possible future rate of development along the regional trail sections as compared to historic growth in the area, including areas adjacent to both trails through Saanich's Uptown Douglas Corridor immediately adjacent to the Lochside Regional Trail.
- Potential for increases in fuel prices, as well as other cost factors such as cost of living and housing prices, facilitating a shift to less expensive travel options such as walking and cycling.
- A continued trend among the general population to both reduce environmental impact and to improve personal health and well-being is likely to increase uptake of active transportation.

The average growth in user volumes on the three trail sections has been approximately 2.5% per year over the past five years⁵. The factors identified above suggest that this growth rate could increase in future due to development along the trail and increasing interest in active transposition, as well as possible improvements to the trails. There is also potential that new municipal infrastructure and natural limits on trail use result in capped use on the trails.

⁴ See **Appendix A** for methodology

⁵ Based on 5-year user volume data provided through the CRD's TRAFx count system, accessed March 3, 2020.

A growth factor of 2.5% per year is recommended as the basis for projecting future trail user volumes. This suggests that average daily volumes during the busiest month in 2040 will be approximately 4,500 per day on Section A, 2,500 per day on Section B, and 3,500 per day on Section C. See **Table 3**.

Table 3. Projected 20-Year Trail User Volumes, Average Daily Pedestrians + Cyclists

	Existing Volumes	Growth Factor	Approx. Projected Volumes (2040)
Section A	2,689	2.5% per year	4,500
Section B	1,499		2,500
Section C	2,054		3,500

2.3 Operating Characteristics

Operating characteristics should be understood when considering appropriate trail facility widths and possible separation of trail users. The following section identifies the basic operating characteristics such as operating space and travel speed for pedestrians, cyclists and other active travel modes. The material presented is largely based on the *British Columbia Active Transportation Design Guide, 2019 Edition*⁶, a detailed engineering resource with design recommendations specific to BC communities.

2.3.1 Operating Space

An understanding of the operating space for various trail users is required in determining appropriate trail facility widths. The following describes the horizontal dimensions for trail users. Consideration is given to the physical width of the various users, as well as the operating space required to accommodate safe, comfortable operations.

⁶ The British Columbia Active Transportation Design Guide is available on the Ministry of Transportation + Infrastructure's website:

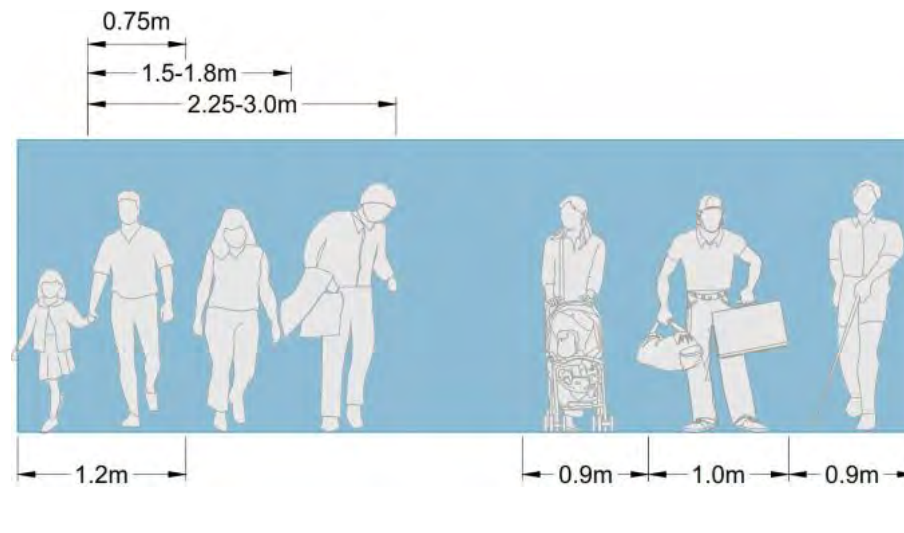
<https://www2.gov.bc.ca/gov/content/transportation/transportation-infrastructure/engineering-standards-guidelines/traffic-engineering-safety/active-transportation-design-guide>

Pedestrians

People walking and using mobility devices are the target design users when considering trail facilities intended to accommodate pedestrians. This covers a range of people of all sizes, ages and abilities, as shown in **Figure 3**. The following are some of the key dimensions for pedestrians on trail facilities:

- The typical width of an adult pedestrian is 0.5m wide from shoulder-to-shoulder. The horizontal operating space for a typical adult pedestrian is 0.75m wide, which accounts for lateral sway when walking. People with shopping bags, pushing a stroller or using a guide have horizontal operating spaces in the range of 0.9 to 1.2m.
- An adult and child walking together require 1.2m operating space, two adults walking together require 1.8m and groups of more than two require 3.0m.
- The typical width of a person using a wheelchair is 0.8m wide, which accounts for an electric wheelchair and the hand motion required to propel a manual wheelchair. The horizontal operating space for an individual using a wheelchair is 0.9m wide.
- A minimum of 1.8m is required for two people in wheelchairs to pass or travel side-by-side. Two adults walking side-by-side have an operating envelope of 1.5 to 1.8m, with the upper end of this range providing for added comfort and personal space. Research indicates that pedestrians desire 0.8m of personal space between two people walking for comfort, although this cannot always be achieved.

Figure 3. Typical Pedestrian Dimensions⁷



⁷ Figure adapted from British Columbia Active Transportation Design Guide, Figure B-8 and Figure B-9

Cyclists

An individual on a bicycle is the target design user when considering multi-use and cycling-specific trail facilities. The horizontal operating space for cyclists are highlighted in **Figure 4**. The following are some of the key dimensions for accommodating cyclists on trail facilities:

- The typical physical width of an adult on a bicycle is 0.75m from handlebar-to-handlebar. Certain bicycle types (i.e., cargo bikes, newer model e-bikes) are up to 0.9m wide. Bicycles are variable in size and trails should be designed in consideration of the range of bicycles, as shown in **Figure 5**.
- To allow for lateral movement (common when pedalling uphill or travelling at higher speed), the minimum operating space is 1.2m wide and the preferred operating space is 1.5m wide.
- The preferred operating space to allow passing or side-by-side travel is 3.0m. Reduced width is generally not appropriate on bi-directional trail facilities where cyclists are constrained and unable to steer into adjacent areas to avoid conflict.
- Other trail activities such as skateboarding and inline skating are generally accommodated within the operating space dimensions above. An inline skater, for example, typical requires approximately 1.5m of width.
- Additional lateral clearance is required where a cycling facility is adjacent to a vertical obstruction such as a fence, bollard, bench or rock wall. A minimum 0.2m lateral clearance is required where the obstruction is 0.1m to 0.5m high (typically a curb) and a minimum 0.5m lateral clearance is required where the obstruction is greater than 0.5m high.

Figure 4. Typical Cyclist Dimensions⁸

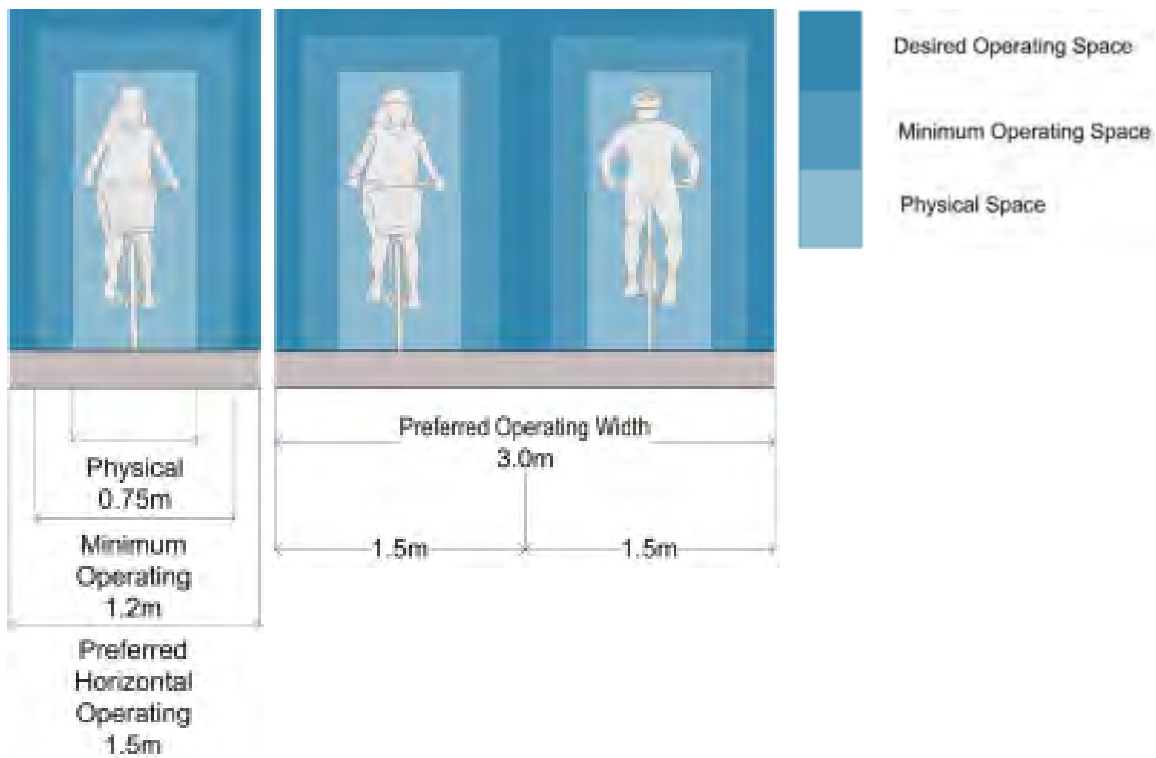
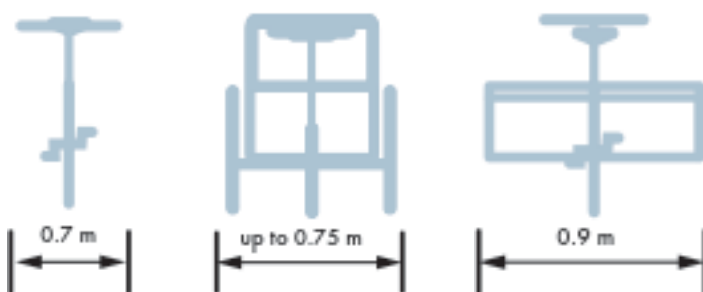


Figure 5. Typical Bicycle Widths - standard bicycle (left), bicycle with trailer (centre), cargo bicycle (right)⁹



⁸ Figure adapted from British Columbia Active Transportation Design Guide, Figure B-12

⁹ Figure adapted from British Columbia Active Transportation Design Guide, Figure B-11

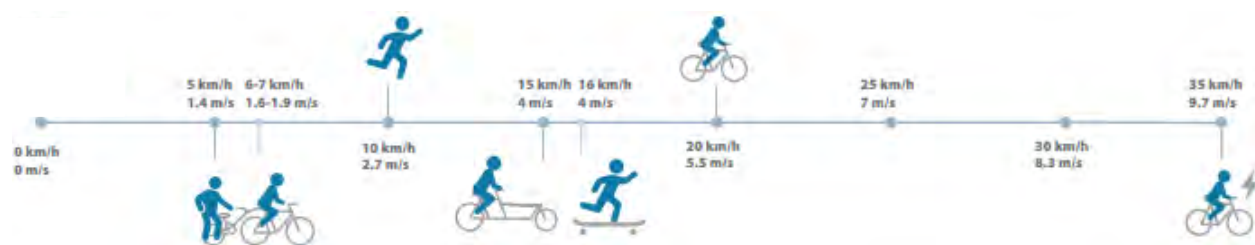
2.3.2 Travel Speed

An understanding of the travel speed for various trail users is beneficial when considering trail widths and/or separating trail uses. Of primary importance is the speed differential between modes when considering trail user safety and comfort, and the frequency of users passing one another on a facility. Generally greater user volumes and higher speed differentials warrant wider trail widths.

Travel speed varies considerably between trail user groups, as well as between trail users of varying experience levels and/or physical abilities. Typical active transportation user speeds are identified in **Figure 6**. The following are some of the key travel speed measures:

- Walking speed for the general population is 5 km/h (1.4m per second). Older adults walk at approximately 3 km/h (0.8 to 1.0m per second). An individual running / jogging travels at approximately 10 km/h (2.8m per second).
- Travel speed for a typical adult cyclist is approximately 20 km/h (5.5m per second). Cyclist travel speed may range from between 10 km/h and 30 km/h, with e-bikes and elite cyclists achieving speeds up to 35 km/h.
- Travel speed for motorized wheelchairs / mobility scooters are in the range of 7 to 10 km/ (2.0 to 2.5m per second).
- The above travel speeds assume a flat surface. Travel speeds increase on downhill grades and decrease on uphill grades, particularly among wheeled travel modes (i.e., bicycles, wheelchairs, inline skates).

Figure 6. Typical Active Transportation User Speeds¹⁰



¹⁰ Figure adapted from British Columbia Active Transportation Design Guide, Figure B-15

2.4 Key Issues

The following is a summary of key issues on the Galloping Goose and Lochside Regional Trails, primarily based on the *Regional Trails Management Plan* (2016) and feedback received from the *Regional Trails Visitor Use Survey* (2019).

User Volumes

Trail user volumes continue to increase, particularly during summer months and special events (i.e., Bike to Work week). A greater number of trail users leads to more frequent interactions between users, particularly users of differing speeds and in opposing directions, creating more opportunities for conflict and generally leading to a less comfortable user experience.

Speed Differential

Speed differential between different user groups is the source of much of the conflict on the trails. An adult cyclist may travel at speeds between 20 and 30 km/h, where a pedestrian typically travels at approximately 5 km/h. The differential leads to faster trail users overtaking slower ones and a willingness to pass through smaller gaps or with reduced safety as trail user volumes increase, leading to greater conflict. A need for increased enforcement of trail speeds and etiquette was cited.

Trail User Safety

Trail user safety concerns largely stem from high user volumes and speed differential leading to possible conflict or collision. Other contributing factors include poor visibility due to a lack of trail lighting, as well as temporary blindness due to on-coming trail user headlights. Some concerns also relate to the “surprise” factor of other users passing quickly and unexpectedly due to the use of headphones, lack of lighting on bicycles approaching from behind, and the lack of verbal signaling and bell use to alert to passing.

Personal Security

Personal safety concerns have been identified along the length of the Galloping Goose and Lochside Regional Trails due to observed and potential criminal activity. Some high-profile incidents in past have increased trail user concerns.

Vehicle Traffic / Intersection

Conflict between motorists and trail users was identified as a key safety concern, particularly at at-grade intersections where trail users have concerns that motorists may not adhere to stop / yield controls or motorists, once they have stopped, cannot see cyclists approaching the crossing at quick speeds.

Trail Etiquette

Numerous reported trail user conflicts stem from a lack of understanding or failure to adhere to proper trail etiquette. Commonly cited issues include the following:

- Failure to alert other trail users before passing
- Inattentive / irregular travel behavior (e.g., excessive meandering)
- Poor passing etiquette (i.e., faster users passing too closely, slower users travelling on the left making passing difficult)
- Failing to travel single file during peak periods, particularly among recreational / professional cycling groups

New Technology (Change)

The introduction of electric bicycles in recent years has created challenges when mixed with other, non-power assisted trail users primarily due to the speeds that e-bikes can achieve. E-bikes are also generally larger and heavier than conventional bicycles, increasing the damage / injury that may occur in case of collision. Further, the range of motorized devices becoming available is making the distinction between motorized and non-motorized more difficult to define and therefore more challenging to regulate and enforce.

3.0 Best Practices Review

A review of trail design best practices is presented in this section to understand the latest guidance with respect to trail widening and separation, as well as illumination. The focus of the review is on trail standards and precedent facilities that are representative of the sections of the Galloping Goose and Lochside trails that are the focus of this study. The following sections include a comprehensive scan of research and guidelines documents from professional agencies and other communities, as well as a comprehensive review of ten representative trails in other communities.

3.1 Research + Guidelines

A review of available research and guidelines from professional organizations and other communities was undertaken to understand best practices on the key items being given consideration in this study, as follows:

- What is an appropriate multi-use trail width to provide safe, comfortable conditions? What factors contribute to the need to widen a multi-use trail? (Section 3.1.2)
- Under what conditions should a multi-use trail be separated to provide distinct facilities for pedestrians and cyclists? (Section 3.1.3)
- What are the advantages and disadvantages of lighting trails? Are there certain conditions where lighting is less or more desirable? What are appropriate lighting types / technologies on trails? (Section 3.1.4)
- What are other, alternative trail configurations? What are the advantages and disadvantages compared to more typical multi-use or separated trail facilities? (Section 3.1.5)

The following sections provide a summary of best practices for each of the questions / problem statements identified above. A detailed list of reference documents is included at the back of this document.

3.1.1 CRD Trail Development Guidelines

The CRD's own Trail Development Guidelines (RTMP, Appendix 3) provide a starting point for understanding desirable trail design characteristics. As summarized in the RTMP, the general trail development guidelines for facilities classified as Bike and Pedestrian Trails that apply to the trail sections that are the focus of this study are as follows:

- Primarily cycling and pedestrian use; skateboarding and roller blading may also occur.
- Standard tread width 4.0m; may be up to 7.0m width in high use areas; may be as narrow as 3.0m in areas with restricted corridors.
- Standard shoulder width (each side) 0.5m minimum; in sensitive areas or low use rural or wilderness areas a shoulder width of 0.25m may be considered.
- Cleared width – tread width plus 1.0m on each side.

The Trail Development Guidelines also note that if separation of uses is implemented, the ideal design would be a dual direction pedestrian trail with a minimum 2.0m width, a separation/buffer between it and wheeled use trail of 3.0 – 5.0m in width.

While the above gives guidance on typical trail standards for the CRD's regional trail facilities, the trail sections that are the subject of this study experience the highest use of any section in the regional trail system and require specific consideration of possible widths and configurations beyond those typically applied in the region.

3.1.2 Trail Width

Design guidelines provide recommendations for minimum and recommended trail widths that are comparable to the CRD's Trail Development Guidelines. Trail width design guidance prefers consistency for trail design versus frequently shifting design conditions. Minimum widths are provided, but most design guides note that trail minimums or constrained widths should only be used for short distances where physical constraints limit the trail width. Several design guides note that consideration should be given to providing signage and/or trail calming measures where trail widths are constrained.

In most cases, there are no maximum trail widths. The *Toronto Multi-Use Trail Design Guidelines* notes possible justifications for exceeding default designs including:

- Significant user volume pressure, including where special uses occur
- Destination trails
- Physical, environmental and spatial constraints are surmountable
- Other opportunities exist for exemplary trail facility (i.e., funding, community support)

The Federal Highway Administration's (FHWA) *Evaluation of Safety, Design, and Operation of Shared-Use Paths Final Report* notes that when considering wider trails, trail designers should think in smaller increments and consider level of service based on trail user volumes to avoid overbuilding, increasing costs and environmental impacts. The study also noted that "trails of 3.35 – 4.57m (11 to 15 feet) are wide enough to operate as three-lane paths" and that these trails increased capacity "improves level of service and increases the trail's ability to absorb higher volumes and more diverse mode splits without severely degrading service." General industry practice is that trails over 6.0m should consider separation of users and or separate pathways to avoid large cross-sections of pavement.

Specific guidance from various design resources related to multi-use pathway width in summarized in **Table 4**.

Table 4. Recommended Multi-Use Trail Widths from Design Guide Documents

Design Guide	Trail Width	Lateral Clearance
British Columbia Active Transportation Design Guide 2019	3.0 – 4.0m (for high volume facilities with a variety of different user types, consider using widths at the higher end of the design domain) Constrained width: 2.7m	0.6m (lateral clearance may increase depending on side slope)
TAC 2017 Design Guide: Chapter 5 Bicycle Design	3.0 – 6.0m Minimum width: 2.7m	0.2m for obstructions 100 – 750mm high 0.5m for obstructions >750mm
CROW 2016 Design Manual for Bicycle Traffic	Minimum width: 2.4m	0.25m for low curbs 0.5m for higher curbs 0.7m for fixed objects 1.0m for closed wall
Toronto Multi-use Trail Design Guidelines 2015	3.0 – >4.1m Minimum width: 2.7m	0.6m minimum 1.0m recommended
OTM Book 18 2013 & Ontario Bikeways Design Manual 2014	4.0m Minimum width: 3.0m Constrained width: 2.4m (over very short distances only)	0.5m minimum
Vélo Québec Planning + Design for Cyclists 2010	3.0m	1.0m minimum

3.1.3 Trail Separation

Rationale

Providing separation between bicycle users and other trail users can help enhance safety and make the facility more comfortable for all users. The decision to separate trail users is based on a number of factors including available right-of-way width, total volume of current and anticipated users, and the ratio of pedestrians to all daily pathway users. Trail separation can mean anything from painted lines or different surface materials to physical separation (e.g. curb, bollards, or landscaping). The design guidelines reviewed vary in their approach to providing a threshold for when to separate trail users, as summarized in **Table 5**.


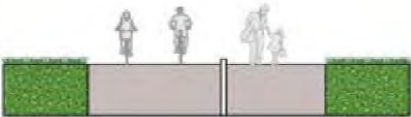
Table 5. Recommended Trail Separation Guidance from Design Guide Documents

Reference	Cyclist-Pedestrian Separation Rationale
British Columbia Active Transportation Design Guide 2019	>20% of users are pedestrians and total user volumes are >33 persons per peak hour, or <20% of users are pedestrians and total user volume is >50 persons per peak hour
Transportation Association of Canada (TAC) 2017 Design Guide: Chapter 5 Bicycle Design	
CROW 2016 Design Manual for Bicycle Traffic	Number of pedestrians per hour per metre of profile width: <100 – full combination of users – shared pathway with no distinct user separation or markings 100-160 – separation at grade, separation along pathway provided as a line, bollard, or other marking 160-200 – grade separation between users >200 – no combination possible, users should be separated
Toronto Multi-use Trail Design Guidelines 2015	Separation between cyclists and pedestrians can be used to resolve potential conflicts between users, especially where pedestrians form an above-average proportion of trail users
Ontario Traffic Manual (OTM) Book 18 2013 & Ontario Bikeways Design Manual 2014	Where space permits, separating pedestrians and cyclists should be considered
Vélo Québec Planning & Design for Cyclists 2010	In urban settings, parallel pedestrian and cycling paths are recommended

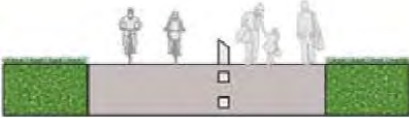
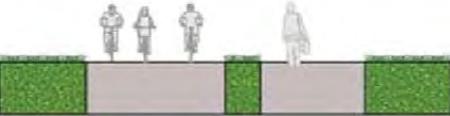
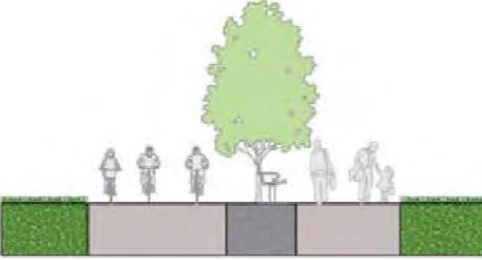
Types of Separation

The BC Active Transportation Design Guide provides specific guidance on the types of treatments that may be applied to achieve separation between users on a separated trail facility. A summary is provided in **Table 6**.

Table 6. Trail Separation Options¹¹

Separation Options	Pros / Cons
 <p>Paint Separation</p>	<ul style="list-style-type: none"> • Provides a visual cue to trail users that a separate space is designated for different user types. • Difficult to detect the separated bicycle space as there is no physical separation between users. As a result, encroachment occurs into both spaces. • Minimal impact on the overall facility width.
 <p>Curb Separation</p>	<ul style="list-style-type: none"> • Provides physical separation and a detectable separation between facilities, creating a clear indication to pathway users of the separate facilities. • Limited or no trail widening required. • Can make the two facilities feel more constrained with less room to maneuver when passing. • Can create an obstruction if visibility of the separation is limited due to lighting or weather conditions. • Can impact pathway drainage and restrict crossing opportunities. • Can pose issues for maintenance as curb may be obstruction to equipment (e.g. snow clearing, sweeping).

¹¹ Adapted from the BC Active Transportation Design Guide, Section E-3, pg E30

 <p>Post Separation</p>	<ul style="list-style-type: none"> • Provides a vertical separation between facilities. • Creates breaks in the separation to allow users to cross into or over the adjacent facility. • Can create an obstruction if visibility of the separation is limited due to lighting or weather conditions. • Can make the two facilities feel more constrained with less room to maneuver when passing. • Can pose issues for maintenance as curb may be obstruction to equipment (e.g. snow clearing, sweeping).
 <p>Boulevard</p>	<ul style="list-style-type: none"> • Provides a buffer space between the two facilities, resulting in a greater degree of separation. • Can be a grass boulevard but also creates space for landscaping, vegetation, and facilitates drainage. • Increased maintenance may be required to prevent overgrown vegetation and ensure upkeep.
 <p>Median with Furniture</p>	<ul style="list-style-type: none"> • Provides the highest degree of separation between users. • Offers space for furniture, lighting, and other trail amenities. • Creates an inviting environment and opportunities to enhance the character of the facility. • Requires a significant amount of right-of-way and results in a wide trail facility.

Separated Facility Widths

Where it is decided that users should be separated, additional guidelines apply for minimum and desired widths of bicycle and pedestrian only pathways. The Transportation Association of Canada (TAC) recommends that a two-way exclusive bicycle pathway should be a minimum of 2.5m wide, which allows oncoming bicycle to safely pass each other. The BC Active Transportation Design Guide provides a constrained limit of 3.0m and a desirable width of 4.0m for bicycle only pathways. Pedestrian-only pathways should consider accessibility, in particular, providing enough space for two on-coming wheelchairs to pass each other (minimum 1.8m). The BC Active Transportation Design Guide provides a constrained width of 1.8m and a desirable width of 2.5 – 3.0m for pedestrian only pathways.

3.1.4 Trail Lighting

Specific guidance on trail lighting is relatively limited. The following is an overview of best practices based on guidance available specific to lighting trail facilities, as well as more general guidance related to the illumination of transportation infrastructure.

Pros + Cons of Lighting Trails

Guidance provided in the various reference documents offers a generalized list of the advantages and disadvantages of lighting trail facilities. The advantages of trail lighting are:

- Increased user comfort and safety
- Aids in wayfinding and navigation
- Allows users to see and be seen
- Recognize hazard, conflict and decision points more readily
- Generally considered a deterrent to criminal activity and vandalism
- Addresses 2 of 4 Crime Prevention Through Environment Design (CPTED) principles:
 - Natural surveillance - See and be seen
 - Natural access control – See intruders entering trail from access points
 - The other two principles relate to territorial reinforcement and maintenance
- Reduce risk of collisions during darkness hours
- Extend hours of when users are comfortable on trail

The disadvantages of trail lighting are:

- Capital, maintenance and operating costs
- Potential / perceived stray light impact on surrounding areas including residential communities and natural spaces
- Environmental concerns with respect to affects on nocturnal creatures
- Light poles creating an additional obstacle for trail users and added maintenance
- Perceived contribution to overall “sky glow” in urban areas, as defined by the International Dark Sky Association

Lighting Priority

Where lighting is being provided on a trail facility, best practices generally suggest the following locations should be prioritized:

- Underpasses and tunnels
- Bridges and overpasses, including at bridge ends and staircases
- Intersections between trails and roads

- Areas with higher crime rates or the potential for criminal activity
- Public gathering areas, open spaces
- Junction of trails/trails and accesses
- Commuter routes, areas of high trail user volumes

Lighting Levels

Preferred lighting levels are generally determined by pedestrian volumes and are related to land use. The latest version of the Illuminating Engineering Society's RP-8 (IES RP-8, currently 2018), Chapter 16 – Off Road lighting, is considered the authoritative reference for recommended lighting levels and uniformities. Tables 16.1, 16.2 and 16.3 of IES RP-8 provide recommended lighting average, minimum and uniformity levels for walkways/bikeways for high, medium and low pedestrian activity. The 2006 TAC Guide for the Design of Roadway Lighting – Chapter 16- Off Road Lighting also provides guidance for walkways/bikeways lighting levels. Typical medium pedestrian density trail lighting average levels are 5 lux minimum, although may vary based on a need to achieve uniformity along the corridor.

Light Technology

- LED light sources should be used throughout. LEDs represent an energy consumption savings over conventional lighting, with approximately 50 % of the energy consumption of high-pressure sodium light sources. LEDs also allow for improved light control and longer life for light source, expected to last 20 years within specified light output, whereas high pressure and non-LED light sources require lamp replacement 4-5 years or more to retain specified light output.
- Warm light colour temperatures are preferred, measured at 3000 degrees Kelvin colour temperature or less. LED light sources are available in a variety of colour temperatures, including warm temperatures. 3000 degrees Kelvin is considered a “warm” light source and is the highest colour temperature recommended by the Dark Sky Association. Both the City of Victoria and District of Saanich use predominantly 3000 degrees Kelvin colour temperature luminaires in municipal street lighting.
- Luminaires should not include an up-lighting component, with minimal backlight and full cut-off to minimize glare. Back-up-glare (“Bug”) rating should be 1-2 for back; 0 for up and 1-2 for glare to minimize and control light spill. The Bug rating system is an industry accepted method to evaluate the performance of an outdoor luminaire by measuring light trespass (backlight), sky glow (up light) and high angle brightness (glare) control. The rating system was developed by the Illuminating Engineering

Society of North America (IES) and the International Dark Sky Association. Additional information on how the outdoor luminaire classifications are determined can be referenced in IES Technical Memorandum TM-15-11 and associated addendums

- Provide provision for dimming, timing and motion detection on trail luminaires, with the application to be determined by the owner.
 - Dimming allows for light levels to be changed to suit trail user density levels, must be programmable, and may be used in conjunction with motion detection. Dimming may also be used with timing to set pre-determined lighting levels by time of day. For example, recommended level from dusk until 11:00pm, lower level unless motion from 11:00pm to 5:00am, recommended level from 5:00am until dawn.
 - Motion sensing can be used in a number of programming options including low light level to recommended light level or off to recommended lighting level. Motion sensing functionality must allow for changes in programming if not optimum in the event of complaints or increased vandalism, include multiple options for control, and have the ability to differentiate between small animals and people.

Lighting Infrastructure

The following guidance relates specifically to trail lighting infrastructure:

- Lighting and poles on trail facilities should be pedestrian scaled to incur lower wattages at an appropriate scale for people and trails, as well as ensuring that light sources do not provide as bright a light or are mounted as high as conventional street lighting, and can therefore more easily control spill light.
- Poles should be a minimum of 4.5m high so as to be low enough to be at a pedestrian scale, but sufficiently high so that they cannot be easily accessed to prevent vandalism and theft.
- Solar lighting may be considered in locations with sufficient solar exposure. Modern solar lighting provides the benefits of not requiring a wired power source, can consist of a single unit containing batteries, solar panels and light fixture, and an 8-year battery life. The primary disadvantage is that the light output per light fixture is substantially lower than hard wired units, therefore requiring more units, poles and concrete bases. Solar lighting generally cannot meet IES RP-8 pedestrian and bike lighting level guidelines for winter months in northern latitudes including Victoria.

Solar lighting performance can be improved/mitigated by employing various lighting programs including combinations of dimming, motion detection and timing plans during off peak times. Solar lighting should not be implemented without fully understanding its limitations. Solar lighting for this application would typically be mounted at 6m and would have a separate luminaire and solar panel/battery array

- Cost effective, vandal resistant luminaires and other lighting components are preferred. Equipment should be purpose made and rugged to resist damage. Luminaires should be chosen for their aesthetics, but also their performance. Overly decorative high-cost luminaires should be avoided, with preference for proven technologies with local representation and a 10-year warranty.
- Junction boxes and other access points to be hardened to deter wire theft. All junction boxes should have vandal resistant fasteners, all other access points shall be of hardened construction. Consider aluminum conductors to reduce the value of theft reward, as well as minimizing the number of access points.

3.2 Representative Trails

A comprehensive review of regional-level trail corridors in other communities has been undertaken to understand the characteristics and design features of other facilities and how regional trails might be improved in the CRD. The focus of the review is on trails that are regional facilities, within a similar context, and with similar user characteristics to those on the Galloping Goose / Lochside Regional Trails. Only those facilities / communities where pertinent information is available – either through research and/or interviews – have been included in the review.

Trail Facilities Reviewed

Detailed investigations were completed for the following trail facilities:

1. Vancouver Seaside Greenway ("Seawall", Vancouver, BC)
2. Arbutus Greenway (Vancouver, BC)
3. BC Parkway (Vancouver, BC)
4. Ottawa River Pathway (Ottawa, ON)
5. Martin Goodman Trail (Toronto, ON)
6. Meewasin Trail (Saskatoon, SK)
7. Burke-Gilman Trail (Seattle, WA)
8. Springwater Corridor (Portland, OR)
9. Chicago Lakefront Trail (Chicago, IL)
10. Midtown Greenway (Minneapolis, MN)

Approach

The investigations included cataloguing a number of specific characteristics of each facility, with consideration for the location and context of each facility. The intent is to understand how the design and configuration of each compares to the Galloping Goose / Lochside Trails, as well as how the user and functional characteristics compare with specific design features.

The following specific characteristics were catalogued for each facility:

- Location, and Community Population
- Adjacent Land Use Context
- Trail Facility Configuration (i.e., multi-use, separated, other)
- Trail Characteristics (width, length, average slope, surface material)
- Trail User Volumes, including mode split where available
- Lighting (i.e., presence of lighting, lighting type)
- Facility Design (Surface material, signing, landscape, signs)

A feature sheet for each precedent trail facility is included in **Appendix B**.

Summary of Take-Aways

Generally, the surveyed trails provided a wide range of trail characteristics and facility configurations. The variability in trail widths, whether trails were separated between users, and trail lighting often fluctuated according to the age of the facility, whether the trail had been upgraded since construction, and specific site constraints. Trail widths varied between 2.0m and over 10.0m in width. The trend with all trails surveyed apart from one, was to move towards widening and in most cases separating trail users as either new trail sections are built, or old trails are reconstructed or retrofitted.

For trails that separate pedestrians and cyclists, most often the method of separation was a paint treatment. Pathways that see significant user numbers (i.e. more than 5,000 users per day on average), in particular high pedestrian use (Chicago Lakefront Trail, Martin Goodman Trail, and Vancouver Seaside Greenway) often provided additional separation between pedestrians and cyclists through landscaped buffers or greenspace. These trails are all located along waterfronts, in linear greenways, and possess significant space that allow for wider pathways and landscape treatments. Trail widening and separating projects are currently underway for several of the trails investigated (BC Parkway, Ottawa River Pathway, and Meewasin Trail). Information obtained from interviewees indicated that the trails were planning phased implementation of trail widening, targeting sections of trail that recorded the highest user volumes and where anecdotal information provided locations of potential or perceived user conflicts between cyclists and pedestrians.

Regarding trail lighting, eight of ten trails investigated were either completely lit, partially lit, or have active plans to introduce lighting in the future. Trails in natural areas were noted as not being lit due to environmental concerns. Several regional trails that stretched from urban centres to suburban settings were lit in the downtown and higher density areas, but lighting would be discontinued as the trail moved further from the urban core. Lighting was often noted as a “nice to have”, but costs were noted as potentially prohibitive to installing lights along entire trail networks. There were very few notable instances of lighting maintenance and/or vandalism issues with regards to lighting.

In summary, there is no consistent approach used across all jurisdictions for the design of trails with regards to trail widths and separation of users as well as the provision of lighting. The trails surveyed did reflect a common trend across multiple jurisdictions to provide wider trails and where possible to separate users. Many interviewees noted that the process to widen and or separate trails is a slow one, with costs being a determining factor. Trail providers may need to weigh widening an existing trail or providing a new trail due to limited trail building dollars.

Table 7. Summary of Key Take-Aways from Precedent Trail Research

Trail Name	Trail Width	User Separation	Lighting	Notes
Vancouver Seaside Greenway	6.0 – 7.0m	Yes 3.0m bidirectional bike path and 3.0m pedestrian path Landscape buffer separation where possible	Yes	Bicycle and pedestrian paths also differ in surface materials (asphalt versus pavers). Paint and signage also used to differentiate between user spaces. Estimated 8- to 10-million annual users, average of 2,800 daily cyclists ¹²
Arbutus Greenway	4.0 – 6.0m	Yes Painted lanes and symbols	Yes Currently conducting limited solar trial, plans to light entire trail	Future plans include full separation between users with a minimum buffer of 1.0m. Average of approximately 250 people per hour
BC Parkway	2.5 – 4.0m	Planned for future implementation 2.5 – 3.0m bidirectional bike path and 2.5 – 3.0m pedestrian path	Yes Lighting not continuous	Current trail design notes issues at transition areas, rest areas, and attractions. These areas require additional trail space. Approximately 200 – 300 persons per hour
Ottawa River Pathway	3.0 – 4.0m	Planned for future implementation Details to be published Spring 2020	Yes Pedestrian scale lighting exists in the core area.	The National Capital Commission is undertaking a Review of the Strategic Plan for the Capital Pathway that will detail future trail improvements such as width, user separation, and lighting.

¹² All trail user volume figures are based on available technical studies and/or anecdotal estimates obtained through verbal or written correspondence from local contacts. These figures should be treated as high level estimates only.

Trail Name	Trail Width	User Separation	Lighting	Notes
Martin Goodman Trail	2.6 – >7.0m	Yes Some sections of trail are divided into two separate pathways with landscaping between 3.5m bidirectional bike path and 2.7m pedestrian path	Yes Trail lighting exists along most of the corridor	Recent trail construction has included consideration and inclusion of amenities such as rest stops. The trail at times widens out into a plaza setting along the waterfront.
Meewasin Trail	2.0 – 5.0m	Planned for future implementation Future trail design widths range from 3.0 – 6.0m for a multi-use trail or optional separated bike and pedestrian trails between 3.0 – 4.5m each	Yes Pedestrian scale lighting limited to the downtown core Natural areas are unlit	Meewasin Trail Study (2014) provides design standards of: <ul style="list-style-type: none"> • 3.0m multi-use trail for less than 200 persons per hour • 4.0m multi-use trail for 200 – 300 persons per hour • 6.0m multi-use trail or two 3.0m separate trails for 300 – 600 persons per hour • Two 4.5m separate trails for over 600 persons per hour
Burke-Gilman Trail	3.0 – 5.0m	Yes Sections near the Univ. of Washington have been widened and separated 3.0m asphalt bidirectional bike lanes, 3.0m concrete pedestrian pathway	No With the exception of small sections near the Univ. of Washington	The trail includes a crushed granular shoulder along most of its length, offering a softer surface for runner and joggers. Approx. 3,000 – 4,000 daily users

Trail Name	Trail Width	User Separation	Lighting	Notes
Springwater Corridor	3.7 – 4.3m	No	No	Trail width is limited by site constraints adjacent river and active rail line. Approx.. 600 persons per hour
Chicago Lakefront Trail	5.0 – >10.0m	Yes The trail has been fully separated into a pedestrian bidirectional trail and a bike bidirectional trail.	Yes	The trail at times widens out into a plaza setting along the waterfront. While often located adjacent each other, the pedestrian trail and the bicycle trail at times may be over 200m apart from each other. Approximately 30,000 daily users.
Midtown Greenway	3.7 – 6.0m	Yes Painted lanes and symbols	Yes Some sections under lit including under bridges	Trail located in a trench along a former rail right-of-way. Available trail space is constrained by sloped walls and numerous bridge crossings. Approximately 4,000 – 5,000 daily users

Local Examples of Lit Trails

The following are examples of trails in Greater Victoria that include sections of illumination:

- Town of Sidney installed lighting along a local trail, Weiler Avenue to Ocean Avenue, alongside Patricia Bay Highway – 400m of solar pedestrian scale lighting. This section of trail is being used as an updated route for the Lochside Trail (luminaires remain owned by Sidney). Lighting levels appear to be very low.
- MoTI installed luminaires McKenzie Avenue to Spectrum Lane (500m) along the Galloping Goose, at the request of School District 61, as part of the McKenzie Interchange project. MoTI owns/manages these.
- Lighting in the underpass at Helmcken Road along the Galloping Goose, installed / owned by MoTI.
- City of Victoria has lighting in dark, vegetated areas near the intersection of Dallas Road and Camas Circle (300m) along the new Dallas Road Waterfront Trail.
- Lighting in the pedestrian underpass beneath Highway 1 at Seaton Street, east of Tillicum Road, installed / owned by MoTI.
- University of Victoria has lighting on approximately 600m of various campus pathways.

4.0 Trail Improvement Options

The following section considers trail improvement options for the subject portions of the Galloping Goose and Lochside trails. This includes three candidate trail configuration options based on the best practices review and understanding of current trail dimensions, as well as identifying locations and methods for lighting the trails. Conceptual design plans for all improvement options are included in **Appendix C**.

4.1 Trail Widening / Reconfiguration Options

Three candidate trail configuration options are recommended to be advanced to more detailed study. These options were selected based on both the background research completed of guidelines and best practices, as well as in consideration of the corridor constraints and what might reasonably be achieved on the corridors.

The recommended candidate trail configuration options are as follows:

- Option 1. Widened Multi-Use Pathway
- Option 2. Separated Use Pathway
- Option 3. Separated Pathways with Centre Boulevard

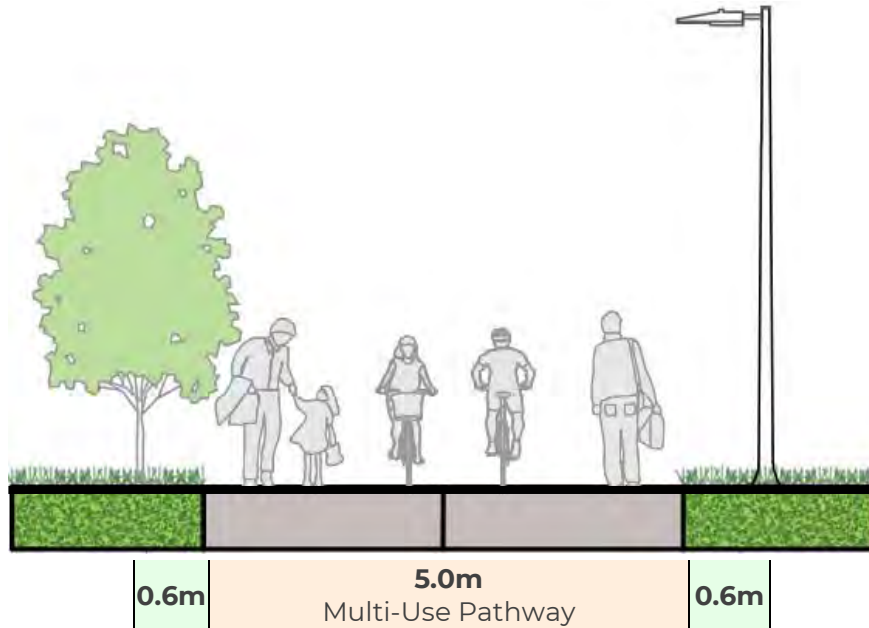
A summary of the key characteristics of each option is provided in **Table 8**. The full corridor long design concepts for each have been included in **Appendix C**, with a high-level summary on the following pages.

Table 8. Summary of Trail Configuration Options

		Option 1. Widened Multi- Use Pathway	Option 2. Separated Use Pathway	Option 3. Separated Pathways with Centre Boulevard
Configuration		Combined Uses	Separated Use Pathway	Separated Uses on Separated Pathways
Width	Total	5.0m	6.5m	8.5m
	Pedestrian	5.0m	2.5m	
	Bicycle		4.0m	

Configuration Option 1.

Widened Multi-Use Pathway



A 5.0m wide multi-use pathway option represents a similar configuration to the current trail condition, but with widening of up to 2.0m along its length. The treatment includes two 2.5m multi-user lanes with a dashed yellow centre line that allows for passing.

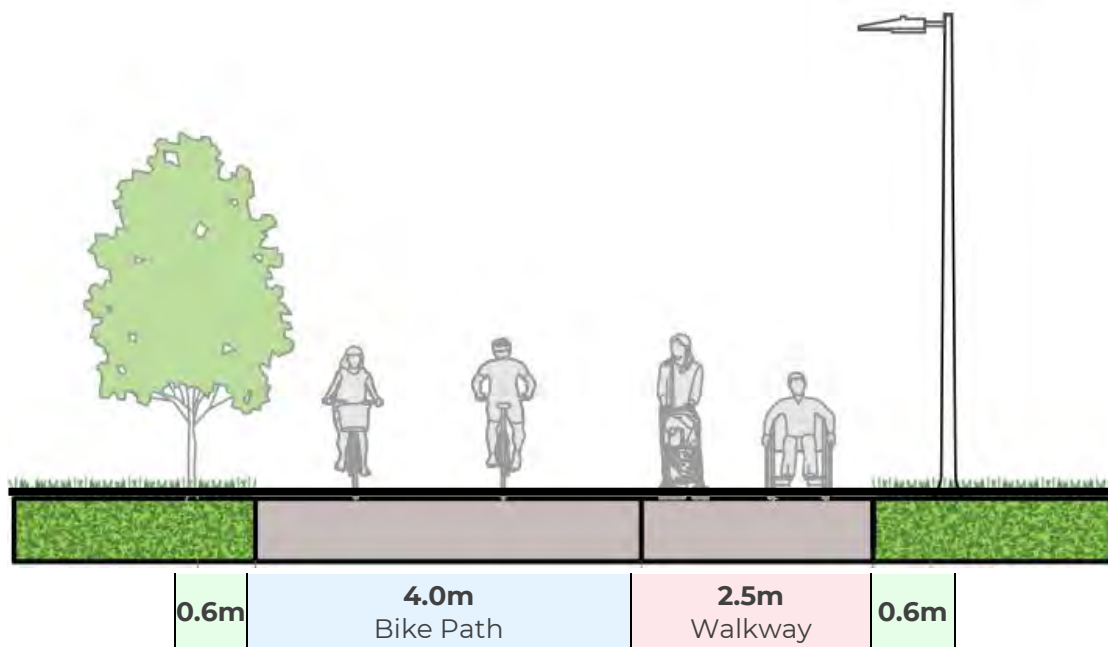
The portion of the Galloping Goose on the east approach to the McKenzie Interchange is an example of a 5.0m wide multi-use trail.

These widths allow for two bikes to pass one another within their lane, or a bike to pass a pedestrian travelling the same direction within the lane. Wheelchairs can safely overtake or be overtaken by cyclists or pedestrians within their lane. Also of importance, a 2.5m lane allows for pedestrians and pedestrians pushing strollers to comfortably travel side-by-side, promoting social interaction and enhancing the trail's recreational function.

The 5.0m width exceeds much of the guidance that is available on multi-use trail widths, which typically suggest a maximum width of 4.0m (note: RTMP Guidelines give consideration up to 7.0m). The high trail user volumes experienced on these trail sections is considered good rationale to increase to the full 5.0m. Further, the works involved in any trail widening are significant and widening to a full 5.0m is recommended if widening is being considered.

The 5.0m multi-use pathway fits beneath all underpasses in the project area but would need reduced width over the bridges. Transitioning to narrower sections over the bridges is easy as cyclists and pedestrians are mixed. At-grade crossings will also be combined crossings.

Configuration Option 2. Separated Use Pathway



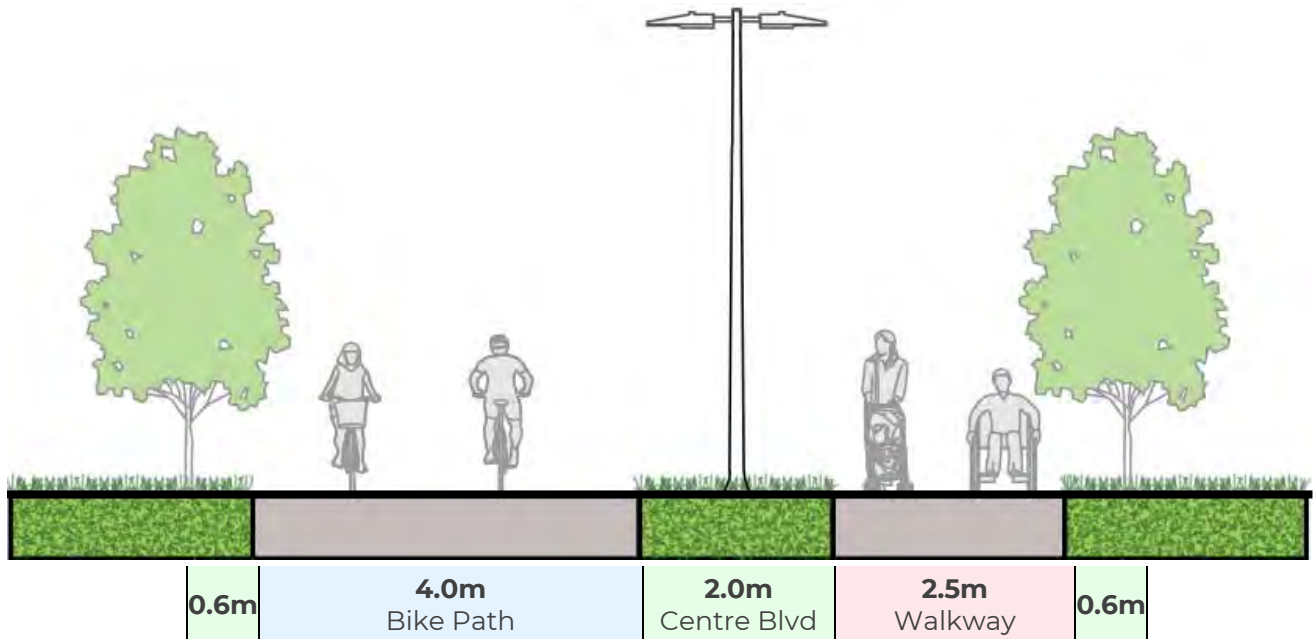
A separated pathway option is considered that includes a 4.0m bike path and a 2.5m walkway. The treatment includes a solid white line separating the cyclist and pedestrian facilities, as well as dashed yellow markings on the bike path and pavement markings indicating the intended user and travel direction in each space.

The primary benefit of this option is the physical separation of cyclists and pedestrians, something which has been identified as desirable in user surveys and which best practices documents indicate as generally appropriate as user volumes increase. The bike path and walkway widths both generally meet preferred facility dimensions in best practices documents. The 4.0m bike path allow for cyclists to comfortably pass one another without impeding on-coming cyclists. The 2.5m walkway facilitates side-by-side pedestrian traffic, as well as comfortable conditions for faster pedestrians overtaking slower ones.

Constrained conditions result in reduced facility widths (but still separated) in the following locations - Burnside Bridge Underpass, Carey Road Underpass, Vernon Avenue Underpass. The separated facility will transition to a combined facility prior to the following locations - Switch Bridge, Brett Trestle, Swan Lake Trestle, Interurban Road Overpass. These locations may include warning signage and pavement marking (i.e., "SLOW") to appropriately message the upcoming change in trail condition.

Configuration Option 3.

Separated Pathways with Centre Boulevard



Another separated pathway option is considered that includes a 4.0m bike path and a 2.5m walkway (as above), but with a 2.0m wide centre boulevard space. The bike path has a dashed yellow centre line and pavement markings indicating the intended travel direction.

The primary benefit of this option over Option 2 is the physical separation of the cycling and walking spaces. The centre boulevard space would generally be grass, with low shrubs in places. All materials would be low maintenance. Rain gardens / stormwater management features could be located in this space, but trees would not be planted in this space due to fall leaves and debris, as well as maintenance concerns. The 2.0m width allows for benches, garbage bins, signs and other furnishings if desired. Lighting would also be located in this area (as opposed to at the side of the trail in other options).

The portion of the Galloping Goose managed by the City of Victoria south of the Selkirk Trestle is a separated pathway with similar widths as shown in this option and a landscaped boulevard between the two facilities of 1.0m – 4.0m in places.

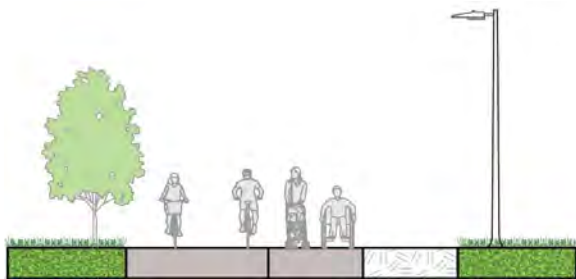
This option is the widest of the three options at 8.5m (plus shy spaces). Similar to Option 2, there are constrained locations where typical cross-section widths have been reduced - Burnside Road Underpass, Carey Road Underpass, Vernon Avenue Underpass.

The separated facility will transition to a combined facility prior to Switch Bridge, Brett Trestle, Swan Lake Trestle, Interurban Road Overpass, and McKenzie Interchange.

4.1.1 Alternative Configuration Options

The following options were given consideration as possible trail reconfiguration options but were ultimately not recommended for further study for various reasons. A brief description of each, including why each is not recommended, is provided below.

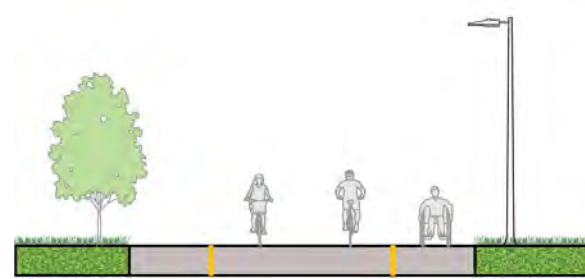
Separated Pathway with Adjacent Soft Surface Trail



Separated bike path and walkway, with an adjacent soft surface trail.

- Greater maintenance required due to tracking granular / chip onto adjacent asphalt area
- Not accessible – extra space does not accommodate wheelchairs
- Drainage can be issue – get mucky and tracks onto asphalt pathway
- User survey and plan documentation does not indicate a strong desire for soft surface in urban trail sections, nor is there the volume of joggers to warrant the added cost and maintenance

Bicycle Path Flanked by Uni-Directional Walkways



A central bike path with uni-directional walkways on either side.

- May lead to further pedestrian and cyclist conflicts as pedestrians cross across bike path
- Enforcing compliant trail user behaviour will be challenging (i.e., pedestrian directional travel, cyclists in pedestrian space)
- Not a standard treatment – will require significant education and signage

Other, more significant interventions were discussed but not advanced to detailed consideration, such as elevated / stacked trail facilities and linear property acquisition for corridor realignment.

4.2 Trail Lighting

The general intent of trail lighting is to improve trail user comfort and safety while negative impacts on nearby properties are mitigated. The general best practice is to consider lighting trails as user volumes increase, which has historically been experienced on the subject trail sections.

Trail lighting may be suitable along much of the corridors for the following specific reasons:

- To increase trail user safety by reducing the potential for trail user collisions during periods of darkness, as well as permitting trail users to recognize hazards and decision points more readily.
- To improve on the trail user sense of personal security by illuminating areas on and adjacent the trails to reduce real and perceived intruder threats during periods of darkness. This specifically addresses two of four Crime Prevention Through Environmental Design (CPTED) principles:
 - Natural surveillance – “see and be seen”
 - Natural access control – see intruders entering trail from access points
 - The other two CPTED principles relate to territorial reinforcement and maintenance, which lighting does not directly impact.
- To aid in wayfinding and navigation during periods of darkness, helping trail users to successfully navigate the trail and supporting navigation at key decision points where a turn movement to/from the trail is required as part of the trail user trip.
- To recognize hazards and irregular trail conditions that would otherwise not be expected, addressing both the fear of and actual safety issue associated with unforeseen hazards.
- To deter deviant and criminal activity as a means to both improve broad trail user comfort and decrease maintenance efforts resulting from vandalism.
- To increase trail use by extending the hours when trail users feel safe and comfortable using the trails, permitting more trail usage during non-peak periods.

Trail lighting may not be suitable through the section of the Lochside Trail through the Swan Lake area as it could have negative impacts on adjacent natural spaces. This includes possible negative impacts on the sleep patterns of wildlife, particularly nocturnal animals, as well as interrupting the natural conditions adjacent wildlife is accustomed to. The installation of lighting includes trenching and other construction activities related to luminaire installation, which would also impact natural areas during construction periods.

The scope of this assignment did not include an environmental assessment of the Swan Lake area and the affects of trail lighting. In addition to the content above, the International Dark Sky Association has stated that artificial lighting can:

- Impact wetland habitats where amphibians exist such as frogs and toads, impacting nocturnal activity, interfering with breeding and reproduction.
- Drawing insects to lighting, making it easier for predators to diminish their species.
- Other means to enhance wayfinding in the Swan Lake area during darkness hours include applying high visibility reflective tape on structures and installing posts with reflectors at regular intervals.

The approach to lighting the trail corridors should include developing a priority-based program that can be rolled out based on the availability of funding toward realizing the long-term lighting strategy. Consideration is to be given to opportunities for partnership with municipalities and other agencies to pursue lighting as nearby infrastructure projects are undertaken. Detail designs for the sections funded for construction should be undertaken well in advance to ensure adequate time for reviews, tendering and construction.

As lighting is pursued, efforts should be made to ensure installation of appropriate lighting that provides the intended illumination benefits and mitigates any possible negative impacts on surrounding areas. The following is recommended:

- Energy efficient LED “warm colour” sources should be used with dimming, time of day and motion detection capability.
- Lighting should be pedestrian scale and have “tight” light control with a suitable “BUG” rating that focuses light on the trail and avoids spillover onto adjacent areas.
- Designs should be economical and concise with respect to light output and light control, energy consumption, longevity, maintenance, installation and replacement.
- Equipment and installations should be selected to mitigate vandalism and theft.
- Lighting levels and uniformity should meet recommended IES RP-8 guidelines.

Diagrams depicting single- and dual-luminaires are shown in **Figure 7**. Single-luminaires would be installed at the trail edge for Options 1 and 2, whereas dual-luminaires would be centrally located in the boulevard space associated with Option 3. The photometric distribution varies with each option, as shown in **Figure 8**, to ensure desired illumination levels are achieved given differing trail dimensions. These diagrams are intended to depict the approximate type/model, dimensions and light output associated with trail lights. Details would be confirmed during subsequent design phases.

Davit poles are to be installed along the trails to illuminate key road crossings. These lights are commonly installed on roadways throughout the Capital Region.

Figure 7. Luminaire Diagram (Option 1 and 2 at left, Option 3 at right)

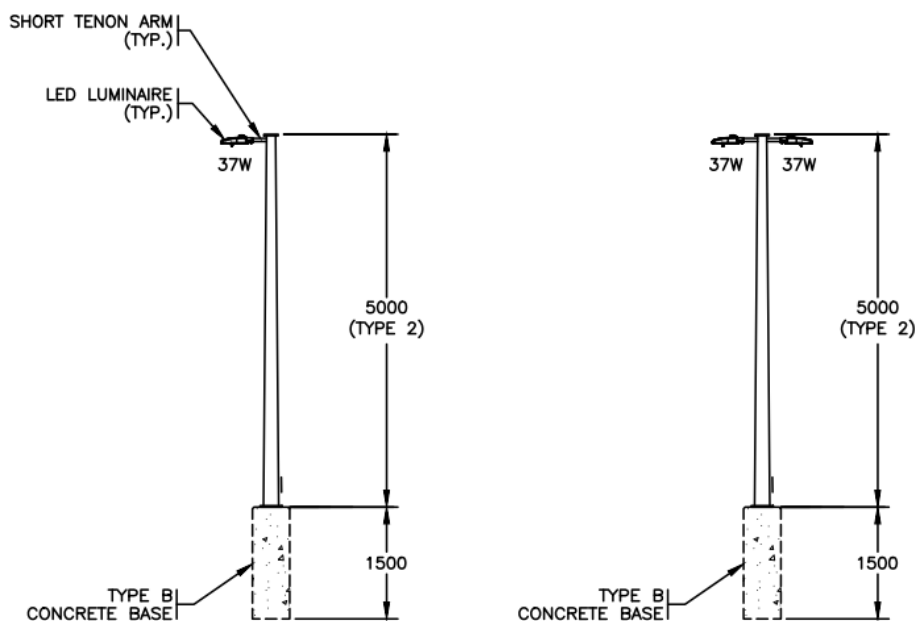
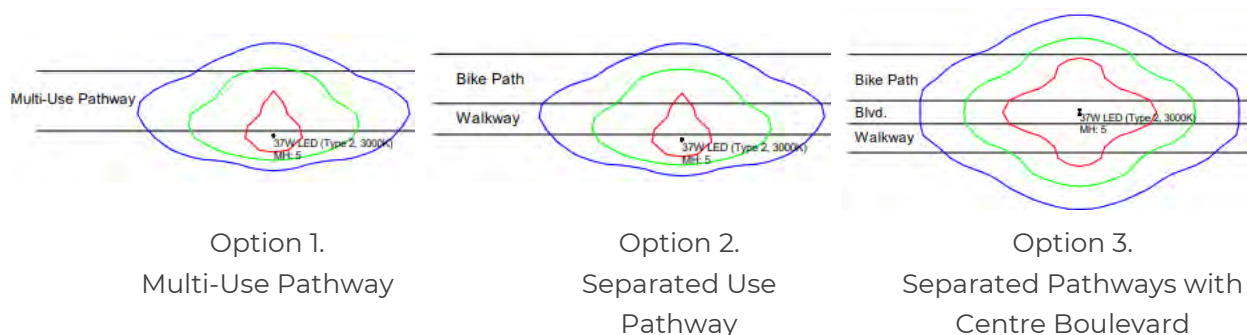


Figure 8. Diagram of Photometric Light Output



Solar light was given consideration as an alternative to hardwired lighting but is generally not suitable due to challenges with solar exposure in many locations throughout the study area. Select locations may be pursued where localized conditions may support solar lighting, as have been identified in **Map 3**, and where solar may be given further consideration as trail lighting is implemented. The following limitations of solar lighting should be noted:

- The capital cost of solar lighting is approximately 1.5- to 2-times higher than the cost of hardwired options due to the greater number of luminaires required.
- Recommended lighting levels cannot reasonably be achieved with solar luminaires, particularly during Winter months when lighting is needed most. The amount of solar energy available in Winter is significantly less than Summer and the power budget required in Winter is significantly greater due to the longer hours of darkness.
- While solar provides approximately \$18 in annual energy savings per luminaire, the greater number of luminaires required to achieve basic lighting levels and reduced energy consumption associated with modern LED luminaires minimizes the energy savings of solar over a hardwired system.

Dimming systems were also given consideration and generally not suitable due to the associated capital costs and limited benefit with respect to power bill savings for this application. The annual power bills for full lighting of the three sections (less the Swan Lake section) are estimated at \$3,000 per year (in 2020\$). The potential power savings by dimming to 50% light output for 50% of the darkness hours would be approximately \$750 per year. The estimated cost for implementation of dimming a dimming system is \$35,000 in capital costs plus \$2,800 per year operating cost. Further, the capital and operating costs of motion detection combined with dimming far exceed the potential power savings. Individual luminaire motion detection on and off is not suitable for cyclists travelling at higher speeds as they would not allow vision more than approximately 30m ahead (a cyclist travelling at 20 km/h is travelling at 5m per second).

5.0 Options Evaluation

The three trail widening/reconfiguration options, including lighting, identified in **Section 4** are evaluated in the following section. This section includes an overview of the evaluation approach (criteria, scoring) and the summary of the results of the evaluation of options. A more detailed description of the evaluation is included in **Appendix D**.

5.1 Evaluation Approach

5.1.1 Criteria

Seven pre-defined criteria were established as the basis for evaluating the three trail widening / reconfiguration options, as follows:

1. Capital Cost
2. Trail User Comfort / Experience
3. Safety / User Conflicts
4. Environmental Impacts
5. Facility Quality
6. Constructability
7. Maintenance / Operations

All criteria are described in detail in **Table 9**, including a description of each, the measure that is to be used, and whether a positive or negative scoring.

Measures






Both quantitative and qualitative evaluation measures have been established. Quantitative measures include capital cost estimates, level of service (LOS) calculations, and quantity measurements from concept design. Qualitative measures are established based on assessment and recommendation by the consultant team.

5.1.2 Scoring

Each widening / configuration option has been assigned a simplified scoring for each criterion ranging from “Very High” to “Very Low”. The scoring is intended to reflect the extent to which each widening / reconfiguration option achieves the intent of the criteria, as identified in **Table 9**.

Assigned scoring is supported by a more detailed assessment contained in **Appendix D**.

Scoring System

Very High	
High	
Moderate	
Low	
Very Low	

Positive / Negative Scoring

Scorings applied to each criterion are either positive or negative, as identified in **Table 9**. Positive scorings (identified with a “+”) are those where a higher or greater evaluation is assigned a higher score. Negative scorings (identified with a “-”) are those where a lower evaluation is assigned a higher score. For example, a lower capital cost indicates the option is less expensive and therefore receives a higher scoring.

Table 9. Trail Widening / Separation Evaluation Criteria






















Criteria		Measure	
1. Capital Cost	The capital cost of the trail widening or reconfiguration	Class “D” cost estimate	-
2. Trail User Comfort / Experience	The relative improvement in trail user comfort and experience as a result of the trail widening or reconfiguration	Trail level of service (FHWA calculator)	+
3. Safety / User Conflicts	The extent to which the trail widening or reconfiguration provides for a safe trail facility and addresses user conflicts	Qualitative evaluation between options	+
4. Environmental Impact	The extent to which the trail widening or reconfiguration impacts environmental features such as trees and natural spaces	Mature trees impacted (approx.) Vegetated space impacted (approx.)	-
5. Facility Quality	The overall quality of design achieved by the trail widening or reconfiguration option, including creating a consistent corridor design, limiting “pinch points” and providing strong transitions between trail sections and changes in facility types	Qualitative evaluation between options	+
6. Constructability	The presence / requirement for slopes, drainage, rock blasting, property encumbrances, constrained existing infrastructure and other challenges that impact the ease of construction	Qualitative evaluation between options	-
7. Maintenance / Operations	The level of maintenance and operational effort required for by the trail widening or reconfiguration	Qualitative evaluation between options	-

5.2 Evaluating Options






















A summary of the evaluation of trail widening / separating options is presented below. The evaluation has been completed at a broad scale using the seven criteria defined above and considered for the three trail sections independently. While parts of the evaluation are quantitative, numeric scoring and weighting factors have not been applied. The intent of the evaluation is not to outright determine the preferred option, but rather to provide a basis for understanding the strengths and weaknesses of each and ultimately supporting the recommended configuration option contained in **Section 6**. This approach is flexible and may be replicated by the CRD or others when considering trail improvements in the future, acknowledging that priorities may change over time and impact the evaluation result.

A summary is provided below for each trail section, with a more detailed description of the evaluation included in **Appendix D**.






















Evaluation Summary,
Section A (Galloping Goose, Selkirk Trestle to Switch Bridge)

	Option 1.	Option 2.	Option 3.
1. Capital Cost			
2. Trail User Comfort / Experience			
3. Safety / User Conflicts			
4. Environmental Impact			
5. Facility Quality			
6. Constructability			
7. Maintenance / Operations			

Evaluation Summary,
Section B (Galloping Goose, Switch Bridge to Grange Road)

	Option 1.	Option 2.	Option 3.
1. Capital Cost			
2. Trail User Comfort / Experience			
3. Safety / User Conflicts			
4. Environmental Impact			
5. Facility Quality			
6. Constructability			
7. Maintenance / Operations			

Evaluation Summary,
Section C (Lochside Trail, Switch Bridge to McKenzie Avenue)

	Option 1.	Option 2.	Option 3.
1. Capital Cost			
2. Trail User Comfort / Experience			
3. Safety / User Conflicts			
4. Environmental Impact			
5. Facility Quality			
6. Constructability			
7. Maintenance / Operations			

5.3 Summary

The Option 3 (Separated Pathways with Centre Boulevard) configuration represents significantly higher capital costs as compared to the other two options (approximately 35% higher than Option 2, 82% higher than Option 1). It also results in the most challenging construction due to the extent of works attributed with the added width and greater maintenance requirements over time. There are also significant environmental impacts in terms of both tree loss and impacted natural areas on the Section A (Galloping Goose) and Section C (Lochside Trail) segments. The quality of the trail facility, user experience, comfort and safety are greatest of the three options, but not significantly greater than Option 2 due to a greater number of “pinch points” resulting from the overall width and challenges with physically separated spaces precluding cyclist run-off in case of unexpected conflict. This last item is particularly relevant given the high cyclist volumes (approximately 80% of trail users) on the subject trails.

In contrast to the Option 3 configuration, Option 1 (Widened Multi-Use Pathway) represents the lowest capital cost of the three options, with its narrower overall width resulting in reduced environmental impacts and advantages in terms of both constructability and maintenance. While widening the trails to 5.0m represents an improvement over most existing trail segments and will help address trail user conflicts, it does not provide the quality of user experience and safety associated with the separated options (Option 2, Option 3), nor the same level of overall facility quality. And while the FHWA LOS calculator returned a similar level of service, these trails are key corridors for commuter cyclists commonly travelling long distances at higher speeds, and separating pedestrians from cyclists represents a significant improvement in addressing safety and user conflicts (as compared to simply widening the multi-use facility).

The Option 2 (Separated Use Pathway) configuration balances the preference for separated uses with a relatively modest increase in trail width and managed overall impacts. The improvement in trail user comfort and safety associated with separating uses is significant and is the preferred approach for these trail sections. The functional widths of both the bicycle path (4.0m) and walkway (2.5m) are appropriate for the anticipated trail user volumes, while the capital cost and impacts of widening to 6.5m overall are significantly less than Option 3 (8.5m total width).

Further, the Option 2 configuration presents flexibility to include a centre boulevard in unconstrained locations (not possible with Option 1) and can be effectively transitioned through constrained locations where reduced trail widths are required. Modifications to the preferred trails widths would be explored in more detail during subsequent design phases.

6.0 Recommendations

The following are the key recommendations of this study with respect to trail widening / separation and lighting.

6.1 Trail Facilities

6.1.1 Reconfiguration

Option 2 (Separated Use Pathway) is the recommended configuration as future improvements are made on the Galloping Goose and Lochside Trail sections that are the subject of this study. This option scored highly in the multi-criteria evaluation completed in this study and reflects best practices with respect to trail user separation and widths.

The recommended configuration consists of a 4.0m bicycle path and 2.5m walkway, with 0.6m buffer area on either side.

Opportunities to limit environmental impacts, as well as optimizing the alignment to minimize costs associated with cuts and fills and other potential impediments, are to be explored through subsequent design phases. This may also include identifying unconstrained locations where additional width and/or a centre boulevard may be achieved with limited capital cost and/or environmental impact.

6.1.2 Implementation Priority

The recommended trail reconfiguration option represents a long-term build-out that will take many years to achieve. As trail improvements will likely be completed in sections as funding becomes available, the following is the recommended phasing of improvements with supporting rationale, as shown in **Map 4**. Recommended phasing may change over time if priorities change and/or opportunities for trail improvement are identified concurrent with other works. Future works should also consider the success of early phases, the level of public support and updated trail user counts over time.

1. Galloping Goose between Selkirk Trestle and Culduthel Road – 1,600m
 - This section of trail has the highest trail user volumes and some of the narrowest current trail widths (approximately 50% of the corridor is <4.0m)
 - Separation of trail facilities can be achieved along entire corridor with only one location of significant narrowing (Burnside Road underpass)
2. Galloping Goose between Culduthel Road and trail junction (including Switch Bridge), and Lochside Trail between trail junction and Darwin Avenue – 700m
 - High volume trail section with a change in trail character from urban to more natural north of Darwin Avenue
 - Could be pursued in combination with trail lighting
 - Support widening of Switch Bridge (currently 4.0m) in coordination with MoTI
3. Lochside Trail, Darwin Avenue to McKenzie Avenue – 1,600m
 - Improvements may be coordinated with Swan Lake and Brett trestle upgrades / replacement
4. Galloping Goose between Lochside Trail junction and Tillicum Road – 950m
 - Current trail widths generally exceed 4.0m, while trail user volumes are lower than other sections
5. Galloping Goose between Tillicum Road and Grange Road – 1,600m
 - Improvements may be completed as bridge over Interurban Road is upgraded/replaced
 - Limited works required west of through McKenzie interchange project area

Map 4. Recommended Trail Widening Implementation Priority



6.2 Lighting

6.2.1 Locations

The recommended approach is to light the portions of the Galloping Goose Regional Trail and Lochside Regional Trail within the study area, with the exception of the 1.3km of the Lochside Regional Trail between Darwin Avenue and Quadra Street, primarily adjacent to Swan Lake. Refer to **Map 5**.

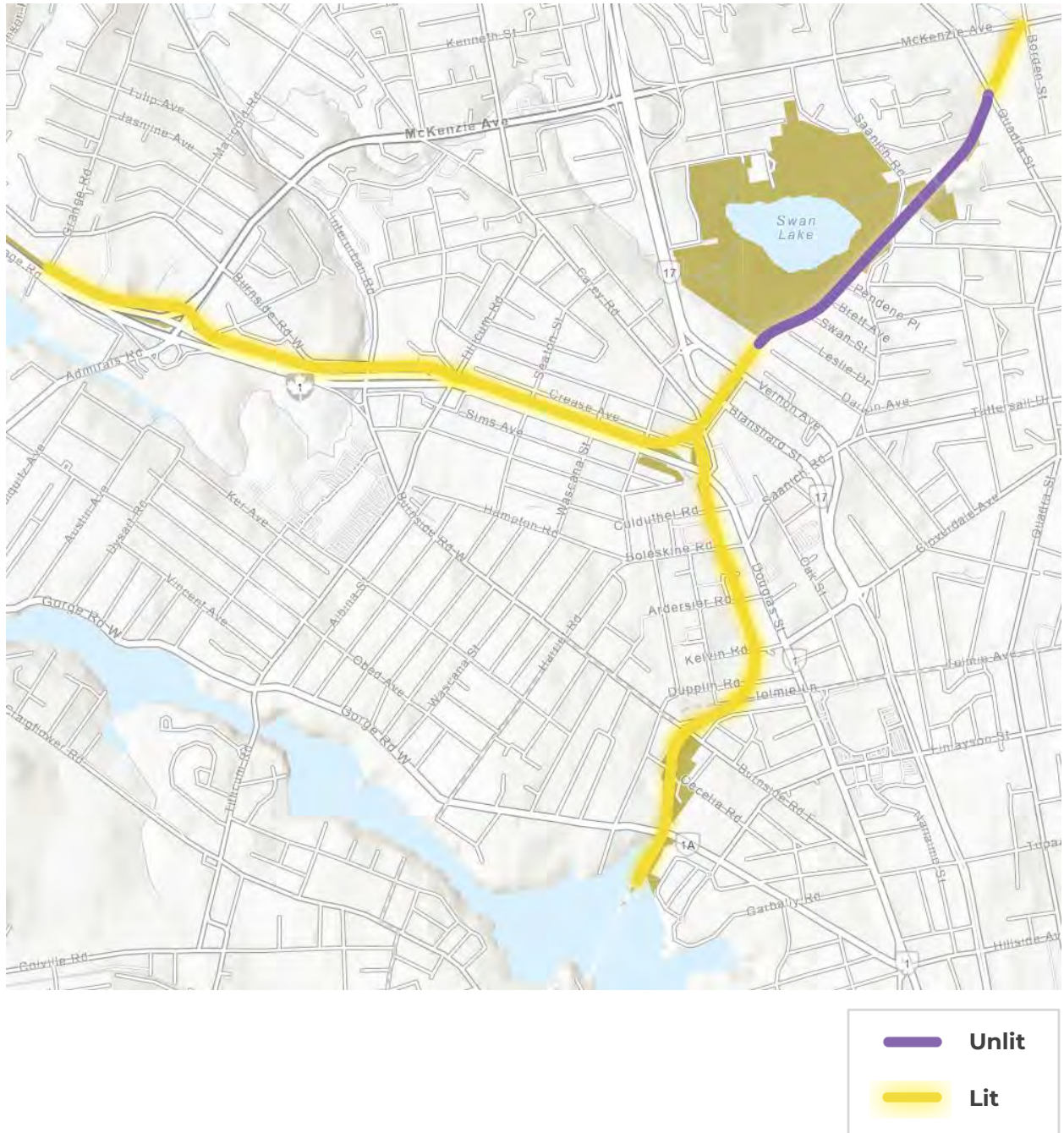
Partnerships or external grant funding should be sought to assist with capital, power and maintenance costs for lighting.

6.2.2 Technology / System

A hardwired system is recommended that employs pedestrian-scaled luminaires at 4.5 - 6.0m in height. Luminaires are to be spaced approximately every 38 - 40m.

Further consideration may be given to lighting technology / options in the Swan Lake section of the Lochside Trail based on consideration of environmental impacts, safety concerns and CPTED.

Map 5. Recommended Long-Term Illumination Approach



6.2.3 Lighting Priority

The recommended approach to trail lighting includes approximately 5.3km of lit pathway within the study area. This represents a long-term build-out that will take many years to achieve, likely occurring as trail improvements are pursued as well as infrastructure projects nearby the trail corridors are undertaken.

Based on the review of applicable standards and guidelines, the recommended priorities for the implementation of corridor illumination are as follows:

1. CRD should request that those who have jurisdiction for the six underpasses install lighting, with priority from longest to shortest:
 - a. Carey Road, Blanshard Street, Vernon Avenue (likely pursued in combination)
 - b. Boleskine Road
 - c. Burnside Road
 - d. Gorge Road
2. The Lochside Regional Trail / Saanich Road intersection, in combination with possible trail and/or road geometric improvements to address overall intersection safety, working cooperatively with the municipality
3. The Galloping Goose / Lochside trail junction to Darwin Avenue (including three underpasses identified above)
4. End points of bridges, with the north end of the Switch Bridge and Galloping Goose / Lochside trail junction as highest priority
5. Intersections between the trail and intersecting roads in partnership with municipalities - District of Saanich and City of Victoria (Tolmie Ave, Dupplin Rd, Kelvin Rd, Ardersier Rd, Barbon Pl, Culduthel Rd, Crease Ave, Tillicum Rd, Darwin Ave, Saanich Rd (identified above)). Lighting would be oriented over the road to illuminate the conflict zone between trail users and motorists as well as the trail to a distance of 25m in each direction from the intersection to illuminate approaching trail users.
6. Remaining trail sections should be prioritized sequentially based on trail user volumes (Section A, Section C, Section B), with consideration of “easy win” sections as demonstration projects.

Acronyms

The following acronyms are used throughout the document.

AASHTO

American Association of State Highway
and Transportation Officials

BUG

Back-up-Glare

CPTED

Crime Prevention Through Environmental
Design

CRD

Capital Regional District

CROW

Information and Technology Centre for
Transport and Infrastructure
(Dutch abbreviation)

FHWA

Federal Highway Administration (United
States)

IES

Illuminating Engineering Society

ITE

Institute of Transportation Engineers

LED

Light Emitting Diode

LOS

Level of Service

MoTI

B.C. Ministry of Transportation and
Infrastructure

OTM

Ontario Traffic Manual

TAC

Transportation Association of Canada

References

American Association of State Highway and Transportation Officials (AASHTO). 2012. *Guide for the Development of Bicycle Facilities*.

British Columbia Ministry of Transportation and Infrastructure (MoTI). 2019. *British Columbia Active Transportation Design Guide*. Province of British Columbia.

British Columbia Ministry of Transportation and Infrastructure (MoTI). 2019. *Electrical and Traffic Engineering Manual*. Province of British Columbia.

Capital Regional District (CRD). 2016. *Regional Trails Management Plan*.

City of Toronto. 2015. *Toronto Multi-Use Trail Design Guidelines*.

CROW. 2016. *Design Manual for Bicycle Traffic*.

Federal Highway Administration (FHWA). 2006. *Evaluation of Safety, Design, and Operation of Shared-Use Paths Final Report*.

Illuminating Engineering Society (IES). 2018. *Recommended Practice for Design and Maintenance of Roadway and Parking Facility Lighting*. New York.

Master Municipal Construction Documents Association. 2014. *Design Guidelines Manual*.

Ministry of Transportation of Ontario. 2013. *Ontario Traffic Manual Book 18: Cycling Facilities*. Province of Ontario.

Transportation Association of Canada (TAC). 2017. *Geometric Design Guide for Canadian Roads*. Ottawa.

Transportation Association of Canada (TAC). 2006. *Guide for the Design of Roadway Lighting, Chapter 16 – Off Road Lighting*.

Vélo Québec. 2010. *Planning and Design for Pedestrians and Cyclists*. Montreal: Vélo Québec.

Appendix A.

TRAIL USER VOLUMES METHODOLOGY

As indicated in the report main body, the available trail user count data sources have limitations and, as a result, a multi-step process was undertaken to establish reliable measures of current trail user volumes. The following is a description of the approach taken to utilizing trail user count data.

Data Sources

The CRD undertakes trail user counts using automated sensor technology installed at key regional park and trail locations, including locations on the Galloping Goose and Lochside trail sections within the study area. Generally one trail data count location was available for each sections analyzed in this study and data was assumed to be representative of that entire section.

The CRD has recently updated some of its trail user count technology and now has two active methods of collecting data. As a result, data from two different sources was used in this study – TRAFx and Eco-Counter. Key differences are summarized below:

- **TRAFx Data:**
 - Provides historic, year-round data dating back to 2009
 - Certain count locations use electro-magnetic loops in the trail surface with capability to only count bicycles (no pedestrians)
 - Other count locations use infrared sensors that count total users but cannot differentiate between cyclists and pedestrians
 - Therefore, there is no reliable pedestrian count data from TRAFx, and total user data appears to be less accurate than the newer Eco-Counter data
- **Eco-Counter Data:**
 - Installed in Fall 2019, therefore no historic data available
 - Newer technology using both infrared sensors and electro-magnetic loops in the trail surface, meaning it can differentiate between cyclists and pedestrians, providing more accurate user counts

The capabilities and date range for each data source are outlined in the table on the following page.

While the available data has limitations, it is considered reliable for the sake of establishing approximate trail user volumes and pedestrian-to-cyclist ratio for the purpose of comparing to trail facilities in other communities and applying guidelines and best practices.

Trail User Volume Data Sources by Section

ID	Section	TRAFx Data			Eco-Counter Data		
		Counter ID	Mode(s) Counted	Date Range	Counter ID	Mode(s) Counted	Date Range
A	Galloping Goose, Selkirk Trestle to Switch Bridge	#24: GG Dupplin Road Bikes	Bikes only	2009-11-19 to 2020-02-09	GG-South-of-Culduthel	Bike + Ped	2020-11-15 to 2020-02-10
B	Galloping Goose, Switch Bridge to Grange Road	#30: GG Switch Bridge Bikes	Bikes only	2009-11-19 to 2020-02-09	GG-West-Harriet	Bike + Ped	2020-11-01 to 2020-02-10
C	Lochside Trail, Switch Bridge to McKenzie Avenue	#39: LS Darwin St Bikes	Bikes only	2009-12-09 to 2020-02-08	LS-South-Nigel	Bike + Ped	2020-11-08 to 2020-02-10

Methodology:

Daily Average User Volume Calculation

- Best practice dictates that the understanding of average daily trail user volumes should be based on peak periods, which the historical TRAFx data suggests occurs during Summer months
- The Eco-Counter stations provide the most accurate data, but the count data extends back only to October 2019 (when these counters were first installed)
- The TRAFx stations provide count data dating back to 2009, but there is no pedestrian data and the total user counts are not accurate
- Therefore, both the Eco-Counter data and the TRAFx data were used to estimate daily average user volumes along each of the three sections, as outlined below:
 1. Eco-Counter data from November 2019 was analyzed to calculate modal split (i.e. the cyclist-pedestrian ratio) for each section (e.g. 20% pedestrian vs. 80% cyclist). November 2019 was selected because it was the month with the highest ridership and one full month of data available (as compared to October, which had high ridership but only partial data available).
 2. TRAFx data from 2015-01-04 to 2020-02-09 was used to calculate average daily cyclists per month for each section. This data range was selected because it represents the longest timespan offering consistent data for all three sections, as partial data gaps exist in the historic data.

3. Average daily pedestrian volumes per month were estimated by taking the cyclist-pedestrian ratio established in the Fall 2019 count data (step #1) and applying it to the average daily cyclist numbers (step #2), with the assumption that the ratio will remain relatively consistent throughout the year. For example, an average of 1,152 cyclists per day use Section A each January. The cyclist-pedestrian ratio for Section A is 82:18. Therefore, in January, an average of 207 pedestrians per day use Section A ($1,152 \times 0.18 = 207$).
4. The total average daily user volume is the sum of the pedestrian and cyclist volumes. Monthly variation in trail user volumes is shown in **Figure 1**. For each section, the months with the lowest and highest average daily trail users were identified, with the busiest month count data summarized in **Table 2**.

Methodology:

Hourly Average User Volume Calculation

- Due to the data limitations discussed above, both the Eco-Counter data and the TRAFx data were again used to estimate hourly average user volumes along each of the three sections, as outlined below:
 1. Eco-Counter data from November 2019 was analyzed to calculate total user volumes per hour for each section. November 2019 was used again for consistency (see reasons discussed above).
 2. Using this data, the percentage of pedestrians and cyclists using the trail during each hourly section was calculated (e.g. on Section A, 10% of all daily pedestrian volumes occur from 15:00-16:00, whereas 8.2% of all daily cyclist volumes occur during that period).
 3. Next, the hourly percentages calculated in step #2 were applied to the average daily user volumes for the busiest month for each section (**Table 2**) to determine the total number of pedestrian and cyclists using the trail during each hourly segment. For example, in Section A, there was an average daily volume of 410 pedestrians in July, the busiest month (as outlined in **Table 2**) and the calculations in step #2 found that 10% of daily pedestrian traffic on Section A occurs at 15:00. Therefore, it was estimated that there was a total of 41 pedestrians at 15:00 on Section A ($410 \times 0.10 = 41$). This calculation was repeated for each hour of the day for both pedestrians and cyclists. The results of this analysis are shown in **Figure 2**.
- Note that due to the data limitations described above, this analysis involved making the assumption that the hourly trends in pedestrian and cyclist user volumes will be similar

in November and in the Summer months. In reality, there may be changes due to warmer temperature and longer daylight hours in the Summer, which can influence when and how (commuting vs. recreation) people utilize trails in the CRD.

Appendix B.

PRECEDENT TRAIL FACILITIES FEATURE SHEETS

1. Vancouver Seaside Greenway	Vancouver, BC
2. Arbutus Greenway	Vancouver, BC
3. BC Parkway	Vancouver, BC
4. Ottawa River Pathway	Ottawa, ON
5. Martin Goodman Trail	Toronto, ON
6. Meewasin Trail	Saskatoon, SK
7. Burke-Gilman Trail	Seattle, WA
8. Springwater Corridor	Portland, OR
9. Chicago Lakefront Trail	Chicago, IL
10. Midtown Greenway	Minneapolis, MN

1. Vancouver Seaside Greenway



Location: Vancouver, British Columbia

Source: Google Street View

Trail Management and Maintenance: City of Vancouver

Population: 2,463,431 in the census metropolitan area (2016 Census)

Adjacent Land Use:

- Adjacent Vancouver Harbour, English Bay and False Creek
- High density residential, mixed use, and lower density neighbourhoods
- Circumnavigates Stanley Park
- Numerous waterfront parks

Trail Characteristics:

Length: 28 km

Width: 6.0 – 7.0 m

Average slope: Less than 5%

Surface materials: Asphalt and paving stone, some sections in parks include granular surfacing

Trail Facility Configuration:

- Separate pedestrian and cycling pathways
 - Trail cross sections vary
 - Standard is 3.0 m bidirectional bike path and 3.0 m pedestrian path
- Separation occurs using painted lines and symbols, signage, materiality, bollards, and landscaping treatments

Trail User Volumes: The Seaside Greenway sees approximately 8,000,000 – 10,000,000 total users per year. Limited counts are currently conducted for bicycles only at six locations along the greenway. The daily user volumes for bicycles only at these locations over an 18-month period (August 2018 – January 2020) show an average of 2,790 daily cyclists. During the peak month of July (2019) the average daily bicycle count was 4,760. Pedestrian data is not available, but anecdotally it is very high.

Lighting: Pedestrian scale pathway lighting used throughout

Facility Design:

The pathway is well landscaped with numerous rest areas. Signage is used to indicate pathway user types. Materiality plays a key role in differentiating the pedestrian and bicycle trails. The bicycle trail is paved in asphalt, while the pedestrian facility differs between unit pavers, concrete, and asphalt along the length of the trail. Unit pavers and/or concrete bands provide further delineation between users.

Notes:

- Trail upgrades recently completed including upgrading accessibility by removing sections of flagstone to replace with unit pavers
- Separation of trail users is close to mandatory for trail design along the Seaside Greenway
- Compliance by users to select either the pedestrian or bicycle path is good, even with adjacent facilities and only the use of paint as a separation tool
- The Seaside Greenway was noted as being successful because it is a continuous path

2. Arbutus Greenway



Location: Vancouver, British Columbia

Source: Google Street View

Trail Management and Maintenance: City of Vancouver

Population: 2,463,431 in the census metropolitan area (2016 Census)

Adjacent Land Use:

- Runs between two parallel roadways along former rail line
- Adjacent lower density and mixed-use neighbourhoods

Trail Characteristics:

Length: 8.5 km

Width: 4.0 – 6.0 m

Average slope: Less than 5%

Surface materials: Asphalt; limited sections have adjacent bark mulch or granular surfacing

Trail Facility Configuration:

- Separate pedestrian and cycling pathways. Trail cross sections range from:
 - 4.0 m – 2.5 m bidirectional bike path and 1.5 m pedestrian path
 - 5.0 m – 2.5 m bidirectional bike path and 2.5 m pedestrian path
 - 6.0 m – 3.0 m bidirectional bike path and 3.0 m pedestrian path

- Adjacent soft surface trail (bark mulch or granular) along portions of greenway where paved trail width is 4.0 m
- Separation occurs through the use of painted lines and symbols, signage, materiality, and landscaping treatments

Trail User Volumes: Hourly counts conducted in 2018 at four locations along the greenway show average user counts of 267 persons per hour with a range of 109 – 429 persons per hour for weekday and weekend counts. The average mode share was 63% bicycles, 32.5% pedestrians, and 4.5% joggers/runners.

Lighting: City of Vancouver is currently conducting a trial study using 30 solar powered, pedestrian-scale lights along the greenway. Permanent lighting is planned to be installed along the entire corridor in the future with pedestrian-scale lampposts (6 m high) spaced approximately every 25 – 30 m. All lights will be LED, with a warmer temperature selected of 3000 kelvin.

The current solar lighting study has been successful so far with only one battery pack failing. The adjacent neighbourhood was initially opposed to the installation of lights due to a worry of light spillage into private yards. After lighting was installed there were no complaints as lighting was directed towards trail and there was no light spillage into yards.

Facility Design:

The current Arbutus Greenway is a temporary trail that was recently installed on a former rail line. After the rail line was removed, the City was finding people already attempting to walk and cycle the corridor, so a temporary asphalt pathway was installed to provide an accessible surface for all users. The initial path was 4.0 m wide. This path width was found to be too narrow for the volume of users. Sections that were initially paved at 4.0 m were retrofitted with an adjacent soft surface pathway to the pedestrian path to increase the overall trail cross section width. The soft surface path was found to not be used by many pedestrians as it is not accessible for wheelchairs or strollers. Later trails were installed at 5.0 or 6.0 m widths to better accommodate user volumes.

The entire trail is separated between pedestrians and cyclists, mainly using a painted line, symbols and signage. A Vision for the Arbutus Greenway has been completed, but not yet constructed. The final design will see full separation between bicycles and pedestrians with a minimum 1.0 m landscaped buffer, with occasional 2.0 m wide buffer where space permits. Lighting will be installed in the landscape buffer to light both pathways.

Notes:

- The City initially planned to mill out a 1.0 m buffer on the 6.0 m wide trail between the pedestrian and bicycle paths, but the community pushed back and wanted the full 6.0 m available as accessible surfacing

- A buffer between pedestrians and cyclists was milled out of the asphalt at intersections to assist in setting crossings
- To reduce costs on lighting installation, the City is testing screw piles versus poured piles for lampposts
- Initial results from solar lighting trial are very promising
- Lessons learned include facilitating a community stewardship group or program to assist in trail maintenance, planning, programming, etc.
- Trail amenities including benches and port-a-potties have been installed and have been well received

3. BC Parkway



Source: Google Street View

Location: Vancouver, British Columbia

Trail Management and Maintenance: TransLink

Population: 2,463,431 in the census metropolitan area (2016 Census)

Adjacent Land Use:

- Runs parallel to the Expo SkyTrain Line
- Connects Surrey City Centre, New Westminster, South Burnaby, and Vancouver
- Adjacent land uses include transit-oriented neighbourhoods, low-high density residential, industrial, commercial, mixed-use, and parks and open space

Trail Characteristics:

Length: 26 km

Width: 2.5 – 3.0 m

Average slope: Less than 5%

Surface materials: Asphalt and limited areas with paving stone

Trail Facility Configuration:

- Asphalt multi-use pathway

- Signage and stencils indicate shared use path

Trail User Volumes: Bike monitoring program in process of being installed. Limited user intercept surveys conducted in 2016 showed approximately 200 – 300 persons per hour with no breakdown between modes.

Lighting: Majority of trail is lit. Standard is one pedestrian-scale lamppost every 25 m. TransLink will attempt to negotiate arrangements with municipality that TransLink will pay for the capital costs for lighting installation, but then the municipality will assume operating and maintenance costs. TransLink is beginning to explore solar lighting and guideway lighting.

Facility Design:

The pathway is well landscaped with numerous rest areas. Signage is used to indicate a shared pathway.

Notes:

- Transition areas, rest areas, and areas where cyclists may dismount have been difficult to manage and design to reduce conflicts between users. Additional space is required in these areas.
- TransLink has developed a conceptual design report for improvements to the BC Parkway. Conceptual design is for separated pathways for pedestrians and cyclists of 2.5 to 3.0 m.

4. Ottawa River Pathway



Source: Google Street View

Location: Ottawa, Ontario

Trail Management and Maintenance: National Capital Commission (NCC)

Population: 1,323,783 in the census metropolitan area (2016 Census)

Adjacent Land Use:

- The trail runs parallel to the Ottawa River connecting the greenbelt through the core of Ottawa
- The trail is part of the larger Capital Pathway Network of over 250 km of trail
- The trail is located in a linear greenway, largely running between a roadway and the river as well as passing behind Parliament
- Adjacent land uses are largely residential, commercial and institutional

Trail Characteristics:

Length: 48 km

Width: 3.0 – 4.0 m

Average slope: Less than 5%

Surface materials: Asphalt in the core and crushed granular in the greenbelt

Trail Facility Configuration:

- Asphalt multi-use pathway
- Signage and stencils indicate shared use path

Trail User Volumes: Trail user volume was not available at this time.

Lighting: The trail is lit in the core downtown area of Ottawa. As the trail extends from downtown it is not lit. The NCC is working towards lighting areas of the trail with a priority for sections under bridges and underpasses.

Facility Design:

The trail is a typical multi-use pathway shared pathway located in a linear greenway along the Ottawa River. There are numerous trail amenities located adjacent the trail such as rest stops.

Notes:

- The NCC is currently completing an Update to their strategic plan the *Pathway Network for Canada's Capital Region* from 2006. The updated plan will be presented to the public for review in spring 2020.
- The updated plan will include scenarios for the future separation of pathways between users and will identify priority areas to explore further.

5. Martin Goodman Trail



Source: Google Street View

Location: Toronto, Ontario

Trail Management and Maintenance: The City of Toronto

Population: 6,417,516 in the census metropolitan area (2016 Census)

Adjacent Land Use:

- Runs along the waterfront crossing the entire city located between Lake Ontario and Lake shore Boulevard West and the Gardiner Expressway
- Connects to the larger 730 km Waterfront Trail around Lake Ontario
- Adjacent land uses largely include parks and open space, high density residential, commercial, and mixed use

Trail Characteristics:

Length: 56 km

Width: 2.6 – >7.0 m

Average slope: Less than 5%

Surface materials: Asphalt, concrete and paving stone

Trail Facility Configuration:

- Separate concrete pedestrian and asphalt cycling pathways occasionally with landscaping separating the two pathways. Trail cross sections widths:
 - 3.5 m bidirectional bike path and 2.7 m pedestrian path
 - Separation is indicated through signage and stencils
- Separate paving stone pedestrian pathway/plaza spaces with a 3.5 m wide asphalt pathway cutting through for cyclists and other faster moving users
- Other sections of the trail are asphalt multi-use pathway of varying widths
 - Signage indicates shared use path

Trail User Volumes: Trail user volume was not available at this time.

Lighting: The majority of the trail is lit through a combination of pedestrian scale pathway lighting and roadway lighting.

Facility Design:

The pathway is located in a high-density urban setting that is well landscaped with numerous rest areas. Signage is used to indicate a shared pathway as well as for the separated pathways. Wayfinding signage is present as well as a constant painted double blue line painted down the centre of the trail which can be used as additional wayfinding.

Notes:

- The trail connects onto an on-road protected bicycle lane with adjacent sidewalk for pedestrians on Queens Quay West. The protected bike lane transitions to a separated bicycle pathway adjacent the pedestrian sidewalk before merging back into a shared multi-use pathway at the eastern terminus of Queens Quay East.

6. Meewasin Trail



Location: Saskatoon, Saskatchewan

Source: Google Street View

Trail Management and Maintenance: Inside the City of Saskatoon, the Meewasin Valley Authority (a non-profit organization) builds the trail and the City of Saskatoon maintains the trail through a formal agreement. Outside the city, the Meewasin Valley Authority builds and maintains the trail.

Population: 295,095 in the census metropolitan area (2016 Census)

Adjacent Land Use:

- Runs parallel to the South Saskatchewan River along both sides
- The trail is largely located in a linear greenway along both sides of the river
- Adjacent land uses include residential, downtown, parks and open space, institutional and industrial lands

Trail Characteristics:

Length: 80 km

Width: 2.0 – 5.0 m

Average slope: Path varies from 0-10% slopes due to its location in a river valley

Surface materials: The majority of the trail is asphalt. There is concrete at seating nodes, paving stone located in the downtown sections, and some connector trails are dirt (no surfacing).

Trail Facility Configuration:

- Asphalt multi-use pathway that varies in width and surface material

Trail User Volumes: In 2019, approximately 1.65 million users used the Meewasin Trail. User counts were conducted in 2012 and 2013 as part of a 2014 Trail Study. These counts determined that there was a mode share of 57% pedestrians and 43% cyclists along the Meewasin Trail. The counts also saw a systemwide average peak volume of 89 users per hour with a high peak volume of 164 persons per hour.

Lighting: Some sections of the trail are lit. These sections are mainly confined to the downtown. There is currently no lighting policy for the trail and lighting is included in trail projects on a project by project basis.

Facility Design:

The trail is set largely in a linear greenway along the river. There are numerous rest areas and greenspace for recreational activities.

Notes:

- A Trail Study was completed in 2014 that is now guiding current and future trail widening and enhancement projects.
- The Meewasin Trail Study (2014) provides design standards of:
 - 3.0m multi-use trail for less than 200 persons per hour
 - 4.0m multi-use trail for 200 – 300 persons per hour
 - 6.0m multi-use trail or two 3.0m separate trails for 300 – 600 persons per hour
 - Two 4.5m separate trails for over 600 persons per hour

7. Burke-Gilman Trail



Source: Google Earth

Location: Seattle, Washington

Trail Management and Maintenance: TransLink

Population: 3,867,000 in the Seattle-Tacoma-Bellevue, WA Metropolitan Statistical Area (2017)

Adjacent Land Use:

- The Trail runs from Golden Gardens Park in Ballard east, through the University of Washington Campus and then north around the perimeter of Lake Washington until ending in Bothell to the east.
- Adjacent land uses include low-medium density residential, institutional, commercial, mixed-use, and parks and open space

Trail Characteristics:

Length: 43 km

Width: 3.0 – 6.0 m

Average slope: Less than 5%

Surface materials: Asphalt with crushed granular shoulder on one side. Section near the University of Washington also includes a concrete pedestrian pathway.

Trail Facility Configuration:

- Asphalt multi-use pathway of varying widths
- Signage and stencils indicate shared use path at some intersections stencils direct pedestrians to one side of the trail and bidirectional flow for bicycles. Paint and stencil markings do not carry on beyond the intersection
- One recently reconstructed section along Seaview Avenue NW includes separate pathways. The separate pathways consist of:
 - 3.0 m wide asphalt pathway for bidirectional bicycle travel (not painted)
 - 1.5 m wide concrete sidewalk for pedestrian travel
 - Both pathways are stenciled for their individual users
- Through the high-volume area near the University of Washington, separate pathways have recently been constructed. The separate pathways consist of:
 - 3.0 m wide asphalt pathway with markings for bidirectional bicycle travel
 - 3.0 m wide concrete pathway for pedestrians

Trail User Volumes: The trail sees approximately 3,000 – 4,000 users per day.

Lighting: The trail is not lit except for small sections near the University of Washington that has pedestrian scale lighting.

Facility Design:

The pathway is well landscaped with vegetation but does not possess many amenities for users except for the section through the University of Washington.

Notes:

- The trail has a well publicized safety code that includes:
 - Go slow
 - Keep right
 - Respect others
- The trail also has posted and publicized information on trail etiquette that includes:
 - Bicycles should yield to pedestrians
 - Bicycles should give audible warnings when passing on the trail
 - All riders should ride at a safe speed and avoid pace lines and pack riding
 - Fast cyclists should use alternate routes

- Walkers, runner, and skaters should watch for other trail users and listen for audible signals to allow faster users to pass safely
 - When the trail is congested, form a single line to the right
 - Dogs should be on a leash of a maximum of 8 feet
- The Burke-Gilman Trail is one of the first rail to trail conversions in North America with the first portion of trail dedicated in 1978.

8. Springwater Corridor



Location: Portland, Oregon

Source: Urban Systems

Trail Management and Maintenance: Portland Parks and Recreation (for section in City of Portland); City of Milwaukie and unincorporated Clackamas County.

Population: 2,478,996 in the Portland–Vancouver–Hillsboro Metropolitan Statistical Area (2018 Census)

Adjacent Land Use:

- Runs parallel an existing rail line as well as along a former rail line from Boring, Oregon to Portland connecting to the Eastbank Esplanade
- Adjacent land uses include general employment, open space, low-high density residential, commercial mixed-use, commercial residential, industrial, and institutional.

Trail Characteristics:

Length: 34 km

Width: 3.7 – 4.3 m

Average slope: Less than 5%

Surface materials: Asphalt

Trail Facility Configuration:

- Asphalt multi-use pathway
- Signage indicates shared use path

Trail User Volumes: Volunteer counts are conducted at several locations along the trail in September of each year. Most recent counts for 2018 and 2019 show approximately 600 people per hour on the trail at the eleven locations counted.

Lighting: The trail is not lit. There are no plans to light the trail at this time.

Facility Design:

The pathway is a very typical shared multi-use pathway. There are limited trail amenities as well as limited trail access points.

Notes:

- The trail design has always been constrained by the corridor in which it is located. Between being located adjacent a river, an active rail line, and steep banks, there is no room for a wider trail, or a trail separated between users.
- Ideally would have considered a bifurcated trail between pedestrians and cyclists, but reality is constraints limit the width.
- Current practice in the City of Portland is to bifurcate trails between users.
- Lighting was never included due to budget constraints.

9. Chicago Lakefront Trail



Source: Chicago Park District

Location: Chicago, Illinois

Trail Management and Maintenance: The City of Chicago Park District

Population: 9,533,040 in metropolitan area (2018 Census)

Adjacent Land Use:

- The Lakefront Trail runs alongside Lake Michigan between the Edgewater and South Shore neighbourhoods
- The trail is located entirely in a linear greenspace along the waterfront and is separated from adjacent development by roadways including North Lake Shore Drive and South Lakeshore Drive
- The trail runs through and past numerous waterfront parks including Lincoln Park, Grant Park, and Jackson Park. The trail also passes Soldier Field.

Trail Characteristics:

Length: 30 km

Width: 5.0 – >10.0 m

Average slope: Less than 5%

Surface materials: Asphalt

Trail Facility Configuration:

- The trail is fully separated into separate asphalt pedestrian and cycling pathways
 - The cycling pathway is a minimum of 3.5 m wide for bidirectional travel
 - The pedestrian pathway width varies, at times widening into larger pedestrian plaza spaces along the waterfront
 - Pedestrian access paths are a minimum of 1.8 m

- The two trails are often separated with landscaping, at times they can be over 200 m apart with large greenspaces in between them
- When the trails are co-located painted buffer spaces of a minimum of 1.0 m are used to separate the trail users
- Extensive use of paint and stencilling are employed to differentiate the two pathways as well as the bidirectional nature of both pathways
- At high volume conflict points and trail intersections, the trails may also be widened and turning lanes may be provided

Trail User Volumes: The Lakefront Trail sees approximately 30,000 daily users on weekdays. On summer weekends this number increases to approximately 100,000 daily users.

Lighting: Both the pedestrian and bicycle trails are lit with pedestrian scale lampposts.

Facility Design:

The pathway is well landscaped with numerous rest areas and park amenities. Signage and extensive stencilling are used to indicate pedestrian and bicycle pathways. Intersecting pathways include stop and yield paint and signage control to help direct traffic.

Notes:

- In 2016, the City of Chicago laid out plans to separate the entire Lakefront Trail to create separate pathways for pedestrians and cyclists to alleviate significant trail congestion and conflict between cyclists and pedestrians. The project was completed in December 2018.
- The City of Chicago has published a Lakefront Trails Pathway Symbol Reference Guide to provide information on the various paint markings used on the trail. Markings include “SLOW”, “LOOK”, speed reduction markings, and yield markings.

10. Midtown Greenway



Location: Minneapolis, Minnesota

Source: Google Street View

Trail Management and Maintenance: City of Minneapolis

Population: 4,014,593 in the Minneapolis-St. Paul MN-WI Combined Statistical Area (2018 Census)

Adjacent Land Use:

- Trail located on former rail line. Majority of trail located in below grade trench.
- Connects Mississippi River to Cedar Lake Trail in west Minneapolis
- Adjacent land uses include low-high density residential, industrial, commercial, cultural/entertainment, public/institutional, mixed-use, and parks/open space

Trail Characteristics:

Length: 9.2 km

Width: 3.7 – 6.0 m

Average slope: Less than 5%

Surface materials: Asphalt

Trail Facility Configuration:

- Separate pedestrian and cycling pathways
 - Trail cross sections vary
 - Standard is 3.0 – 4.0 m bidirectional bike path and 2.0 m pedestrian path
- Separation occurs through the use of painted lines and symbols, and signage

- Narrower path at western terminus of trail becomes multi-use pathway with painted centre line

Trail User Volumes: Limited counts in 2016 showed approximately 3,800 – 4,250 daily users at select locations along the trail with a mode split varying between 5-20% pedestrians. Currently estimates are that the Greenway sees approximately 4,000 – 5,000 daily users with an estimate of 1,500,000 annual users.

Lighting: Majority of trail is lit. Some sections are noted as being underlit with too great spacing between light poles. There are many underpass crossings along the trail, some of which are also not lit well enough. Lighting was installed when trail was built.

Facility Design:

The pathway is situated along a former rail line with a significant portion of the trail situated below grade in a trench. The pathway design is limited by the location in the trench and the numerous bridge crossings with their supports.

Notes:

- The location of the trail in the trench provides limited access points along the trail. Access is limited to ramps and stairs. Additional access is desired.
- The trail has few amenities along it, more amenities (rest stops, wayfinding signage) are desired.
- The trail has struggled with safety issues and concerns since constructed. The addition of lighting at stairways and ramps has seen a reduction in crime incidents.

Appendix C.

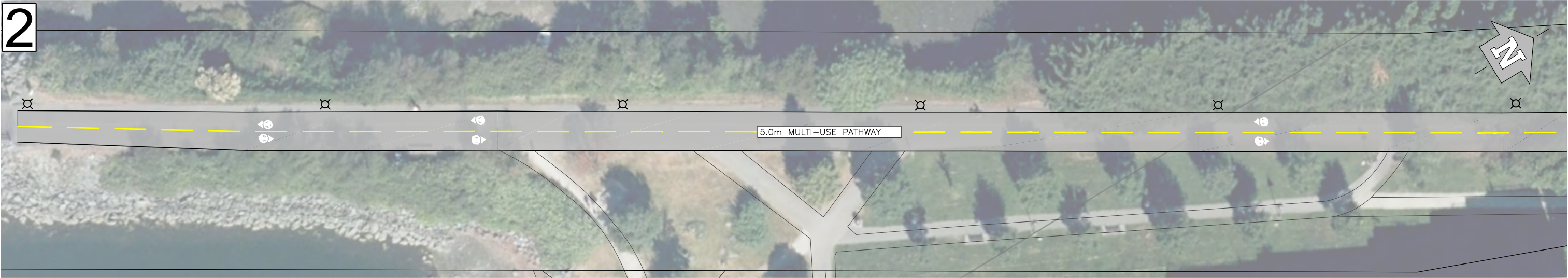
CONCEPTUAL DESIGN PLANS



1



2



3



URBAN
systems

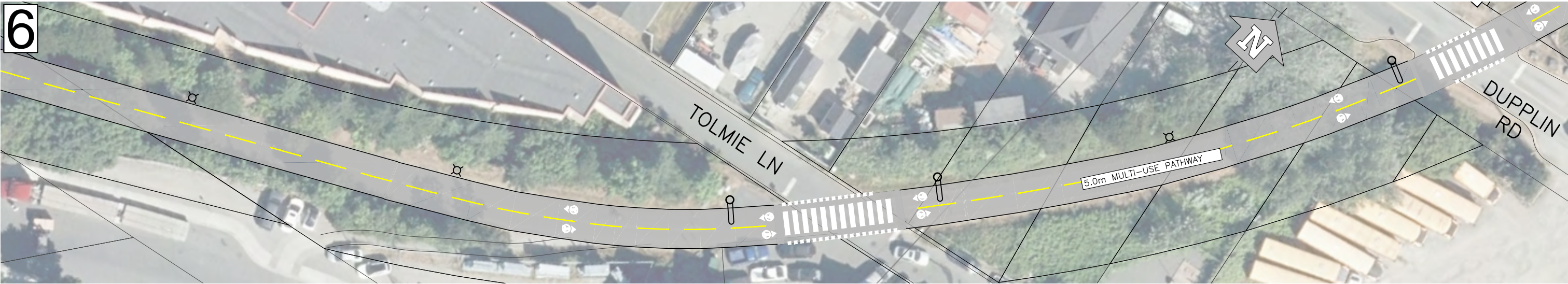
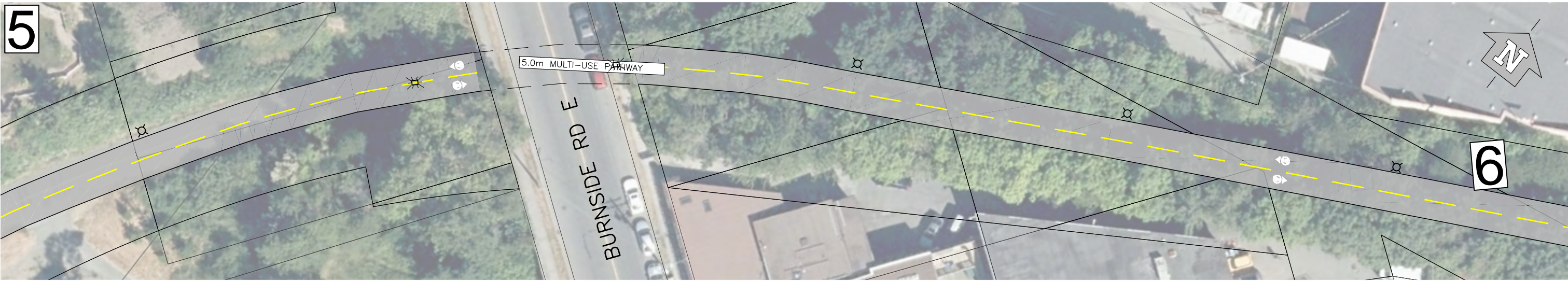
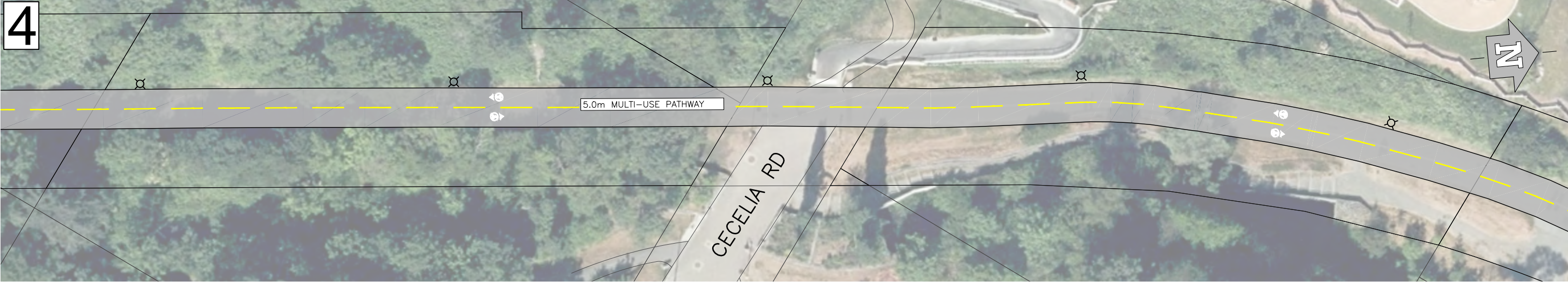
--- Underpass

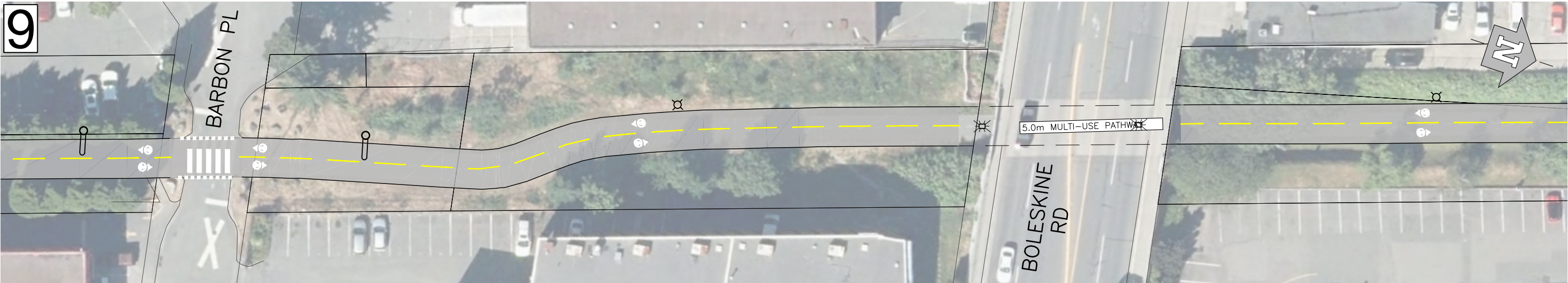
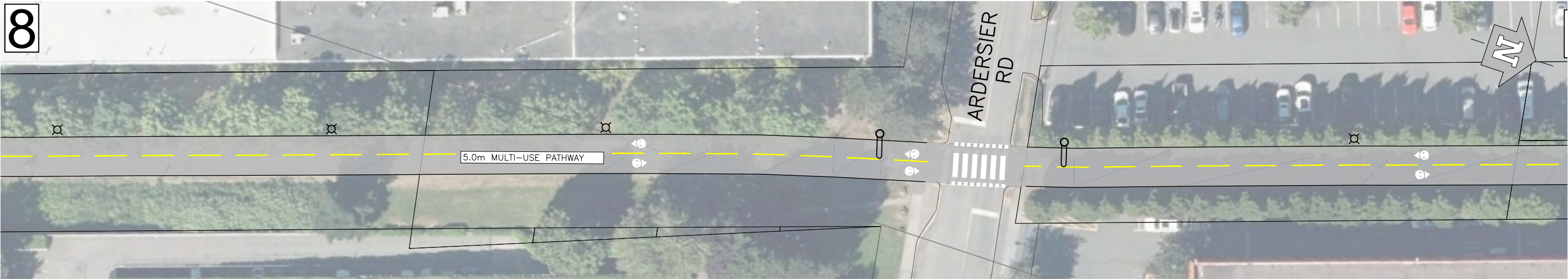
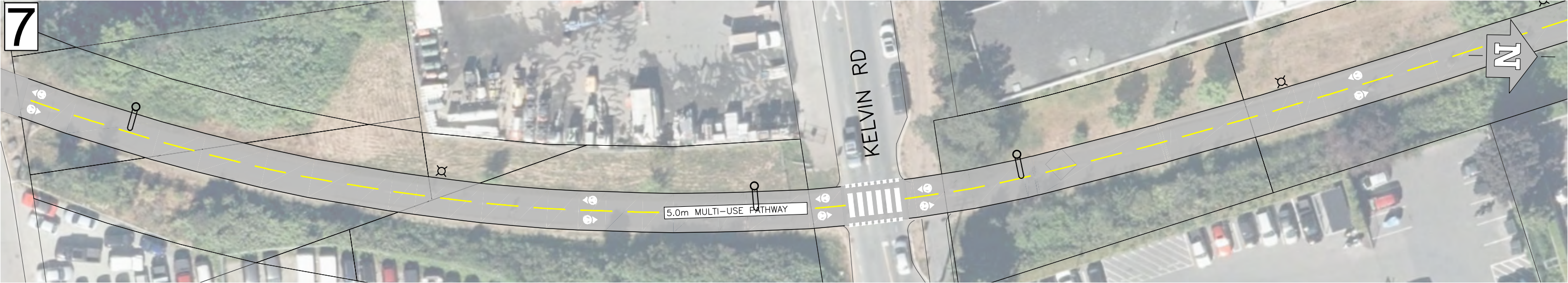
Issued for
100% design
April 29, 2020
urbansystems.ca

Section A

Client/Project		
CAPITAL REGIONAL DISTRICT (CRD) Regional Trails Widening Study		
Scale	Revision Date	Figure
1:500	2020-04-29	1
Title		

Section A
OPT 1-1





URBAN
systems

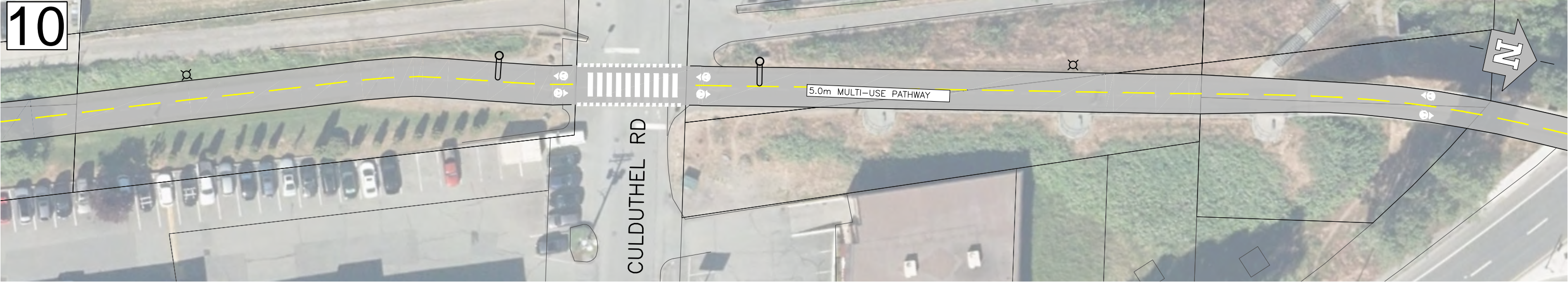
--- Underpass

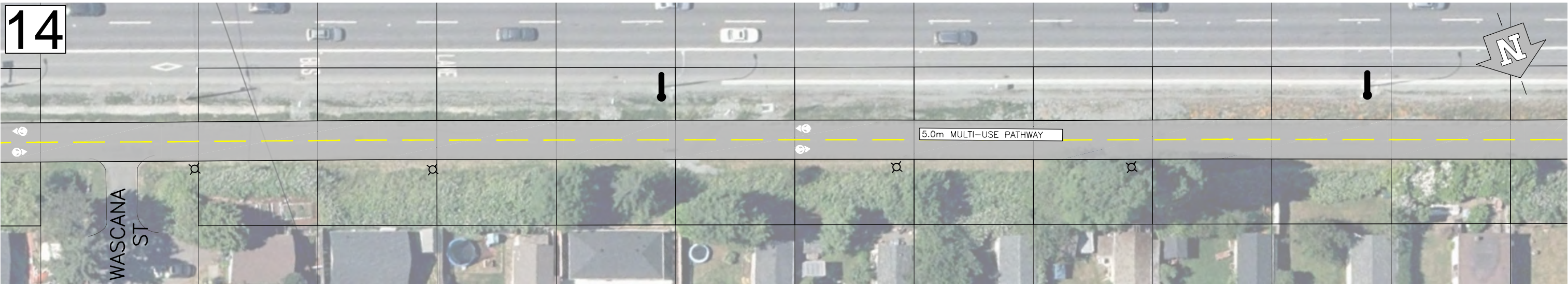
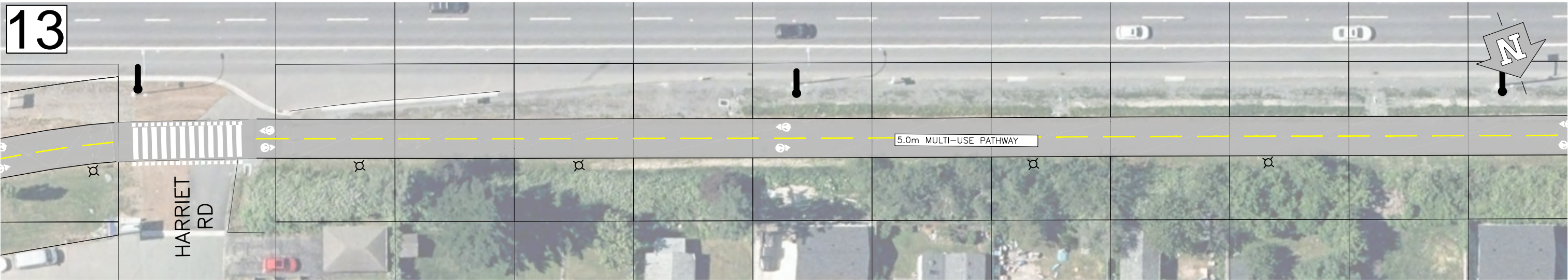
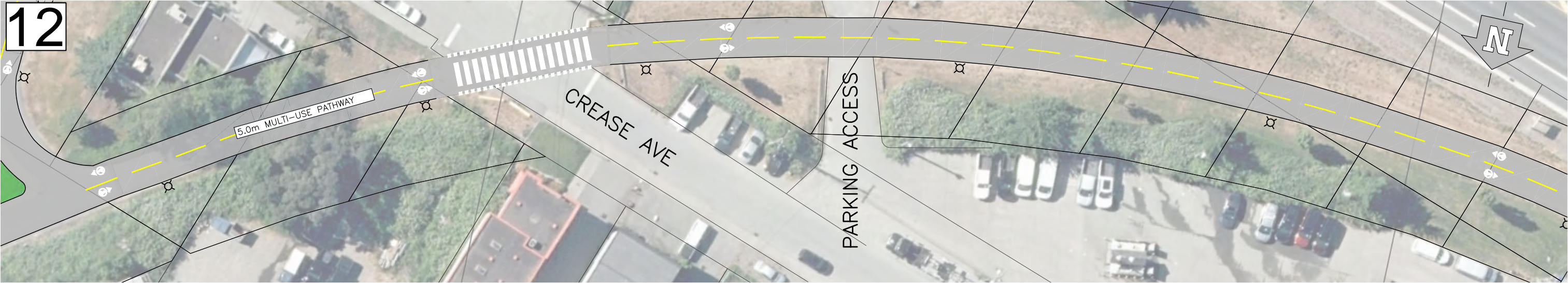
Issued for
100% design
April 29, 2020
urbansystems.ca

Section A

Client/Project		
CAPITAL REGIONAL DISTRICT (CRD) Regional Trails Widening Study		
Scale	Revision Date	Figure
1:500	2020-04-29	3
		Title

Section A
OPT 1-3





URBAN
systems

--- Underpass

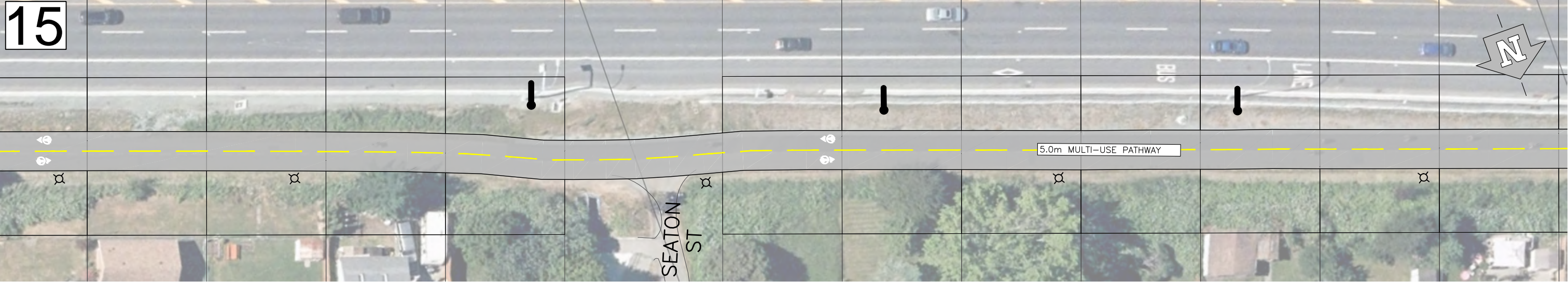
Issued for
100% design
April 29, 2020
urbansystems.ca

Section B

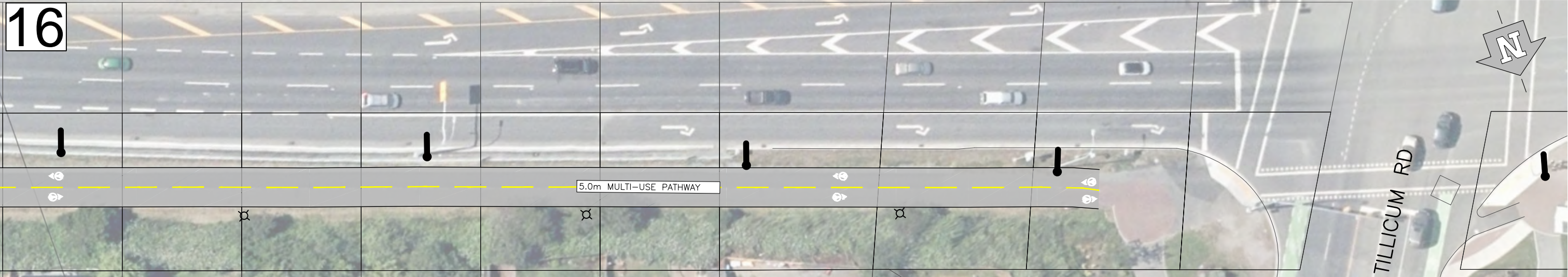
Client/Project		
CAPITAL REGIONAL DISTRICT (CRD) Regional Trails Widening Study		
Scale	Revision Date	Figure
1:500	2020-04-29	5
Title		

Section B
OPT 1-5

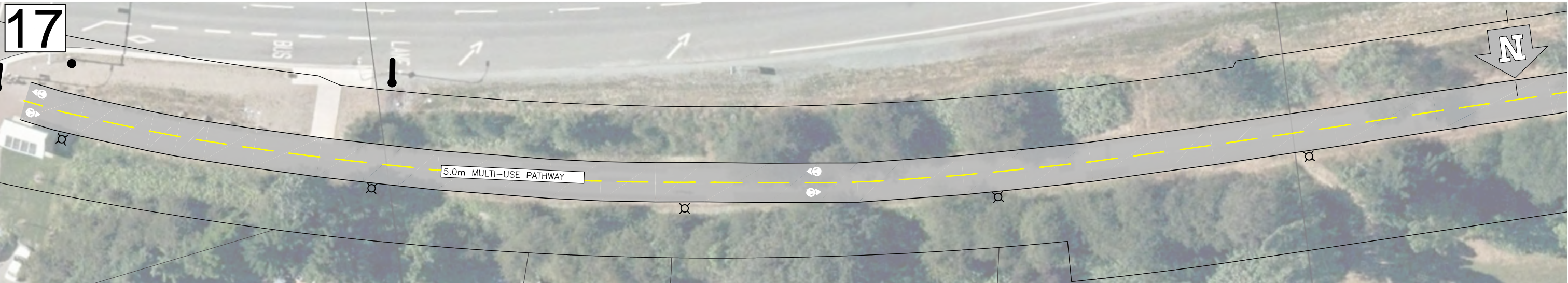
15



16



17



URBAN
systems

--- Underpass

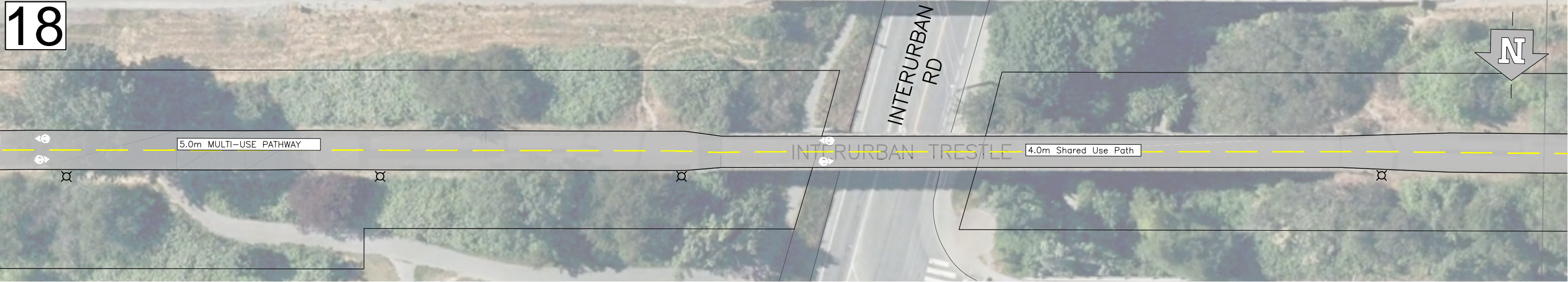
Issued for
100% design
April 29, 2020
urbansystems.ca

Section B

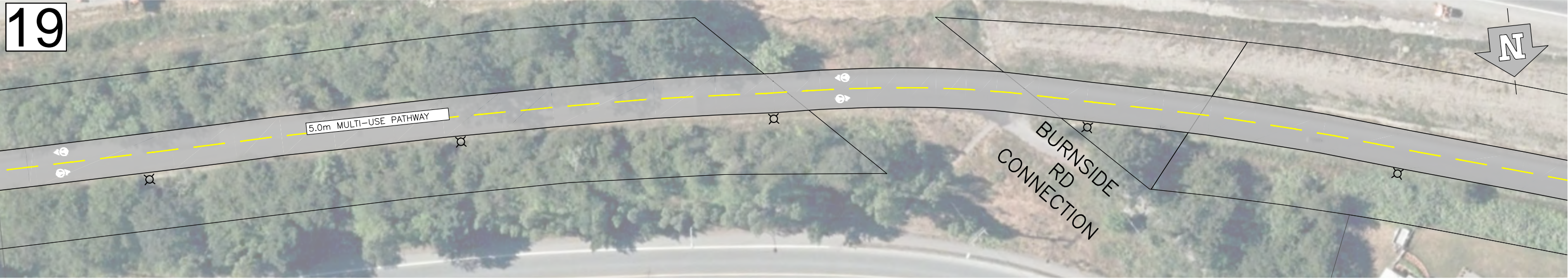
Client/Project		
CAPITAL REGIONAL DISTRICT (CRD) Regional Trails Widening Study		
Scale	Revision Date	Figure
1:500	2020-04-29	6
Title		

Section B
OPT 1-6

18



19



20



URBAN
systems

----- Underpass

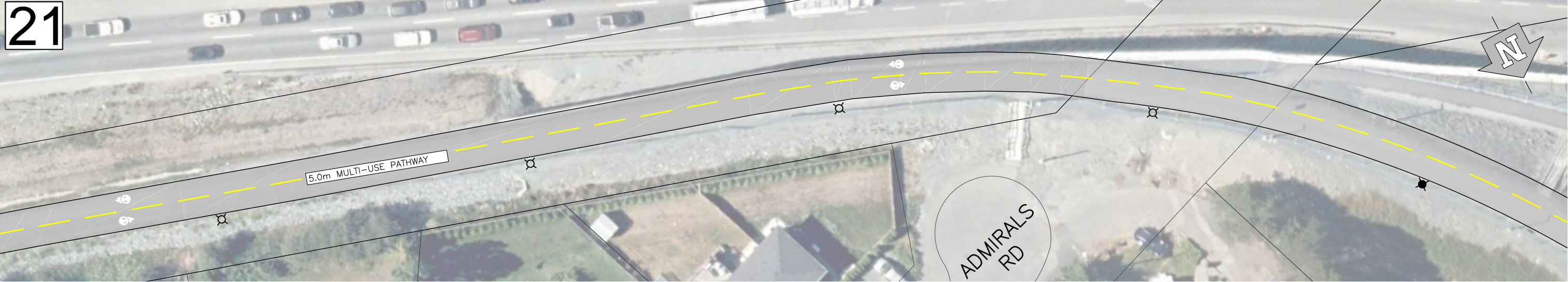
Issued for
100% design
April 29, 2020
urbansystems.ca

Section B

Client/Project		
CAPITAL REGIONAL DISTRICT (CRD) Regional Trails Widening Study		
Scale	Revision Date	Figure
1:500	2020-04-29	7
Title		

Section B
OPT 1-7

21



22



23



URBAN
systems

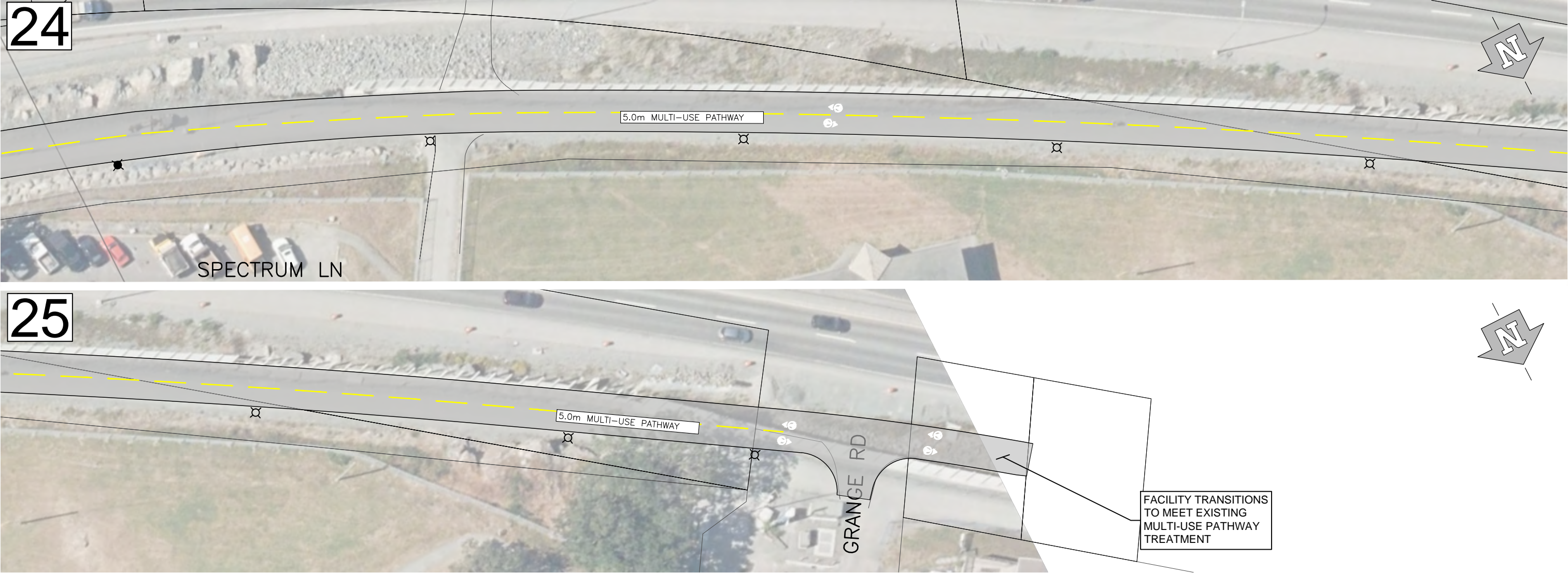
--- Underpass

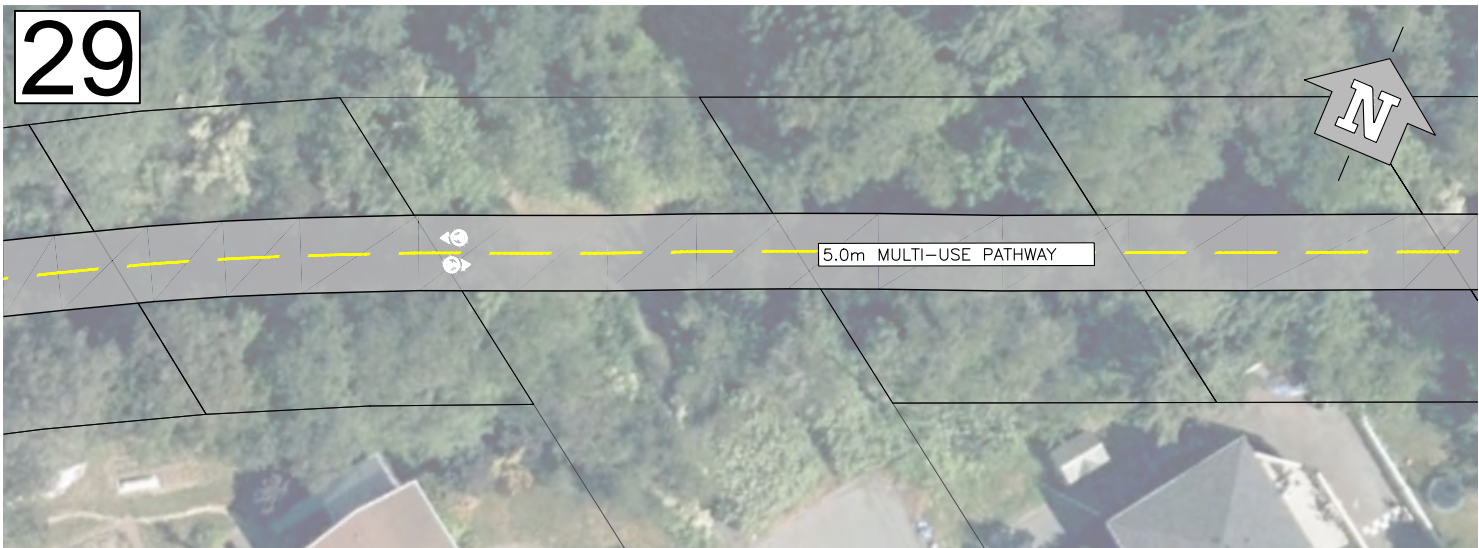
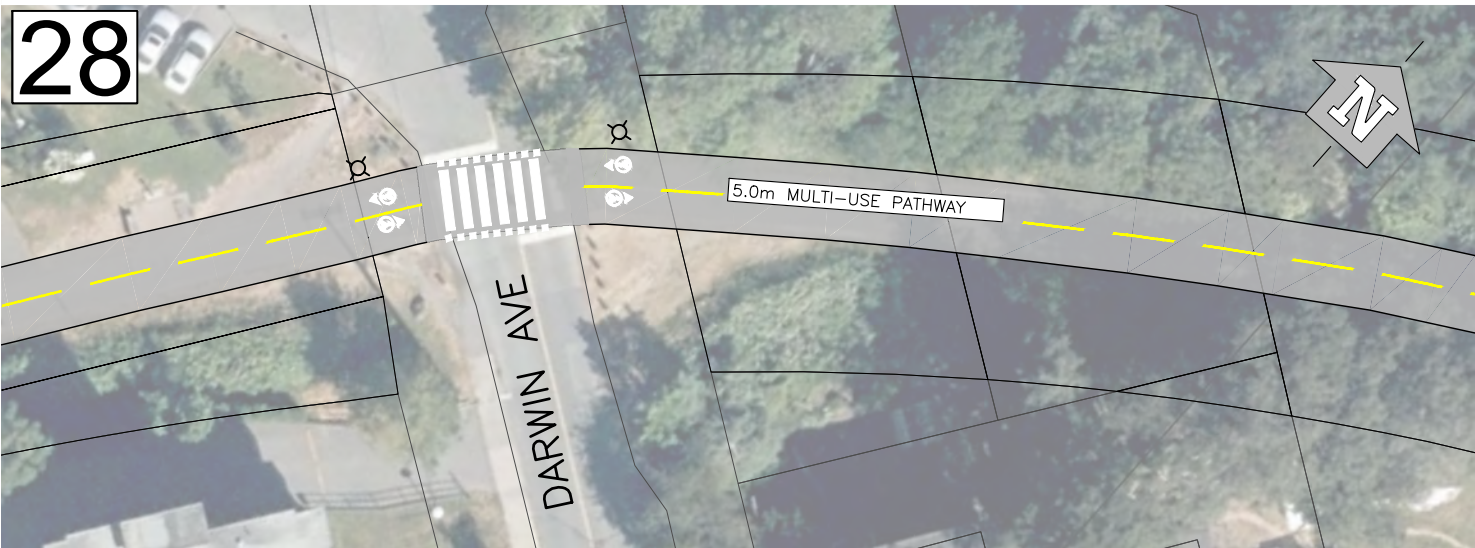
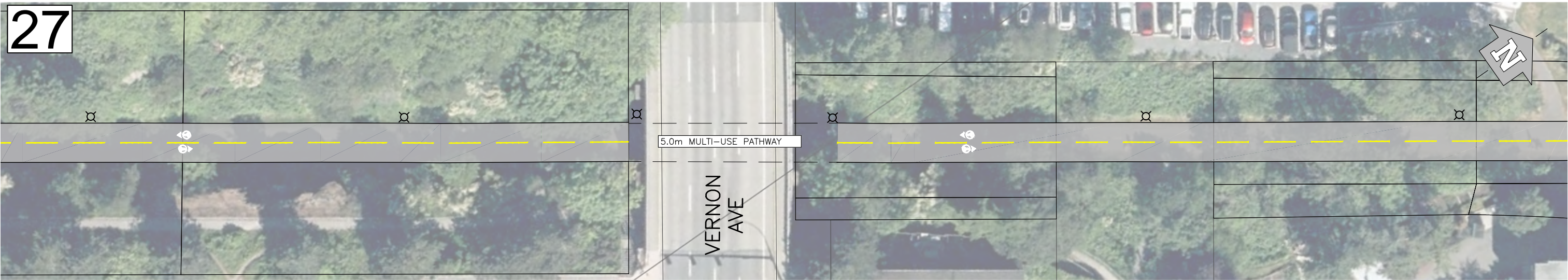
Issued for
100% design
April 29, 2020
urbansystems.ca

Section B

Client/Project		
CAPITAL REGIONAL DISTRICT (CRD) Regional Trails Widening Study		
Scale	Revision Date	Figure
1:500	2020-04-29	8
Title		

Section B
OPT 1-8





URBAN
systems

--- Underpass

Issued for
100% design

April 29, 2020

urbansystems.ca

Section C

Client/Project
CAPITAL REGIONAL DISTRICT (CRD)
Regional Trails Widening Study

Scale	Revision Date	Figure
1:500	2020-04-29	10

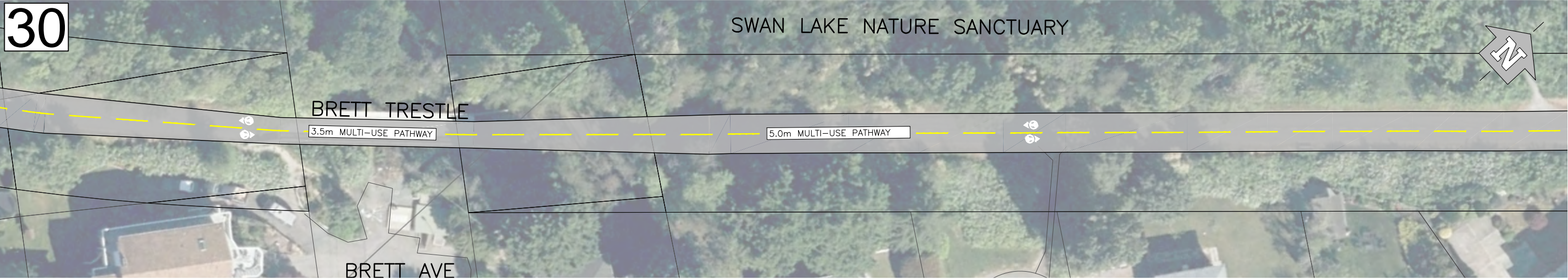
Title
Section C OPT 1-10

Section C
OPT 1-10

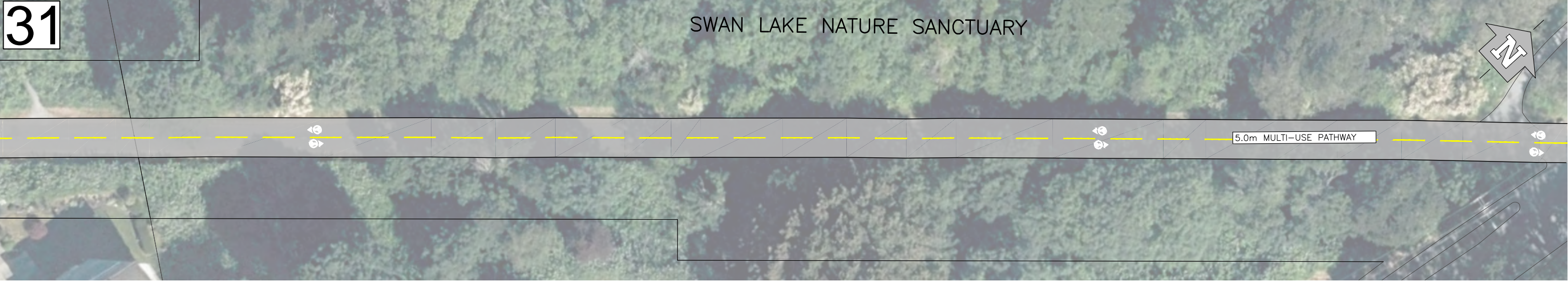
29



30



31



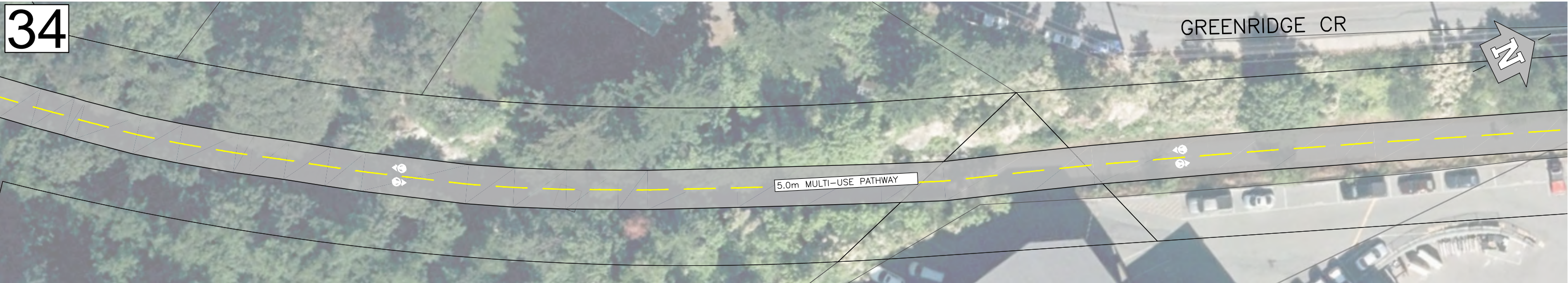
URBAN
systems

--- Underpass

Issued for
100% design
April 29, 2020
urbansystems.ca

Section C

Client/Project		
CAPITAL REGIONAL DISTRICT (CRD) Regional Trails Widening Study		
Scale	Revision Date	Figure
1:500	2020-04-29	11
Title		







URBAN
systems

--- Underpass

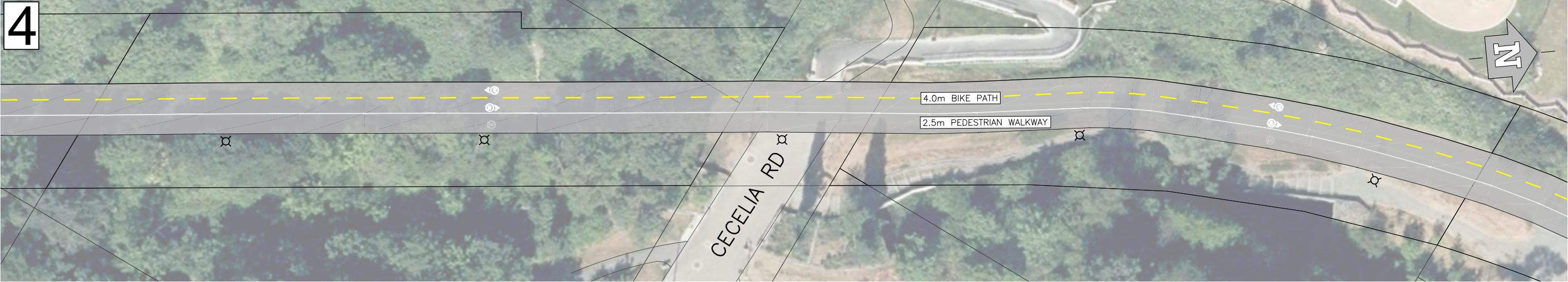
Issued for
100% design
April 29, 2020
urbansystems.ca

Section A

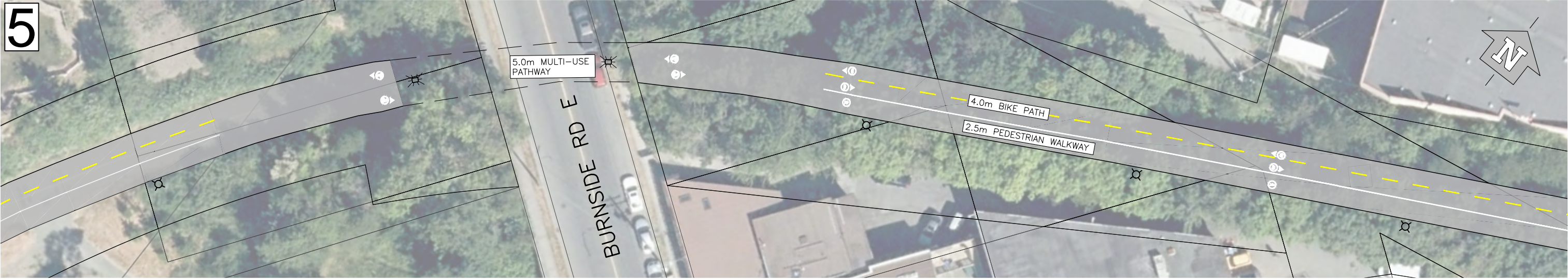
Client/Project		
CAPITAL REGIONAL DISTRICT (CRD) Regional Trails Widening Study		
Scale	Revision Date	Figure
1:500	2020-04-29	14
Title		

Section A
OPT 2-1

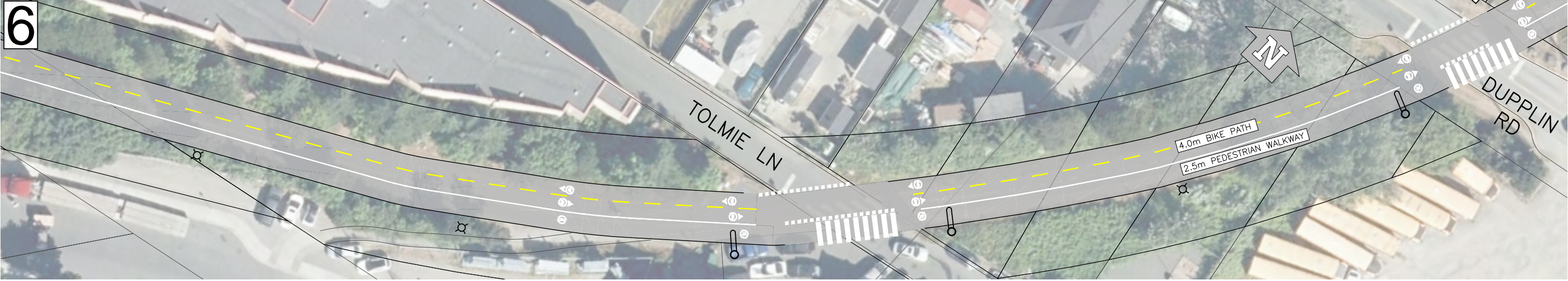
4



5



6



URBAN
systems

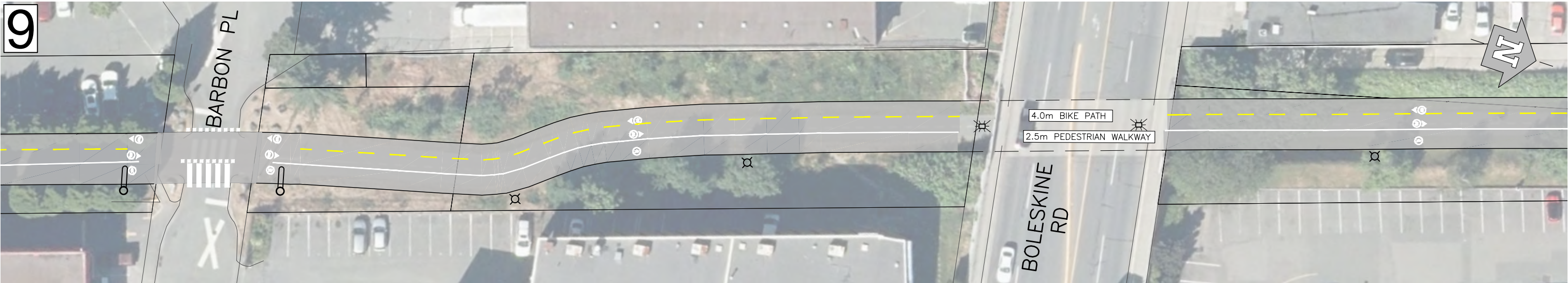
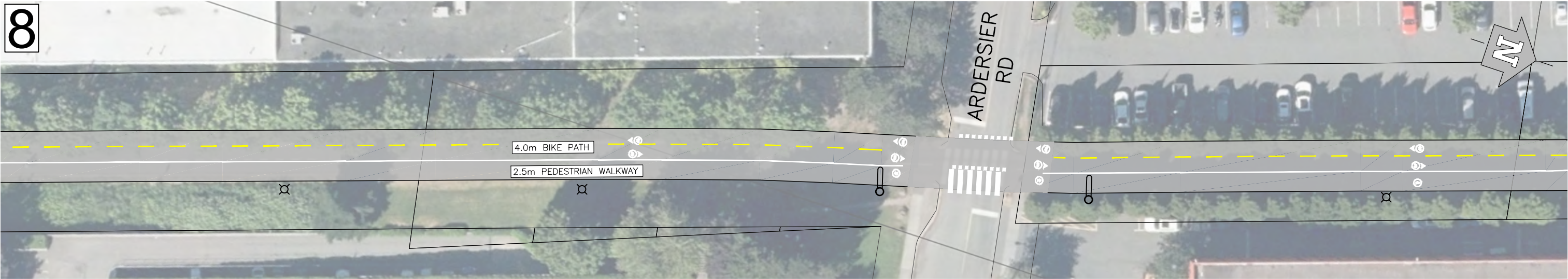
--- Underpass

Issued for
100% design
April 29, 2020
urbansystems.ca

Section A

Client/Project		
CAPITAL REGIONAL DISTRICT (CRD) Regional Trails Widening Study		
Scale	Revision Date	Figure
1:500	2020-04-29	15
Title		

Section A
OPT 2-2



URBAN
systems

--- Underpass

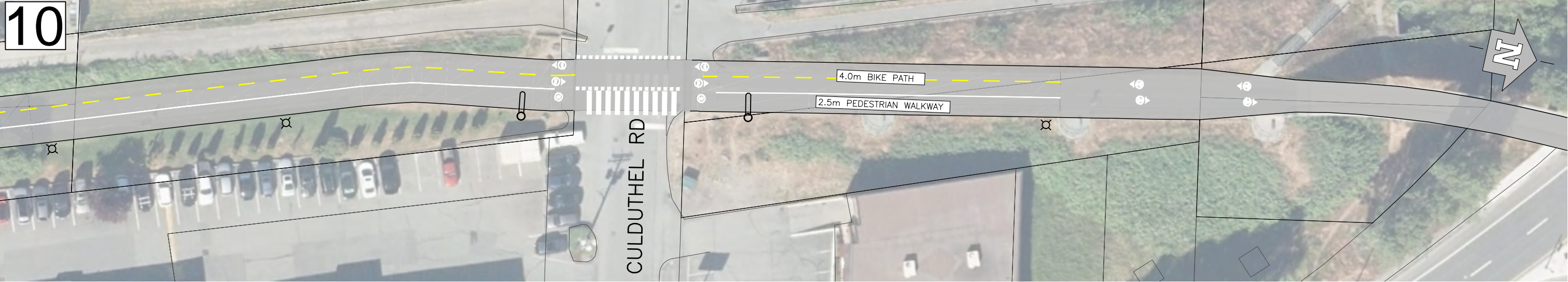
Issued for
100% design
April 29, 2020
urbansystems.ca

Section A

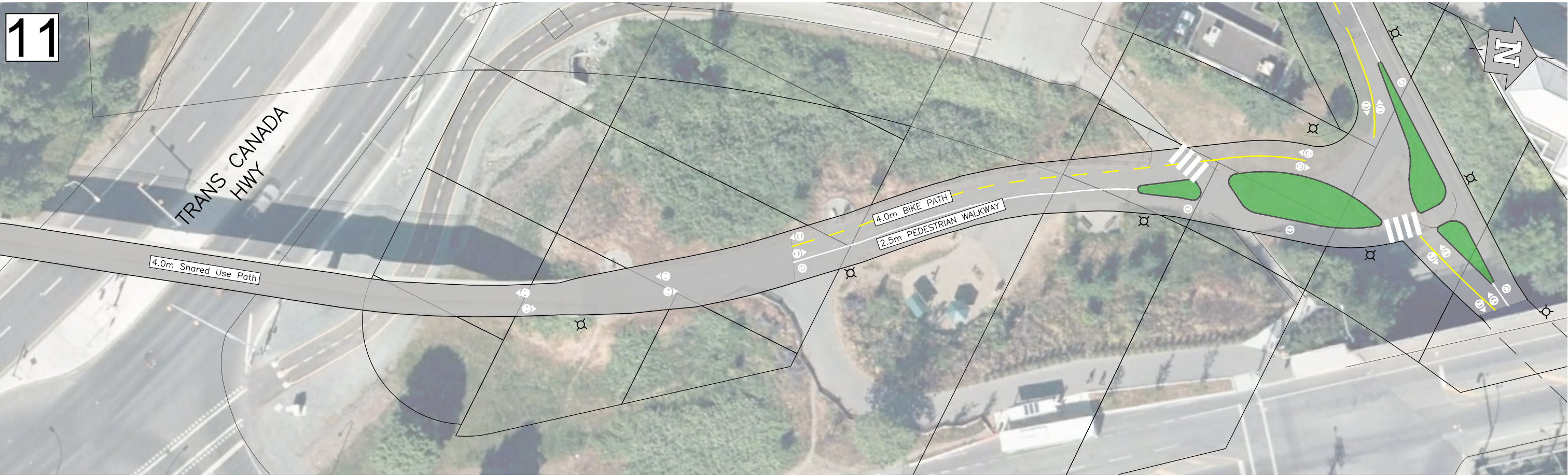
Client/Project		
CAPITAL REGIONAL DISTRICT (CRD) Regional Trails Widening Study		
Scale	Revision Date	Figure
1:500	2020-04-29	16
Title		

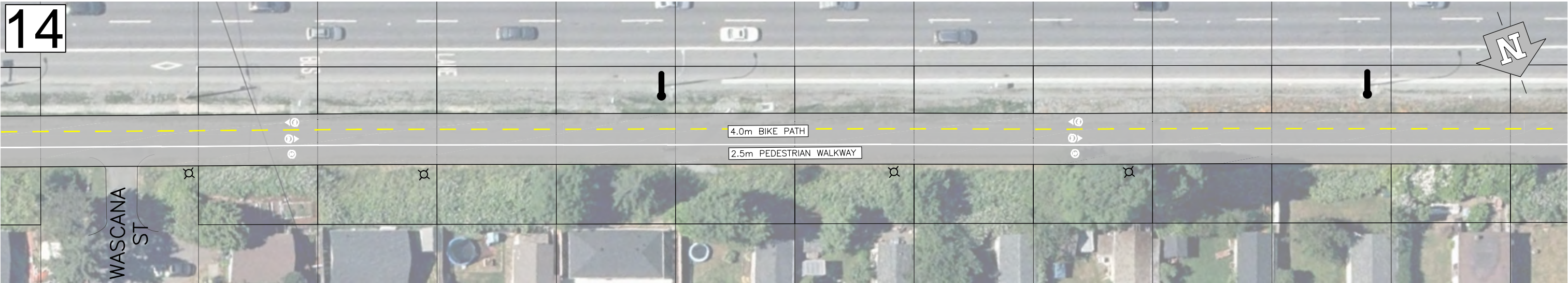
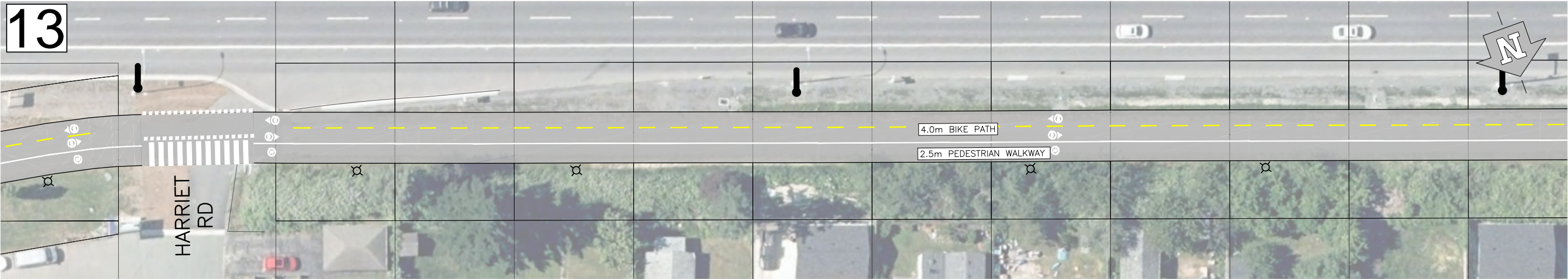
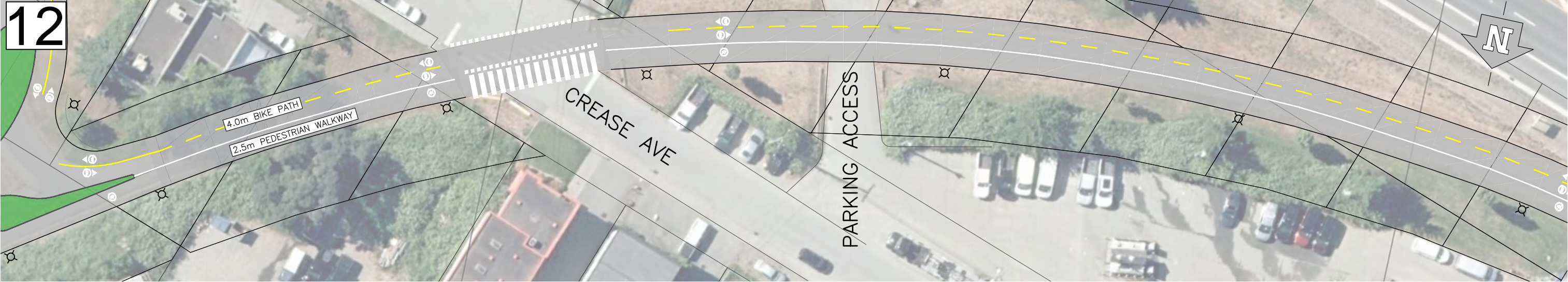
Section A
OPT 2-3

10



11





URBAN
systems

--- Underpass

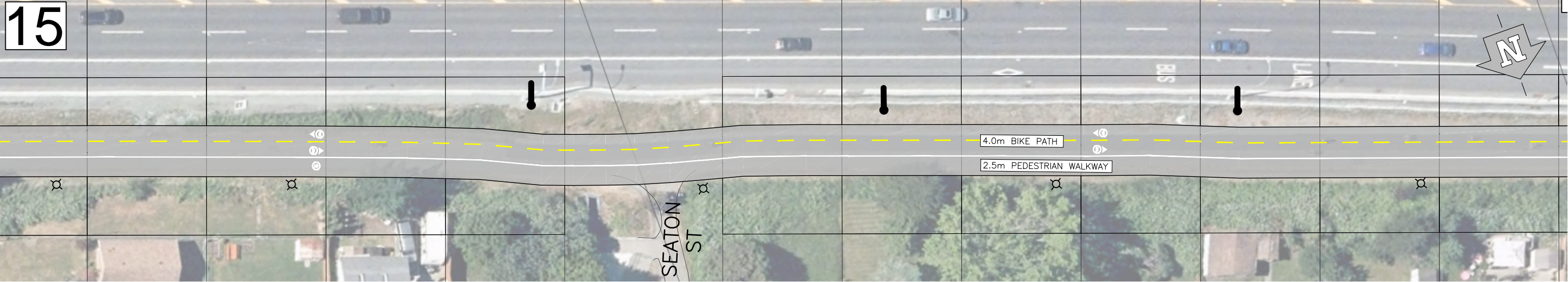
Issued for
100% design
April 29, 2020
urbansystems.ca

Section B

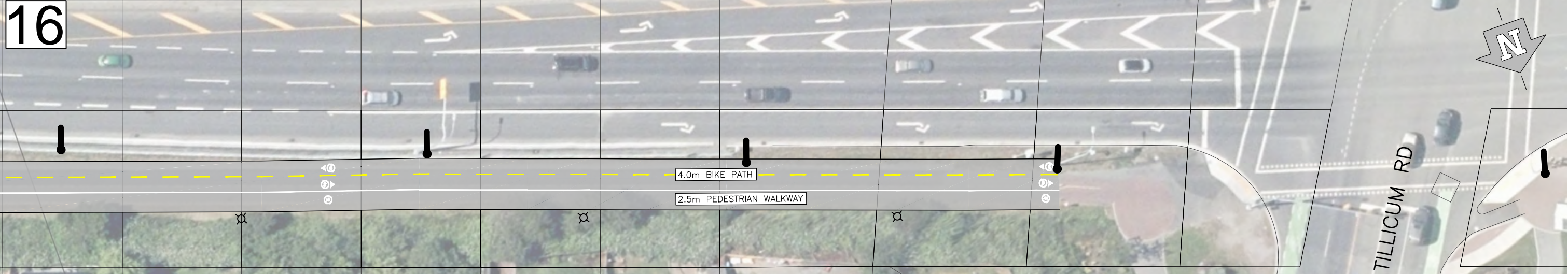
Client/Project		
CAPITAL REGIONAL DISTRICT (CRD) Regional Trails Widening Study		
Scale	Revision Date	Figure
1:500	2020-04-29	18
Title		

Section B
OPT 2-5

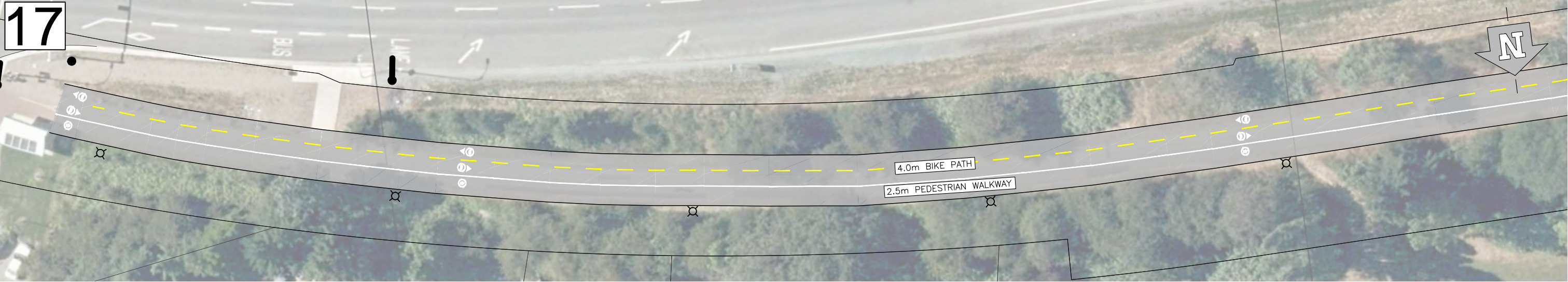
15



16



17



URBAN
systems

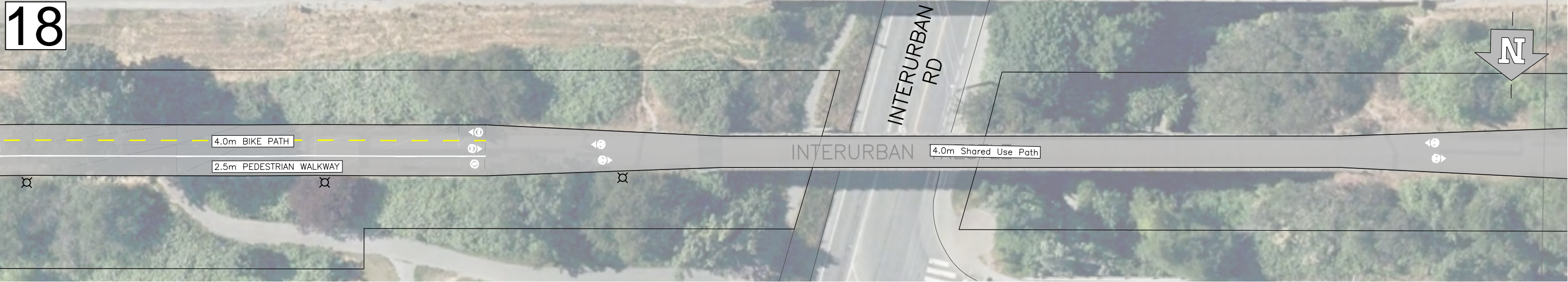
--- Underpass

Issued for
100% design
April 29, 2020
urbansystems.ca

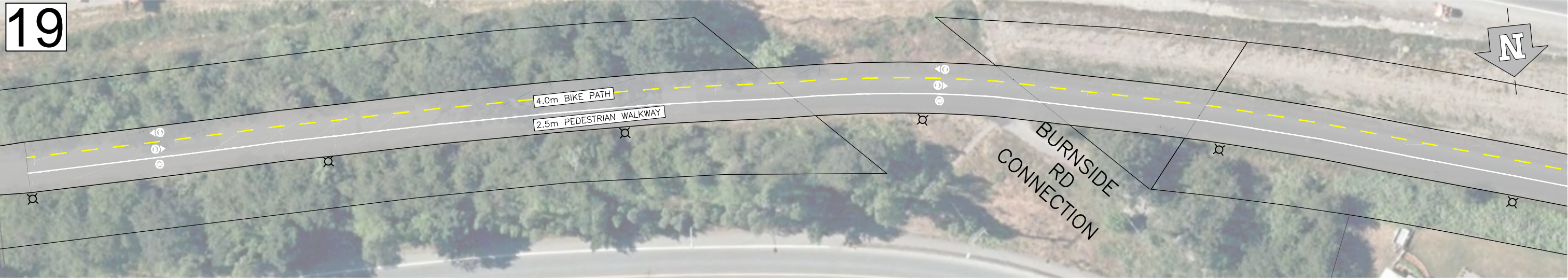
Section B

Client/Project		
CAPITAL REGIONAL DISTRICT (CRD) Regional Trails Widening Study		
Scale	Revision Date	Figure
1:500	2020-04-29	19
Title		

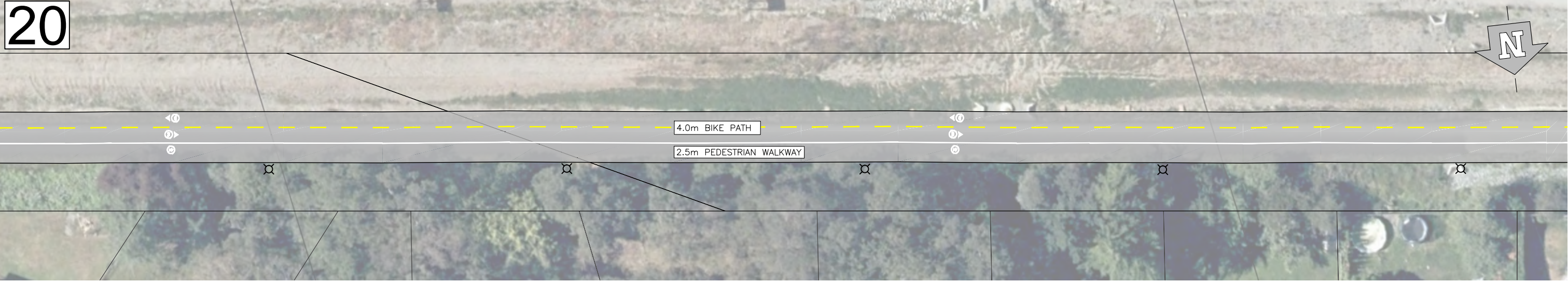
18



19



20



--- Underpass

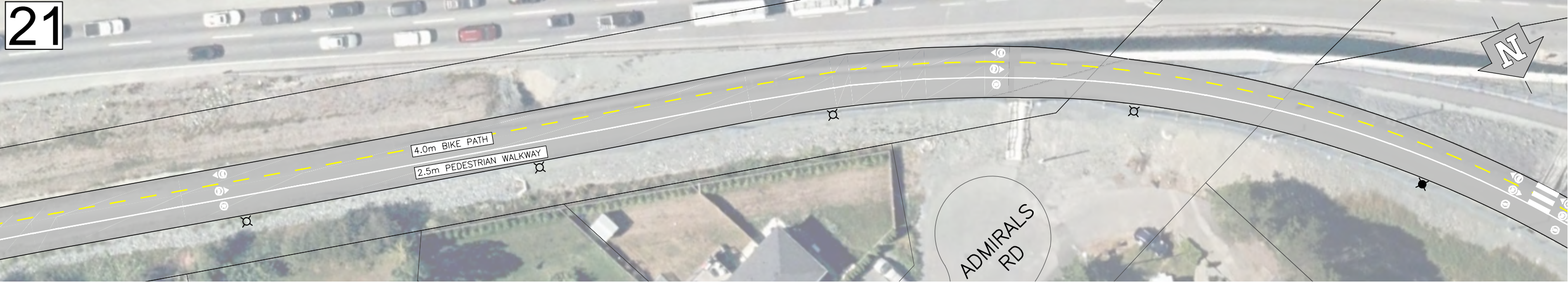
Issued for
100% design
April 29, 2020
urbansystems.ca

Section B

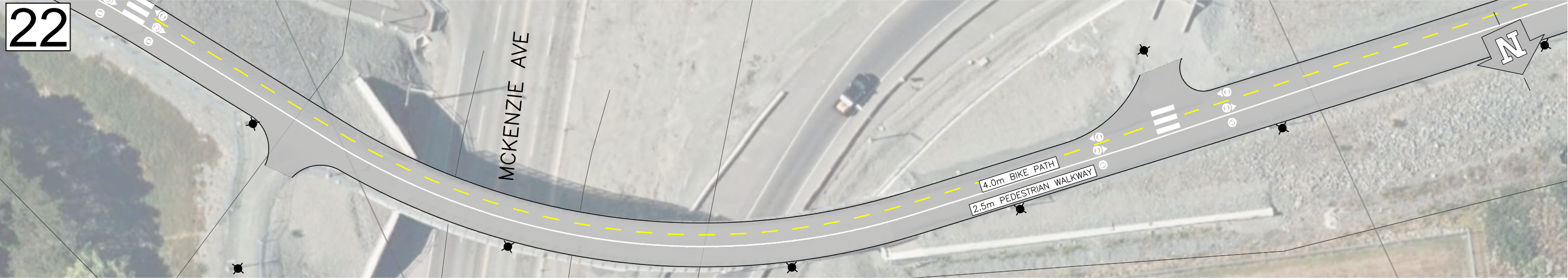
Client/Project		
CAPITAL REGIONAL DISTRICT (CRD) Regional Trails Widening Study		
Scale	Revision Date	Figure
1:500	2020-04-29	20
Title		

Section B
OPT 2-7

21



22



23



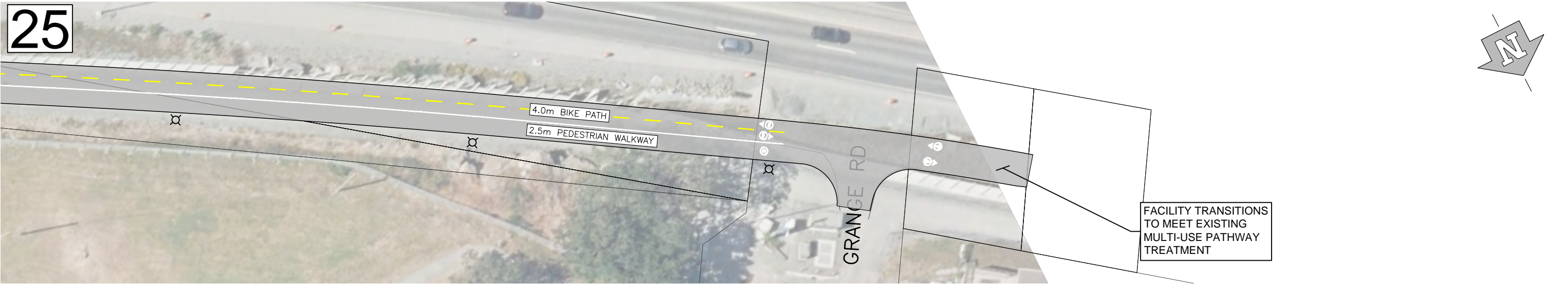
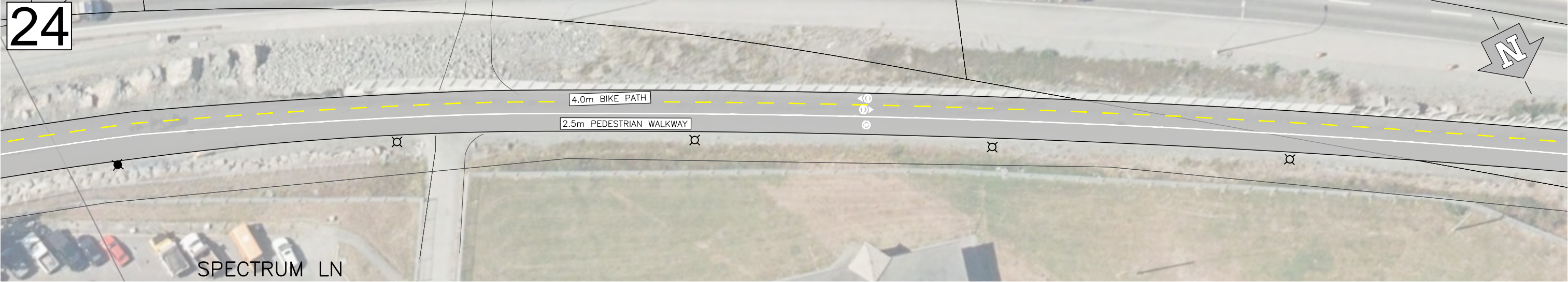
URBAN
systems

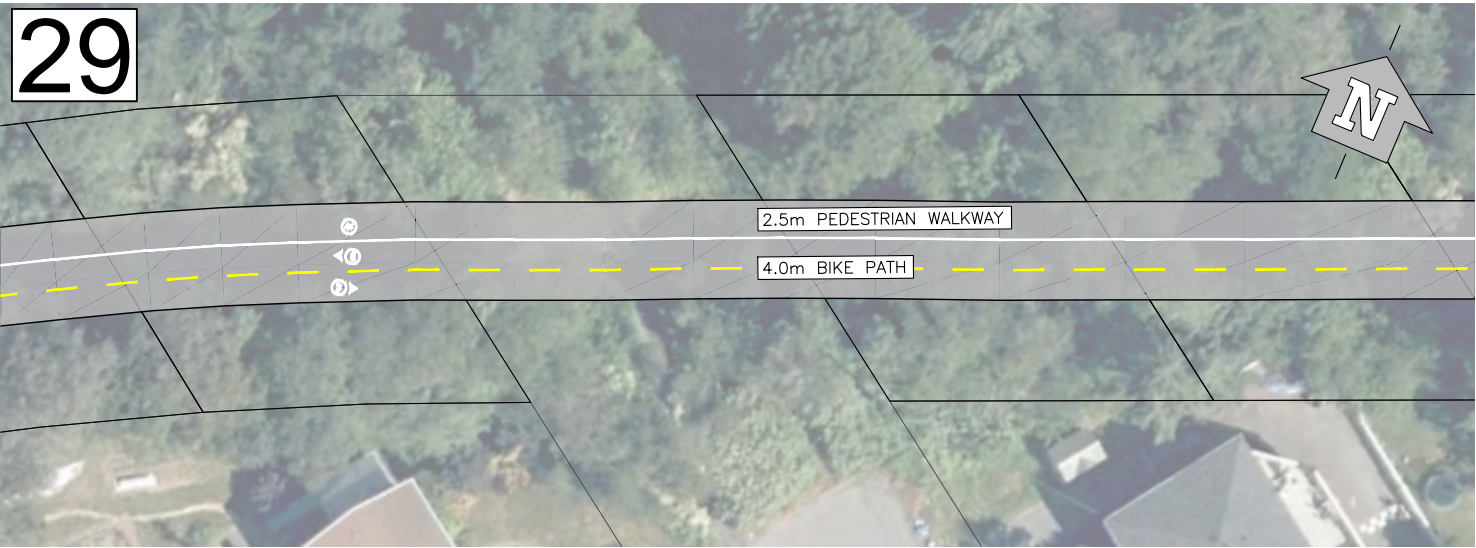
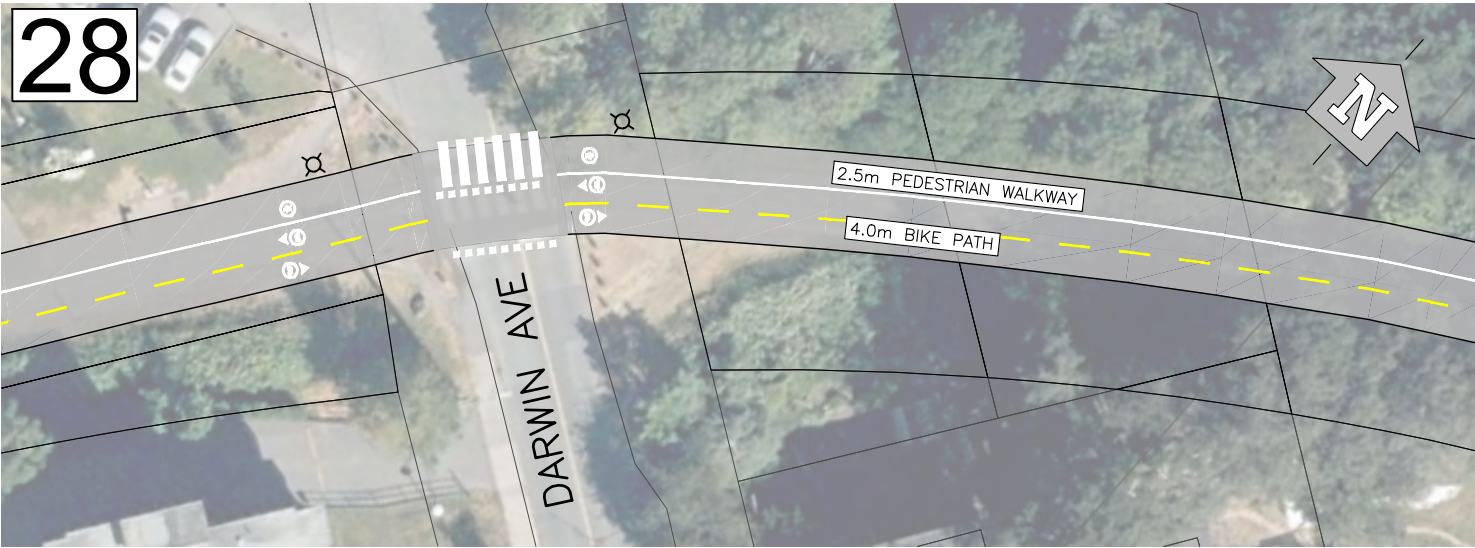
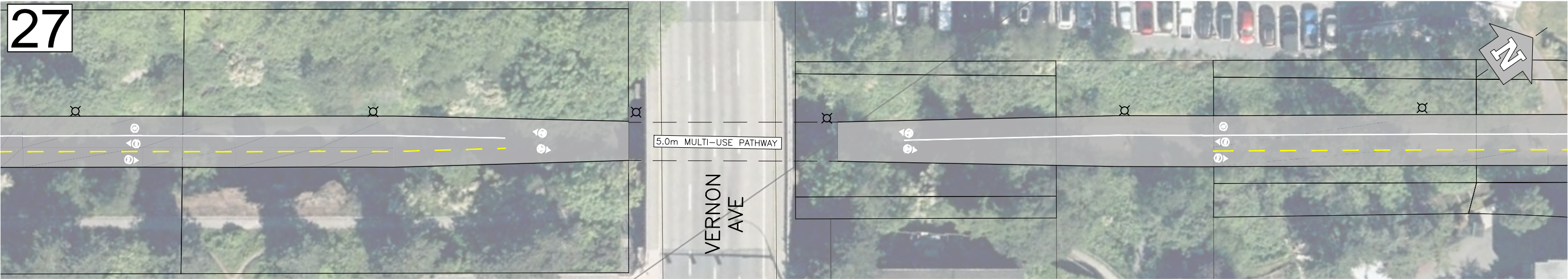
--- Underpass

Issued for
100% design
April 29, 2020
urbansystems.ca

Section B

Client/Project		
CAPITAL REGIONAL DISTRICT (CRD) Regional Trails Widening Study		
Scale	Revision Date	Figure
1:500	2020-04-29	21
Title		





URBAN
systems

--- Underpass

Issued for
100% design

April 29, 2020

urbansystems.ca

Section C

Client/Project

CAPITAL REGIONAL DISTRICT (CRD)
Regional Trails Widening Study

Scale	Revision Date	Figure
1:500	2020-04-29	23

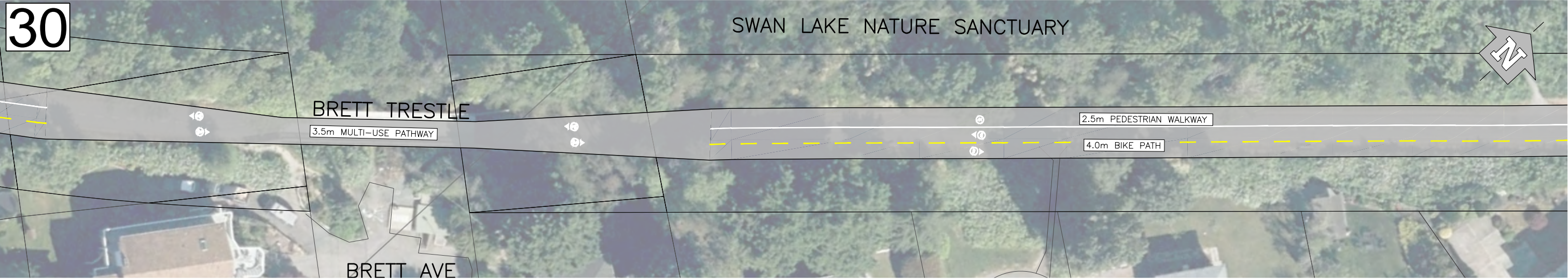
Title

Section C
OPT 2-10

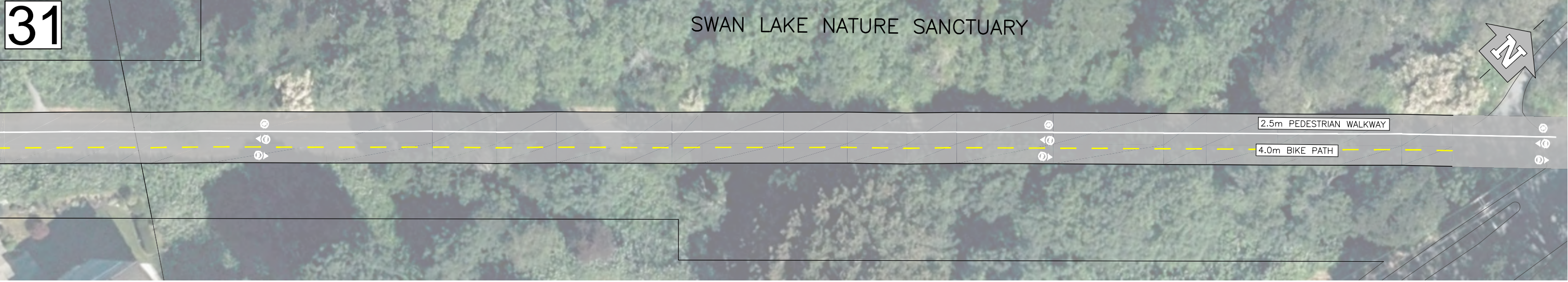
29



30



31



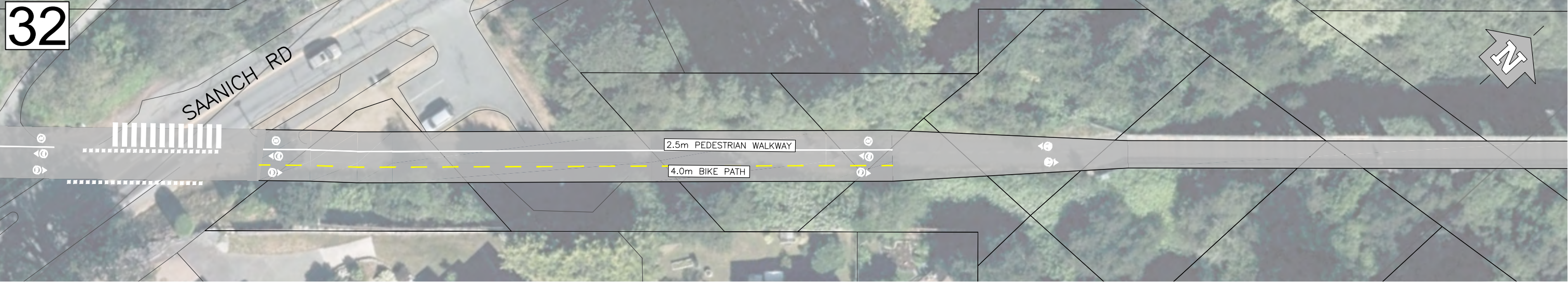
--- Underpass

Issued for
100% design
April 29, 2020
urbansystems.ca

Section C

Client/Project		
CAPITAL REGIONAL DISTRICT (CRD) Regional Trails Widening Study		
Scale	Revision Date	Figure
1:500	2020-04-29	24
Title		

32



33



34



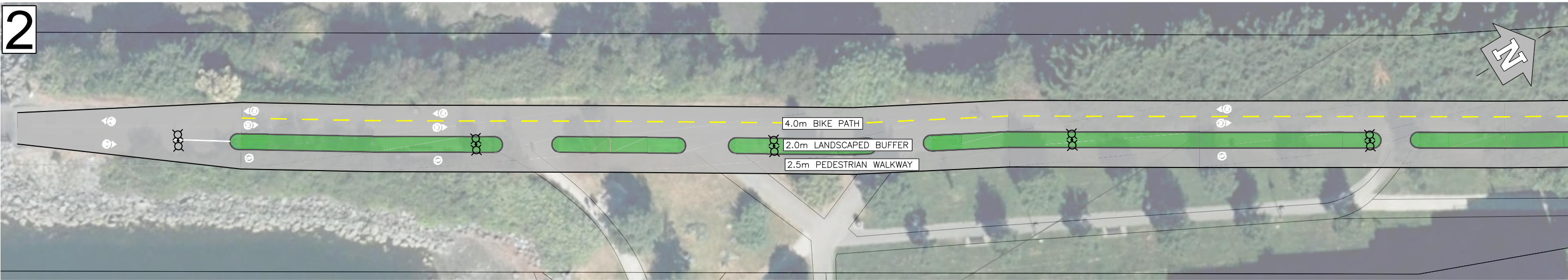
--- Underpass

Issued for
100% design
April 29, 2020
urbansystems.ca

Section C

Client/Project		
CAPITAL REGIONAL DISTRICT (CRD) Regional Trails Widening Study		
Scale	Revision Date	Figure
1:500	2020-04-29	25
Title		





URBAN
systems

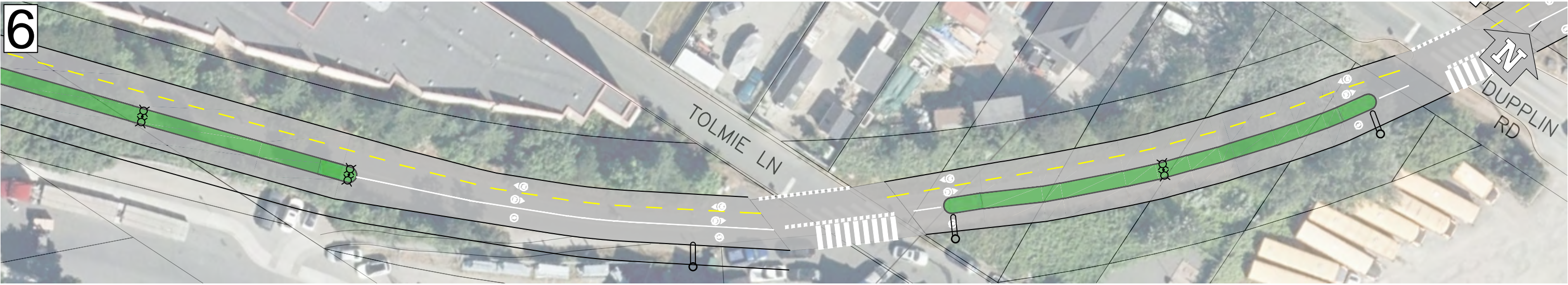
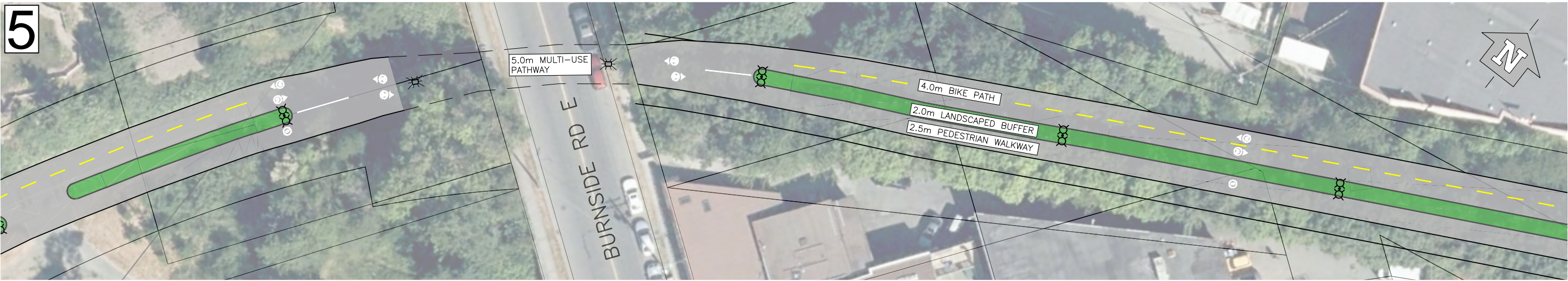
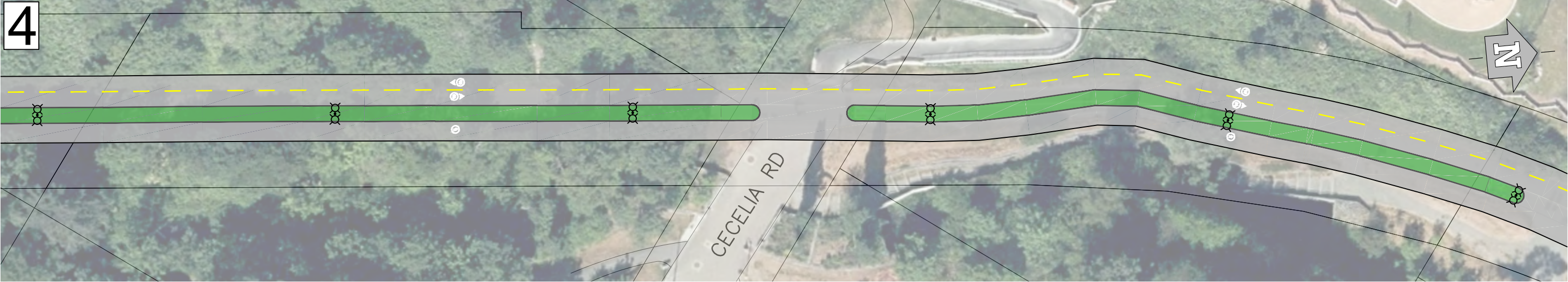
--- Underpass

Issued for
100% design
April 29, 2020
urbansystems.ca

Section A

Client/Project		
CAPITAL REGIONAL DISTRICT (CRD) Regional Trails Widening Study		
Scale	Revision Date	Figure
1:500	2020-04-29	27
Title		

Section A
OPT 3-1



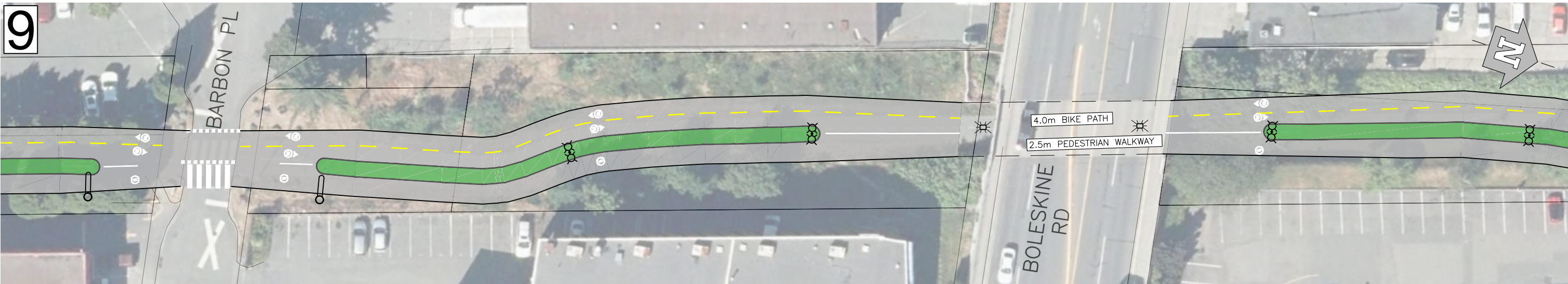
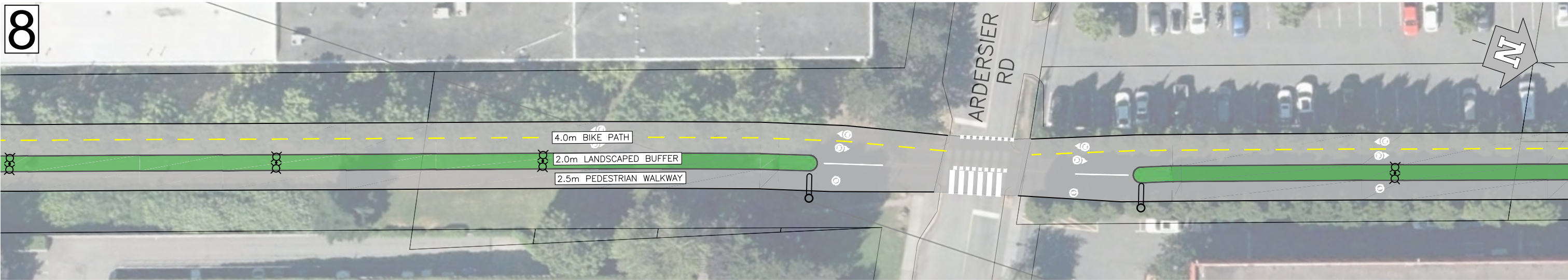
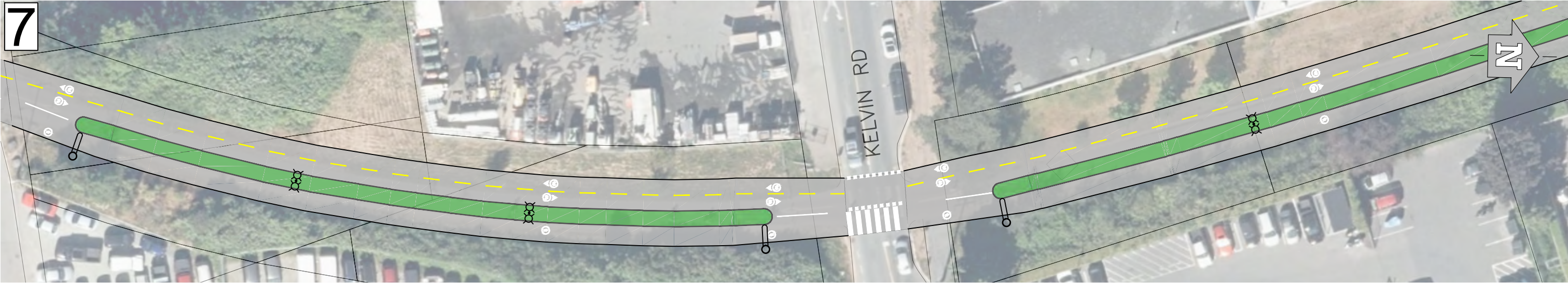
URBAN
systems

Issued for
100% design
April 29, 2020
urbansystems.ca

Section A

Client/Project		
CAPITAL REGIONAL DISTRICT (CRD) Regional Trails Widening Study		
Scale	Revision Date	Figure
1:500	2020-04-29	28
Title		

Section A
OPT 3-2



URBAN
systems

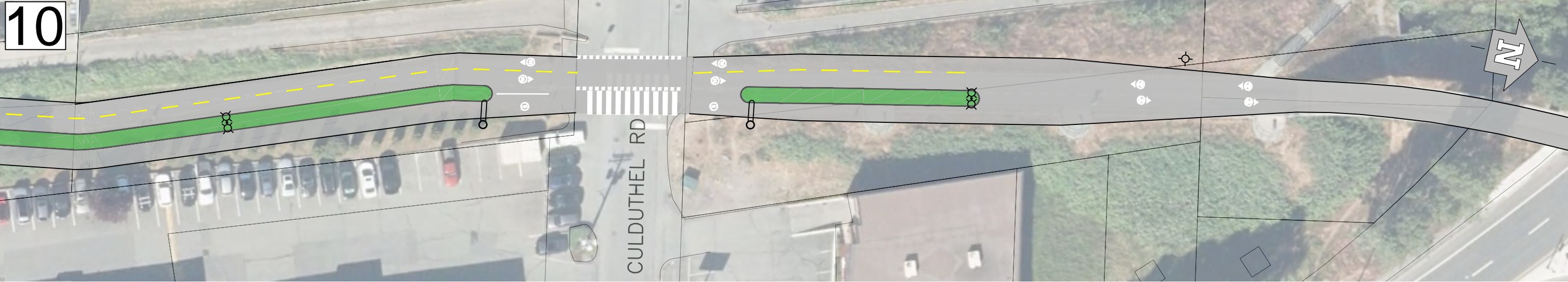
--- Underpass

Issued for
100% design
April 29, 2020
urbansystems.ca

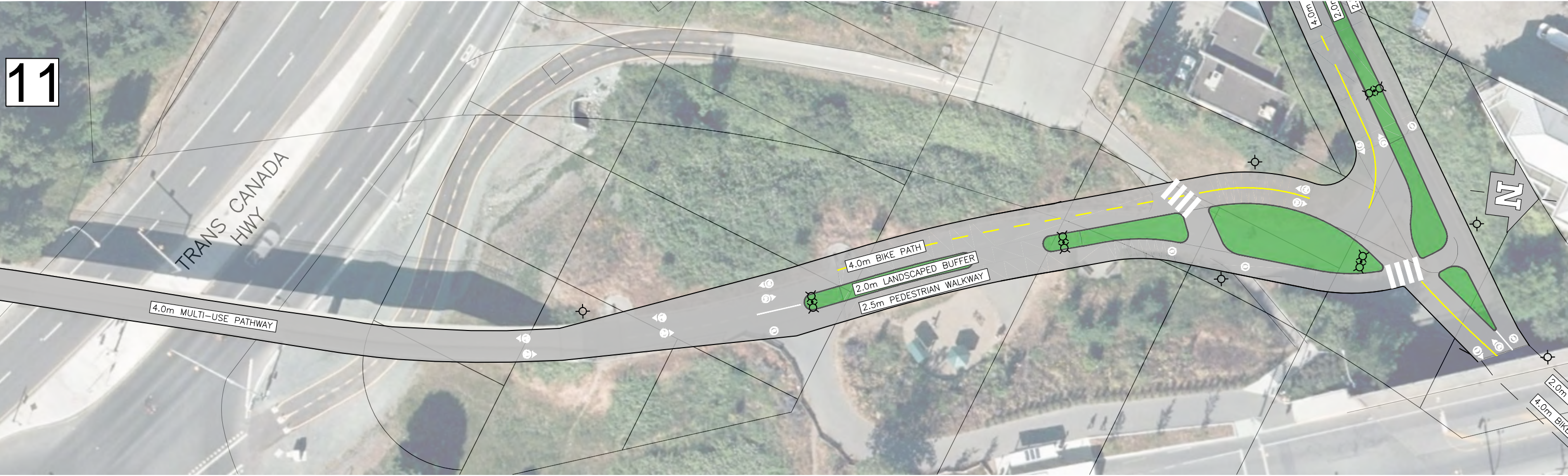
Section A

Client/Project		
CAPITAL REGIONAL DISTRICT (CRD) Regional Trails Widening Study		
Scale	Revision Date	Figure
1:500	2020-04-29	29
Title		

10



11



--- Underpass

Issued for
100% design

April 29, 2020

urbansystems.ca

Section A

Client/Project

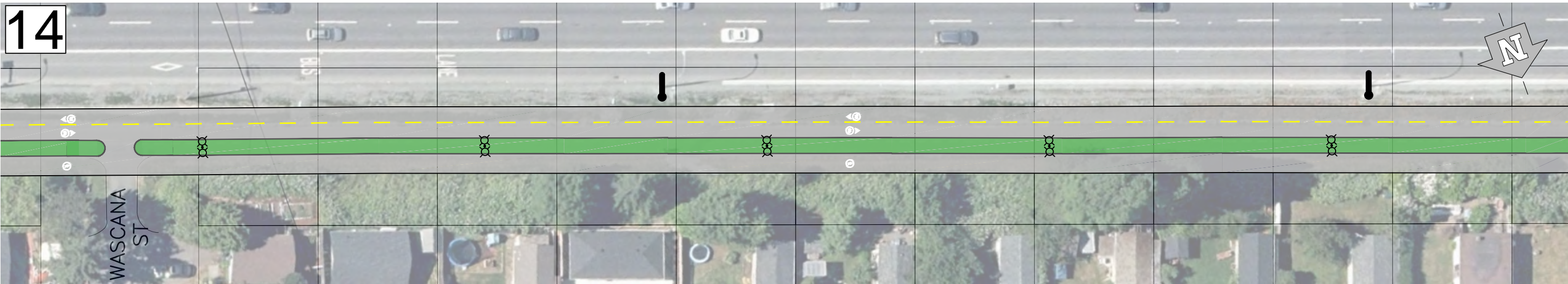
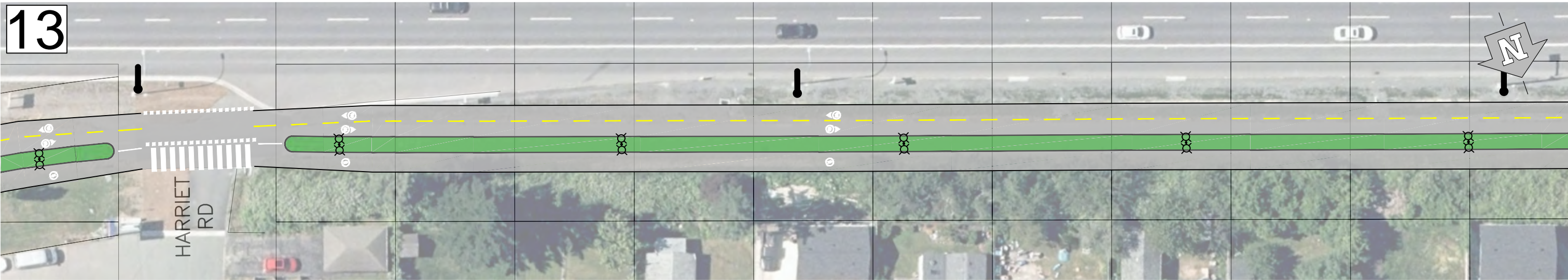
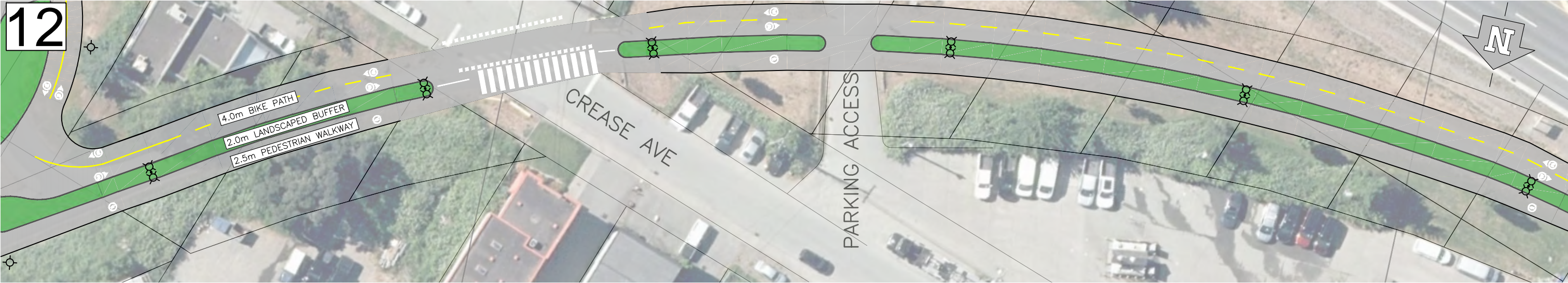
CAPITAL REGIONAL DISTRICT (CRD)
Regional Trails Widening Study

Scale Revision Date Figure

1:500 2020-04-29 30

Title

Section A
OPT 3-4



URBAN
systems

--- Underpass

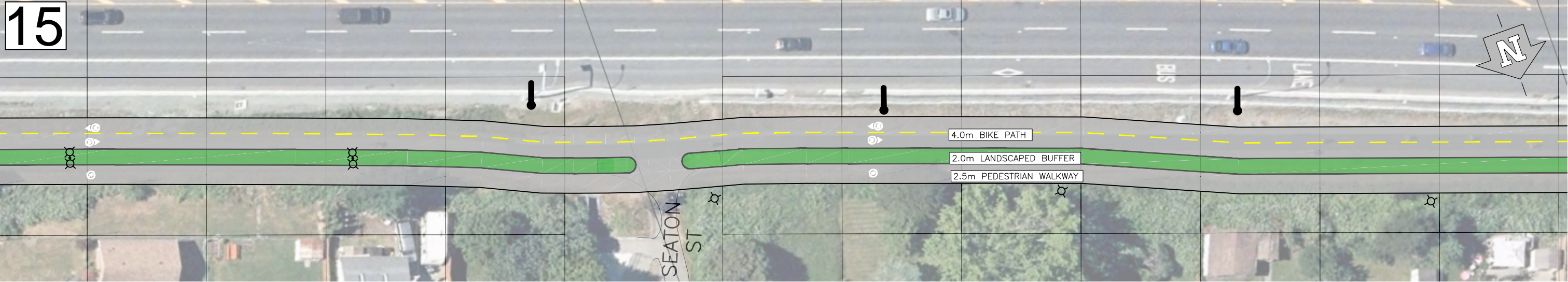
Issued for
100% design
April 29, 2020
urbansystems.ca

Section B

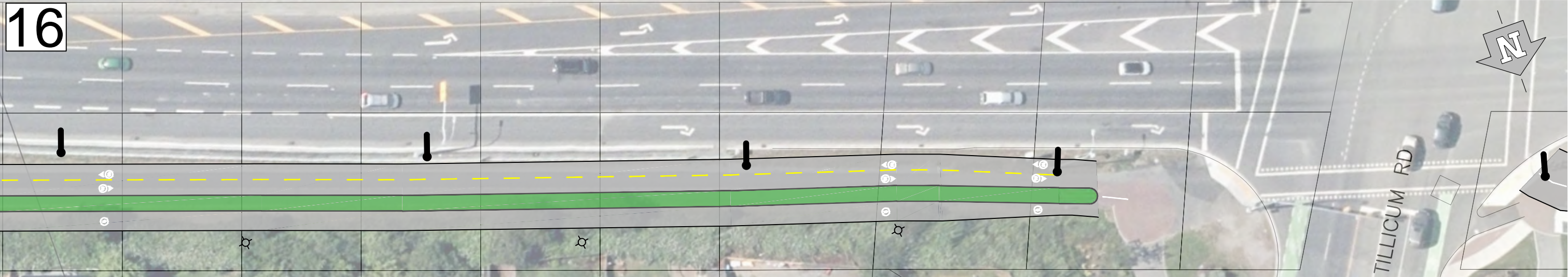
Client/Project		
CAPITAL REGIONAL DISTRICT (CRD) Regional Trails Widening Study		
Scale	Revision Date	Figure
1:500	2020-04-29	31
Title		

Section B
OPT 3-5

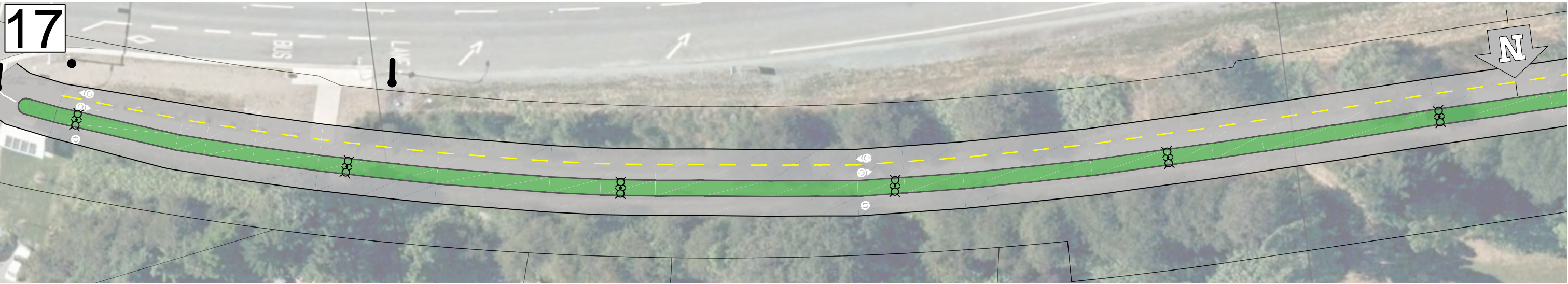
15



16



17



URBAN
systems

--- Underpass

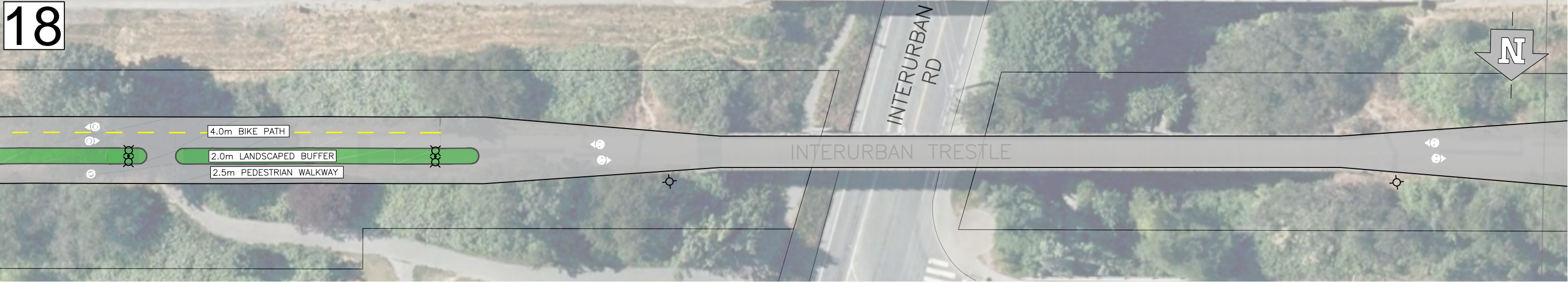
Issued for
100% design
April 29, 2020
urbansystems.ca

Section B

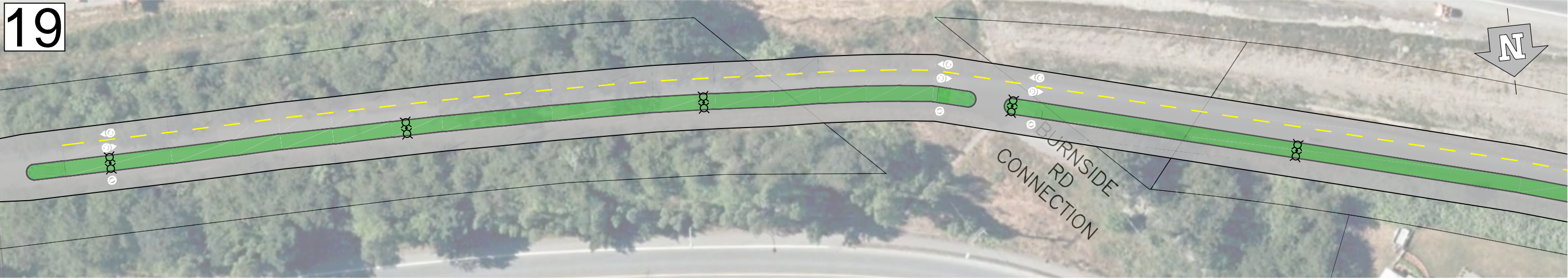
Client/Project		
CAPITAL REGIONAL DISTRICT (CRD) Regional Trails Widening Study		
Scale	Revision Date	Figure
1:500	2020-04-29	32
Title		

Section B
OPT 3-6

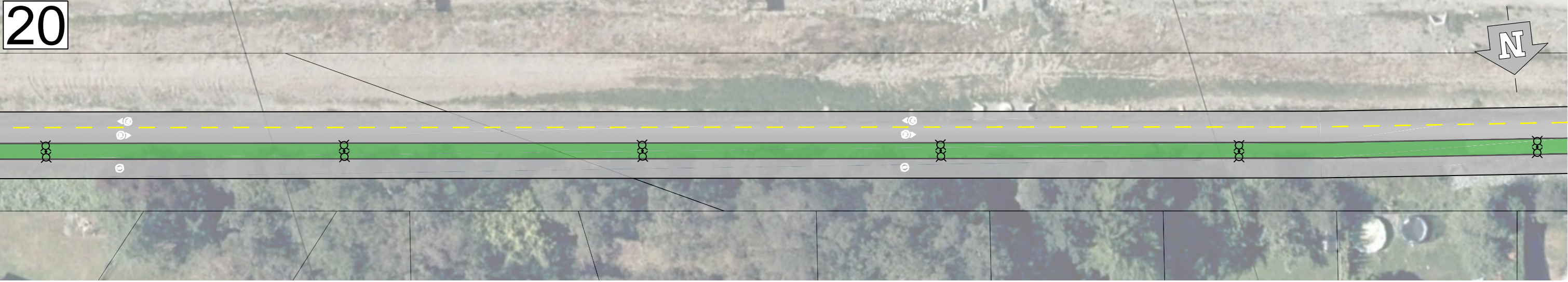
18



19



20



URBAN
systems

--- Underpass

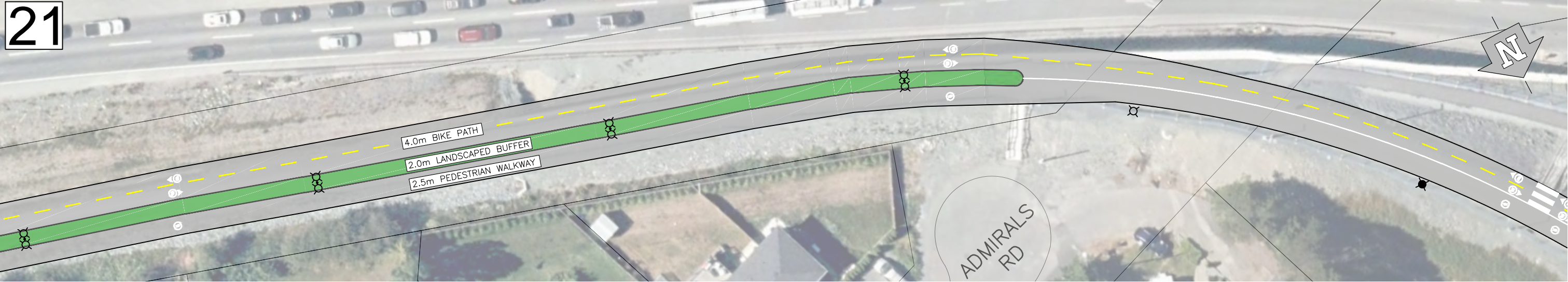
Issued for
100% design
April 29, 2020
urbansystems.ca

Section B

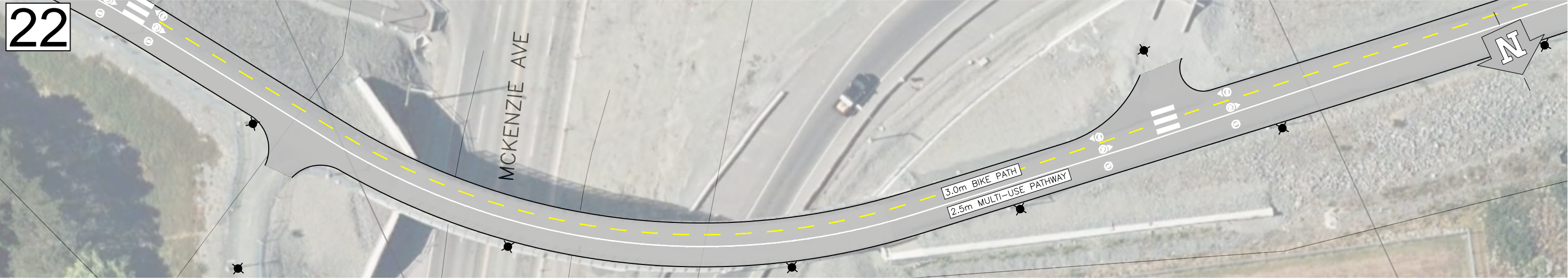
Client/Project		
CAPITAL REGIONAL DISTRICT (CRD) Regional Trails Widening Study		
Scale	Revision Date	Figure
1:500	2020-04-29	33
Title		

Section B
OPT 3-7

21



22



23



URBAN
systems

--- Underpass

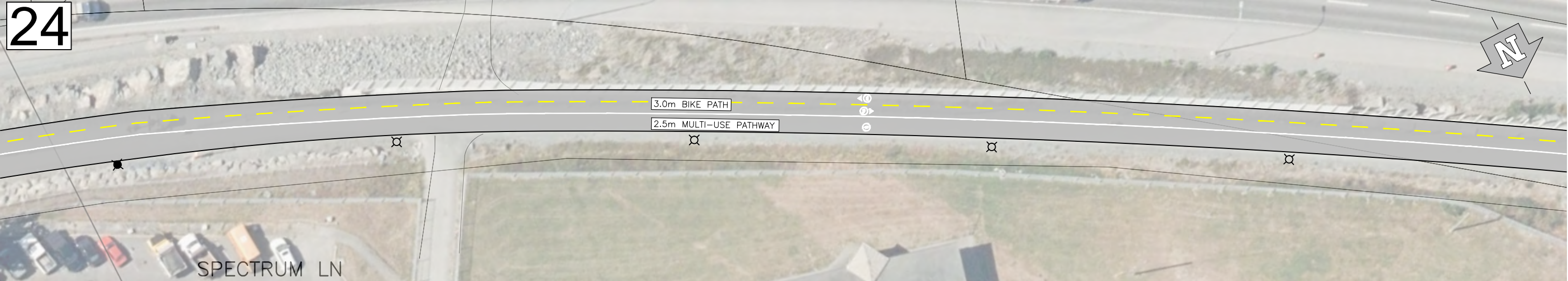
Issued for
100% design
April 29, 2020
urbansystems.ca

Section B

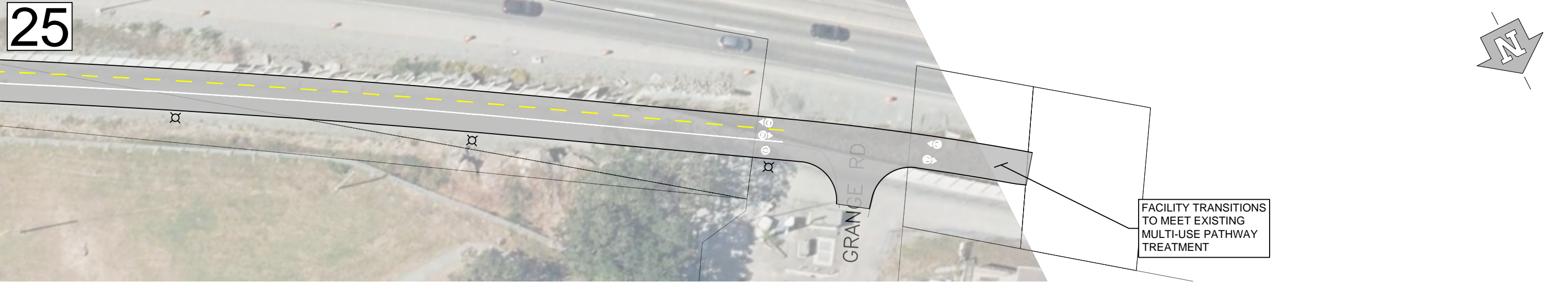
Client/Project		
CAPITAL REGIONAL DISTRICT (CRD) Regional Trails Widening Study		
Scale	Revision Date	Figure
1:500	2020-04-29	34
Title		

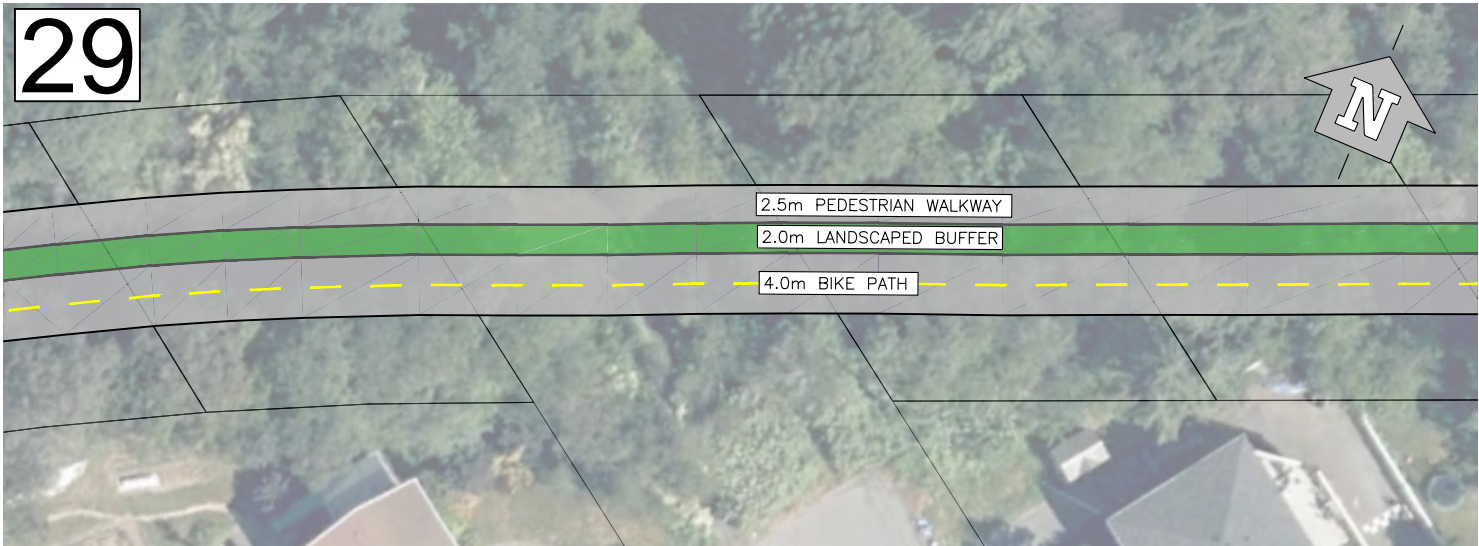
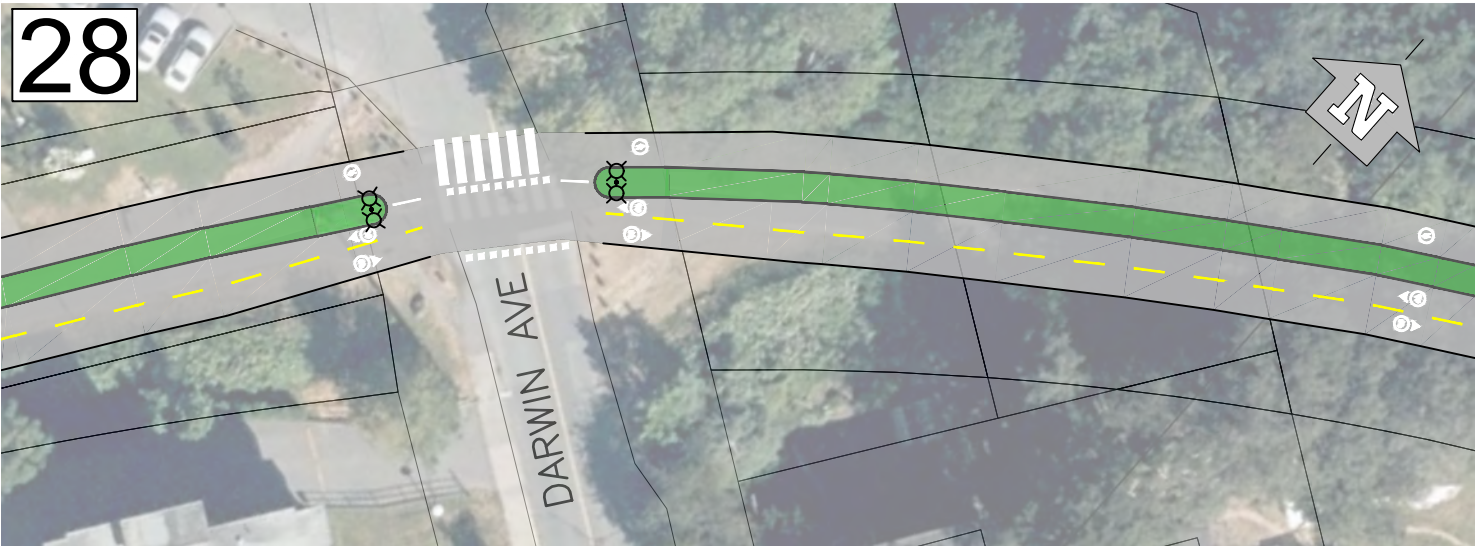
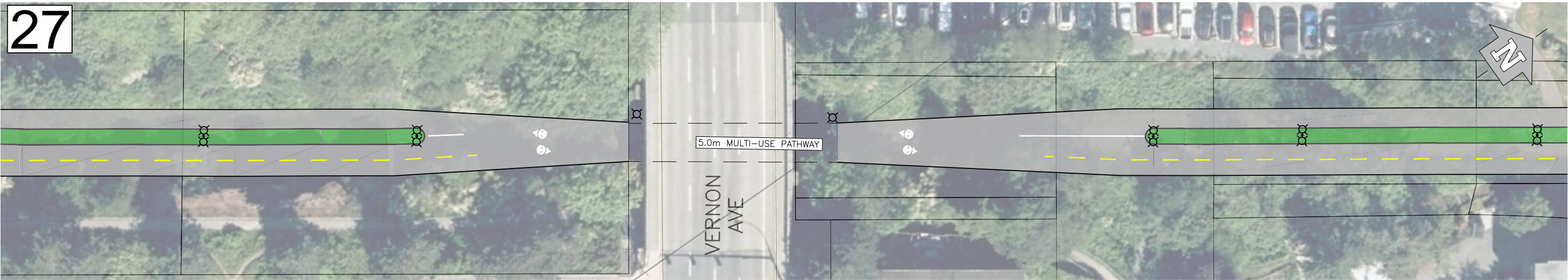
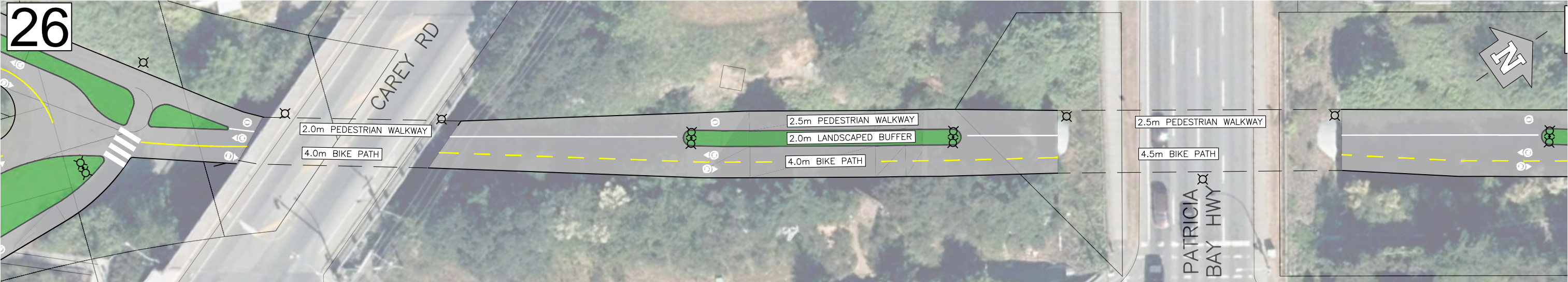
Section B
OPT 3-8

24



25





URBAN
systems

--- Underpass

Issued for
100% design

April 29, 2020

urbansystems.ca

Section C

Client/Project

CAPITAL REGIONAL DISTRICT (CRD)
Regional Trails Widening Study

Scale Revision Date Figure

1:500 2020-04-29 36

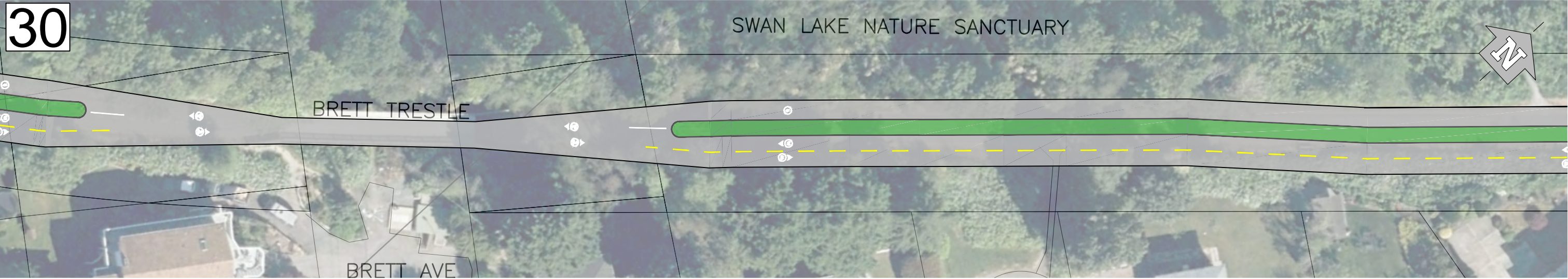
Title

Section C
OPT 3-10

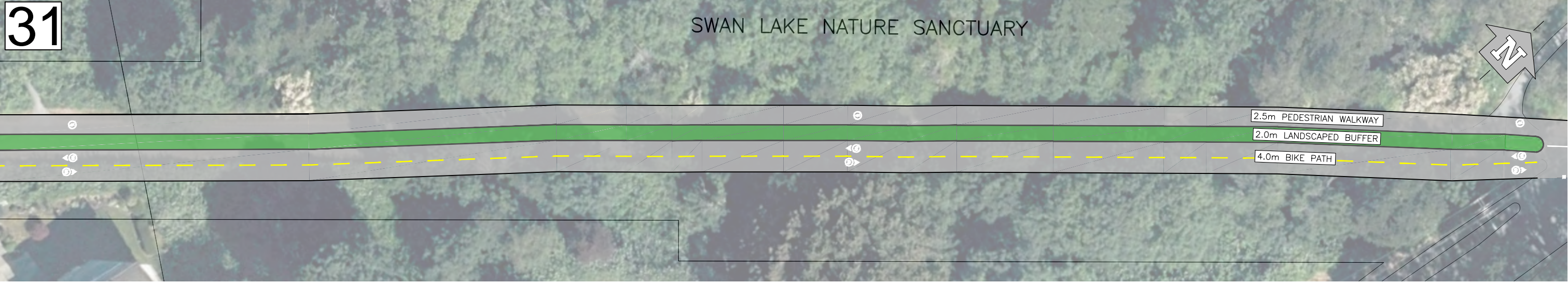
29



30



31



URBAN
systems

--- Underpass

Issued for
100% design
April 29, 2020
urbansystems.ca

Section C

Client/Project		
CAPITAL REGIONAL DISTRICT (CRD) Regional Trails Widening Study		
Scale	Revision Date	Figure
1:500	2020-04-29	37
Title		

Section C
OPT 3-11

32



33



34



URBAN
systems

--- Underpass

Issued for
100% design
April 29, 2020
urbansystems.ca

Section C

Client/Project		
CAPITAL REGIONAL DISTRICT (CRD) Regional Trails Widening Study		
Scale	Revision Date	Figure
1:500	2020-04-29	38
Title		

Section C
OPT 3-12



Appendix D.

DETAILED OPTION EVALUATION

Capital Cost

The capital cost of the trail widening or reconfiguration

Order of magnitude (Class D, 2020\$) cost estimates have been developed for each of the trail configuration options. Option 1 is the least expensive of the three options, at approximate \$10.5-million over the entire 6.6km project area. The cost of Option 2 is approximately 35% higher (approximately \$14.2-million) and the cost of Option 3 is approximately 82% higher than Option 1 (\$19.1-million).

Cost estimates for each option are expressed independently for each of the three trail sections below. A list of assumptions used in developing cost estimates is contained on the following page.

Section A.

	Option 1.	Option 2.	Option 3.
Civil Works	\$2,050,000	\$2,690,000	\$3,610,000
Electrical Works	\$470,000	\$485,000	\$520,000
Contingency (30%)	\$756,000	\$953,000	\$1,239,000
Total	\$3,276,000	\$4,128,000	\$5,369,000

Section B.

	Option 1.	Option 2.	Option 3.
Civil Works	\$2,710,000	\$4,030,000	\$5,380,000
Electrical Works	\$495,000	\$500,000	\$570,000
Contingency (30%)	\$962,000	\$1,359,000	\$1,785,000
Total	\$4,167,000	\$5,889,000	\$7,735,000

Section C.

	Option 1.	Option 2.	Option 3.
Civil Works	\$2,110,000	\$3,000,000	\$4,390,000
Electrical Works	\$205,000	\$215,000	\$235,000
Contingency (30%)	\$695,000	\$965,000	\$1,388,000
Total	\$3,010,000	\$4,180,000	\$6,013,000

Cost Estimate Assumptions:

- Civil costs include all stripping, pavement, landscape and associated works.
- Electrical costs include lighting infrastructure, conduit and associated works.
- Contingency (30%) is applied on top of the identified civil and electrical costs to account for the possibility of unforeseen conditions or challenges that result in increased cost. Soft costs such as a mobilization / demobilization and traffic management may also be covered under contingency.
- Cost estimates consider only infrastructure costs. They do not include costs associated with detailed design or project management.
- Cost estimates are prepared based on the available information at the time of this report and are based on the design drawings provided in **Appendix C**.
- Cost estimates are in 2020 CDN rates. Costs are based on recently tendered projects or recent cost estimates on Vancouver Island and have been updated to projected 2020 CDN dollars.
- Designs were prepared using available GIS information that were provided by the Capital Regional District. No topographic survey information was available for this assignment.
- Allowances were made for the following items based on experience with similar projects in magnitude of scope:
 - Drainage Improvements
 - Signing and Pavements Markings
 - Landscaping (Removals and soft and hard landscaping)
- Costs include total removal of existing pathway and stripping to design width of new pathway. Stripping and pavement excavation are assumed to be 300mm deep for the entire footprint of the design pathways.
- No geotechnical investigation has been conducted for this project. A detailed geotechnical investigation is recommended prior to advancing design to confirm the assumptions made as part of this cost estimate exercise. Geotechnical stability could have significant impacts on the functional design of the pathway and subsequent costs. Costs of this investigation have not been included in the cost estimates above.
- Pathway grading and bedrock impacts are based on the polygons provided by the CRD. A detailed topographic survey and geotechnical investigation would be needed to confirm these assumptions.
- Pavement structure for the pathways are assumed to be 60mm Asphalt Surface Course, 100mm – 25mm Gravel Base Course, 200mm – 75mm Gravel Base Course, and 300mm Gravel Subbase Course. This pavement structure was selected because it allows for minor vehicle traffic for maintenance and operation activities.
- Location and size of retaining walls is based on significance of impacts to grading along the pathway and knowledge of the corridor. Detailed design is required to confirm these assumptions.

- Environmental mitigation and/or remediation, municipal and utility type charges, legal and topographic surveys, property acquisition, permit charges, sub-consultant design and reporting, inspection, and certification fees (electrical, geotechnical, environmental, landscape architect) as well as any legal fees are not included in this cost estimate.
- The design has avoided any property acquisition requirements.
- Detailed Electrical Lighting Product Assumptions developed for pricing are outlined below:
 - 9m Davit Luminaire Pole (Hardwire):
 - MMCD/MoTI standard 9.0m Type 2 pole and Type C concrete base
 - Typical ~80W LED roadway luminaire
 - Post top luminaire (Hardwire):
 - 5.0m MoTI/MMCD Type 2 pole and Type B concrete base
 - American Electric Lighting Autobahn Series ATBMicro 37W 3000K
ATBMIC_10BLEDE10_R3_3K
 - Underpass Luminaire (Hardwire)
 - American Electric Lighting ParkPak LED luminaire (approximately 50W)
 - First Light Technologies BFL-S Solar Street Light Series Luminaire c/w 6.1m luminaire pole and 1.2m arm (solar) and Type C concrete Base
 - MoTI Style Service Panel on a Type 2 pole and Type C concrete Base
 - Conduit infrastructure for hardwire system:
 - MoTI Style Type 10 round plastic junction boxes located at service panels and road crossings
 - 53mm RPVC underground conduit with #4 or #6 Aluminum RW90 conductors
 - 32mm RMC conduit and small metal junction boxes for underpass luminaires
 - Acuity brands ROAM lighting control system (managed by Acuity with cloud-based storage)
- Cost estimates provided are to provide the CRD with an order of magnitude cost estimation for comparison and budgeting purposes only. Additional design work and investigations are needed to refine cost estimates.

Trail User Comfort / Experience

The relative improvement in trail user comfort and experience as a result of the trail widening or reconfiguration

The Federal Highways Administration's (FHWA) maintains the Shared-Use Path Level of Service (LOS) Calculator as a tool to analyze the quality of service provided by shared-use paths. The LOS Calculator has been used to understand the trail user comfort and overall experience provided for each of the trail widening / separating options. The LOS is a quantitative measure used to describe operational conditions within a transportation system. LOS is graded on six levels from A to F to represent best to worst conditions, respectively. LOS grades are assigned as follows:

- A = 4.0+
- B = 3.5 – 4.0
- C = 3.0 – 3.5
- D = 2.5 – 3.0
- E = 2.0 – 2.5
- F = < 2.0

The LOS Calculator focuses on maintaining an optimum speed for cyclists and the freedom to maneuver as measured by the number of anticipated meetings of oncoming trail users, active and delayed passes, and the perceived ability to pass as key criteria in the methodology. The calculator does not account for safety or factor in travel time or traffic interruptions related to trail or roadway intersections. It is largely a measure of pathway width and trail user volumes. LOS declines with increases in trail user volumes and decreases in trail width. The number values used as the basis for assigning LOS letter grades are calculated from measures of the trail characteristics referenced above.

Results of FHWA Level of Service Calculator

	Option 1		Option 2		Option 3	
	LOS Score	LOS Grade	LOS Score	LOS Grade	LOS Score	LOS Grade
Section A	3.65	B	3.79	B	3.79	B
Section B	3.94	B	3.88	B	3.88	B
Section C	3.75	B	3.85	B	3.85	B

To calculate the results presented, the peak hourly user count as shown in **Figure 2** was projected to 20-year trail user volumes for each of the three sections. These numbers were inputted into the Shared-Use Path LOS Calculator tool which is programmed into a Microsoft Excel spreadsheet available from the U.S. Department of Transportation. The calculator tool requires four inputs: trail width, presence of a centreline, one-way trail user volume, and mode split for up to five user types (adult bicyclists, pedestrians, runners, in-line skaters, and child bicyclists).

The trail user volumes provided are for two-way travel. To determine one-way user volumes, an assumption of a 50/50 split between directions was used. The counts provided do not differentiate between adult and child cyclists or between pedestrians and runners, and in-line skaters were not provided. As such, for option 1 the mode split was determined for only adult bicyclists and pedestrians with the other three modes being assigned a 0% rating.

For options 2 and 3, only the bike path portion of the trail was calculated for LOS. This calculation used only the bike path width of the trail (4.0m), the cycling counts projected to 2040, and assumed 100% mode split of adult bicyclists as pedestrians would be on the pedestrian portion of the trail.

All three Options for all three trail sections returned LOS Grades of B. The FHWA defines a trail with a LOS B as “good”. These trails have “good bicycling conditions, and retains significant room to absorb more users, while maintaining an ability to provide a high-quality user experience.”

Safety / User Conflicts

The extent to which the trail widening or reconfiguration provides for a safe trail facility and addresses user conflicts

	Option 1	Option 2	Option 3
Section A	<ul style="list-style-type: none"> • Shared use pathway does not separate different users • Potential for user conflict between faster moving bicycles and slower moving pedestrians, as well as between fast and slow cyclists • 5.0m total pathway width is the narrowest trail option • Continuous facility treatment with no narrowed section, limiting conflict and safety issues created at trail narrowing / transition locations 	<ul style="list-style-type: none"> • Trail configuration provides separation of different users • Pedestrians and cyclists not physically separated, with moderate potential for conflict • 6.5m total pathway width is the largest continuous paved surface • Large groups may infringe on adjacent mode's trail as no barrier exists • Trail configuration will be restricted and narrowed to a shared use trail at two locations. Changes in trail configuration may lead to user conflict. 	<ul style="list-style-type: none"> • Trail configuration provides separation of different users • Physical separation between cyclists and pedestrians, with the least potential for conflict • Trail configuration will be restricted and narrowed to a shared use trail at two locations. Changes in trail configuration may lead to user conflict.
Section B	<ul style="list-style-type: none"> • Shared use pathway does not separate different users • Potential for user conflict between faster moving bicycles and slower moving pedestrians • 5.0m total pathway width is the narrowest trail option • Continuous facility treatment, limiting conflict and safety issues created at trail narrowing / transition locations 	<ul style="list-style-type: none"> • Trail configuration provides separation of different users • Pedestrians and cyclists not physically separated, with moderate potential for conflict • 6.5m total pathway width is the largest continuous paved surface • Large groups may infringe on adjacent mode's trail • Trail configuration will be restricted and narrowed to a shared use trail at 1 location. Changes in trail configuration may lead to user conflict. 	<ul style="list-style-type: none"> • Trail configuration provides separation of different users • Physical separation between cyclists and pedestrians, with the least potential for conflict • Trail configuration will be restricted and narrowed to a shared use trail at 2 locations. Changes in trail configuration may lead to user conflict.

Section C	<ul style="list-style-type: none"> • Shared use pathway does not separate different users • Potential for user conflict between faster moving bicycles and slower moving pedestrians • 5.0m total pathway width is the narrowest trail option • Continuous facility treatment, limiting conflict and safety issues created at trail narrowing / transition locations 	<ul style="list-style-type: none"> • Trail configuration provides separation of different users • Pedestrians and cyclists not physically separated, with moderate potential for conflict • 6.5m total pathway width is the largest continuous paved surface • Large groups may infringe on adjacent mode's trail • Trail configuration will be restricted and narrowed to a shared use trail at 3 locations. Changes in trail configuration may lead to user conflict. 	<ul style="list-style-type: none"> • Trail configuration provides separation of different users • Physical separation between cyclists and pedestrians, with the least potential for conflict • Trail configuration will be restricted and narrowed to a shared use trail at 3 locations. Changes in trail configuration may lead to user conflict.
------------------	--	--	--

Environmental Impact

The extent to which the trail widening or reconfiguration impacts environmental features such as trees and natural spaces

	Option 1	Option 2	Option 3
Section A	<ul style="list-style-type: none"> • 25-50 trees impacted • Minimal impact on natural spaces • Impact to tree roots 	<ul style="list-style-type: none"> • 50-75 trees impacted • Moderate impact on natural spaces • Impact to tree roots • Partial removal of tree promenade north of Ardersier Road 	<ul style="list-style-type: none"> • 100+ trees impacted • Significant impact on natural spaces • Impact to tree roots • Complete removal of tree promenade north of Ardersier Road • Possible fill required between Cecelia Road and Burnside Road
Section B	<ul style="list-style-type: none"> • <10 trees impacted • Minimal impact on natural spaces • Impact to tree roots 	<ul style="list-style-type: none"> • 10-20 trees impacted • Minimal impact on natural spaces • Impact to tree roots • Possible fill required 	<ul style="list-style-type: none"> • 20-30 trees impacted • Minimal impact on natural spaces • Impact to tree roots • Possible fill required
Section C	<ul style="list-style-type: none"> • 25-50 trees impacted • Moderate impact on natural spaces • Fill may be required • Impact to tree roots 	<ul style="list-style-type: none"> • 50-75 trees impacted • Moderate impact on natural spaces • Fill required • Impact to tree roots • Rock work may be required 	<ul style="list-style-type: none"> • 100+ trees impacted • Significant impact on natural spaces • Fill required • Impact to tree roots • Rock work required

This is not an exhaustive list of all possible environmental impacts, only those easily identified and cross-compared between options. Other possible environmental impacts could include drainage / watercourses and animal habitats, as well as positive impacts such as invasive plant management and GHG reduction.

Facility Quality

The overall quality of design achieved by the trail widening or reconfiguration option, including limiting “pinch points” and providing strong transitions between trail sections and changes in facility types.

	Option 1	Option 2	Option 3
Section A	<ul style="list-style-type: none"> • No facility transitions or pinch points • 100% of corridor achieves desired cross-section 	<ul style="list-style-type: none"> • Facility transitions 2 times from separated pathways to shared-use pathways 	<ul style="list-style-type: none"> • Facility transitions 2 times from separated pathways to shared-use pathways • Loss of landscape buffer at one pinch point • Landscape buffer space may be used to provide trail enhancements such as landscaping treatments, rest areas, signage, and/or public art
Section B	<ul style="list-style-type: none"> • No facility transitions or pinch points • 100% of corridor achieves desired cross-section 	<ul style="list-style-type: none"> • Facility transitions once from separated pathways to shared-use pathways 	<ul style="list-style-type: none"> • Facility transitions 2 times from separated pathways to shared-use pathways • Loss of landscape buffer at one pinch point • Landscape buffer space may be used to provide trail enhancements such as landscaping treatments, rest areas, signage, and/or public art
Section C	<ul style="list-style-type: none"> • No facility transitions or pinch points • 100% of corridor achieves desired cross-section 	<ul style="list-style-type: none"> • Facility transitions 3 times from separated pathways to shared-use pathways 	<ul style="list-style-type: none"> • Facility transitions 3 times from separated pathways to shared-use pathways • Loss of landscape buffer at one pinch point • Landscape buffer space may be used to provide trail enhancements such as landscaping treatments, rest areas, signage, and/or public art

Constructability

The presence / requirement for slopes, drainage, rock blasting, property encumbrances, constrained existing infrastructure and other challenges that impact the ease of construction.

	Option 1	Option 2	Option 3
Section A	<ul style="list-style-type: none"> Minimal slope impacts No impacts to existing licensed and unlicensed property encroachments Full width facility can be carried for entire section with exception of Switch Bridge Minimal concern of tie-ins to existing facilities / roadway intersections No challenges with tie-ins to trail beyond study area 	<ul style="list-style-type: none"> Moderate slope and rock impacts between Gorge Road and Tolmie Lane Facility to be reduced to 5.0m multi-use pathway under Burnside Road and 4.0m multi-use pathway over Switch Bridge Potential tree and property encroachment impacts at Red Lion Hotel Potential drainage impacts under Boleskine Road Moderate concern of tie-ins to existing facilities (Cecelia Ravine Park trail, etc.), roadway intersections and trail sections beyond study area 	<ul style="list-style-type: none"> Moderate to significant slope and rock impacts between Selkirk Trestle and Tolmie Lane Facility to reduce to 5.0m multi-use pathway under Burnside Road, reduced width separate facility under Boleskine Road, and 4.0m multi-use pathway over Switch Bridge Potential tree and property encroachment impacts at Red Lion Hotel Moderate concern of tie-ins to existing facilities (Cecelia Ravine Park trail, etc.), roadway intersections and trail sections beyond study area
Section B	<ul style="list-style-type: none"> Minimal slope impacts along Highway 1 between Harriet Road and Tillicum Road Minimal slope impacts on approach to Interurban Bridge Full width facility can be carried for entire section with exception of Interurban Bridge Minimal concern of tie-ins to existing facilities, roadway intersections and trail sections beyond study area 	<ul style="list-style-type: none"> Moderate to significant slope impacts along Highway 1 between Harriet Road and Tillicum Road. Potential retaining structure required for portion. Moderate slope impacts on approach to Interurban Bridge Full width facility can be carried for entire section with exception of Interurban Bridge Minimal concern of tie-ins to existing facilities, roadway intersections 	<ul style="list-style-type: none"> Significant slope impacts along BC Hwy 1 from Harriet Road to Tillicum Road. Retaining wall required for significant portion. Moderate to significant slope impacts on approach to Interurban Bridge Full width facility can be carried for entire section with exception of Interurban Bridge and McKenzie overpass Minimal concern of tie-ins to existing facilities,

		and trail sections beyond study area	roadway intersections and trail sections beyond study area
Section C	<ul style="list-style-type: none"> • Minimal or no rock impact under Carey Road, Highway 17, and Vernon Avenue • Minimal slope impacts along Swan Lake frontage • Full width facility can be carried for entire section with exception of Brett and Swan Lake Trestles • Minimal concern of tie-ins to existing facilities, roadway intersections and trail sections beyond study area 	<ul style="list-style-type: none"> • Minimal to moderate rock impacts under Carey Road, Highway 17, and Vernon Avenue • Moderate slope impacts along Swan Lake frontage • Minimal slope or rock impacts between Swan Lake Trestle and McKenzie Avenue • Full width facility can be carried for entire section with exception of Vernon Avenue underpass, Brett and Swan Lake Trestles • Minimal concern of tie-ins to existing facilities, roadway intersections and trail sections beyond study area 	<ul style="list-style-type: none"> • Moderate to significant rock impacts to rock cuts under Carey Road, Highway 17, and Vernon Avenue • Moderate to significant slope impacts along Swan Lake frontage • Moderate slope or rock impacts between Swan Lake Trestle and McKenzie Avenue • Full width facility can be carried for entire with exception of Carey Road, Highway 17, and Vernon Avenue underpasses and Brett and Swan Lake Trestles • Minimal concern of tie-ins to existing facilities, roadway intersections and trail sections beyond study area

Maintenance / Operations

The level of maintenance and operational effort required for by the trail widening or reconfiguration

	Option 1	Option 2	Option 3
Asphalt Surface	<ul style="list-style-type: none"> Least paved surface of the three options, resulting in less maintenance to repair asphalt surface (cracking, disrepair) 	<ul style="list-style-type: none"> Increased paved surface over Option 1, requiring greater maintenance 	<ul style="list-style-type: none"> Increased paved surface to be maintained over Option 1, plus physical separation creating more challenging repairs over Option 2
Pavement Markings	<ul style="list-style-type: none"> Approximately half the number of pavement markings that require upkeep as compared to Options 2 and 3, where only the shared use stencil is needed 	<ul style="list-style-type: none"> Approximately 2 times the number of pavement markings that require upkeep over time as compared to Option 1, including bicycle / pedestrian stencils on both trail facilities 	
Grass / Landscape	<ul style="list-style-type: none"> Basic grass mowing and landscape maintenance at the trail edge 		<ul style="list-style-type: none"> Added requirement for mowing and landscape maintenance due to centre boulevard Lights in centre median add complexity to mowing requirement by creating further obstacle to mow around
Sweeping	<ul style="list-style-type: none"> Least effort required to clear leaves and debris due to narrowest trail surface and lack of separation 	<ul style="list-style-type: none"> Clearing leaves and debris requires moderately more effort than Option 1 due to widened facility 	<ul style="list-style-type: none"> Level of effort involved in sweeping leaves and debris would be approximately double that of the other options due to physical trail separation
Snow Clearing	<ul style="list-style-type: none"> Least effort involved in snow clearing due to narrow, unseparated trail surface 	<ul style="list-style-type: none"> Snow clearing requires moderately more effort than Option 1 due to widened facility 	<ul style="list-style-type: none"> Greatest effort required for snow clearing due to physical trail separation
Lighting	<ul style="list-style-type: none"> Lampposts require corrective and preventative maintenance (cleaning, graffiti removal) 	<ul style="list-style-type: none"> Slightly increased number of lampposts on wider pathway than Option 1 that may require future maintenance (cleaning posts, graffiti) 	<ul style="list-style-type: none"> Number of lampposts is less than Option 2 with use of centre median lights, but with increased luminaires due to double-headed lights

	<ul style="list-style-type: none"> • Use of LED luminaires require minimal maintenance (may require replacement in 10-20 years) • Lighting maintenance would be a new operation task for CRD 	<ul style="list-style-type: none"> • Use of LED luminaires require minimal maintenance (may require replacement in 10-20 years) • Lighting maintenance would be a new operation task for CRD 	<ul style="list-style-type: none"> • Use of LED luminaires require minimal maintenance (may require replacement in 10-20 years) • Lighting maintenance would be a new operation task for CRD
--	--	--	--

**REPORT TO REGIONAL PARKS COMMITTEE
MEETING OF WEDNESDAY, JANUARY 27, 2021**

SUBJECT CRD Regional Parks and Trails – 2020 Update

ISSUE SUMMARY

To present an update on 2020 Regional Parks and Trails Accomplishments

BACKGROUND

This report presents accomplishments for 2020 and information on the Regional Parks services and programs.

Regional Parks staff are extremely appreciative of the support and the patience of the public as the CRD continues to respond to COVID-19 challenges. The success of 2020 is in large part due to volunteer groups; First Nations, local, provincial and municipal governments; community organizations; and all CRD staff, who demonstrated their stewardship of, and commitment to, regional parks and trails. The support of a number of generous donors and organizations also helped with the acquisition of additional land and the completion of important projects.

RECOMMENDATION

The Regional Parks Committee recommends to the Capital Regional District Board:

That the Regional Parks and Trails – 2020 Update be received for information.

Submitted by:	Jeff Leahy, RPF, Senior Manager, Regional Parks
Concurrence:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services
Concurrence:	Kevin Lorette, P. Eng., MBA, Acting Chief Administrative Officer

ATTACHMENT

Appendix A: Presentation – CRD Regional Parks and Trails – 2020 – Year in Review

CRD REGIONAL PARKS AND TRAILS

2020 – YEAR IN REVIEW

Presentation to:
Regional Parks Committee
January 27, 2021

Mount Work, East Sooke and Matheson Lake & Roche Cove regional parks management planning processes

- Initiated park management planning process in May 2020.
- Conducting initial phase of public engagement and reporting back activities.
- Engaging in discussions with WSÁNEĆ Leadership Council reps, T'Sou-ke Nation & Sc'ianew First Nations.



Southern Gulf Islands Regional Trail design project initiated

- Developing engineering designs for future regional trails on North Pender, Galiano and Saturna islands.

Completed Park Opening Plan: Sooke Hills Wilderness – Southern Section

- Identified opening trail system, facilities type and location, and access points.

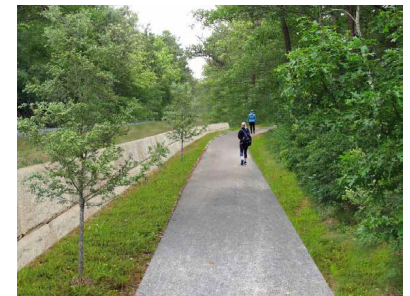


Mayne Island Regional Trail Phase 1 development project initiated

- \$2.8 million Investing in Canada Infrastructure grant received.
- Project initiated in June, archaeological overview assessment completed in November.



Present



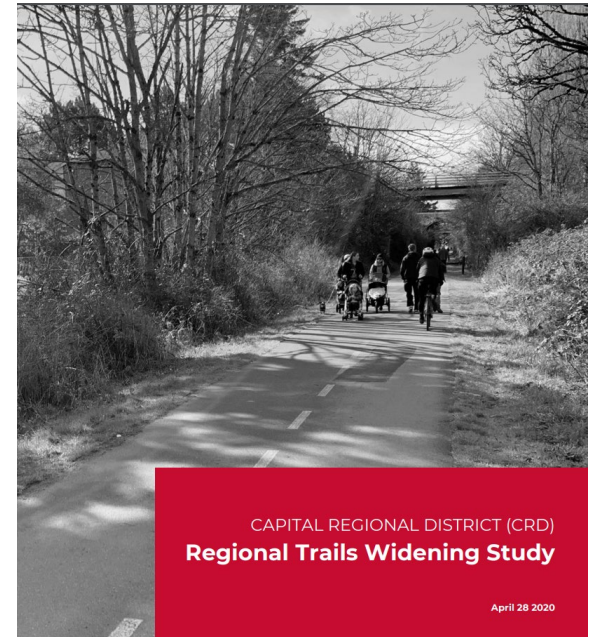
Future

Regional Trails Widening & Lighting Study

- Advanced Regional Trails Management Plan priority action.
- Report completed in 2020 for priority sections of Galloping Goose and Lochside regional trails, including a cost refinement analysis.

Planning Development Referrals

- 106 reviewed in 2020 for development activities adjacent to regional parks and trails.



Rehabilitation of the Todd Creek Trestle

- Along the Galloping Goose Regional Trail near Sooke Potholes Regional Park.
- This four-storey wooden trestle was originally built in 1917 as part of the Canadian National Railway and its historical value has been maintained. It is now reopened to the public for use after significant damage several years ago.



Durrance Lake Dam in Mount Work

- 'Upgrade or Decommission Options' Review.



Millstream Fishway Project at Mill Hill – opens another 7 km of upstream habitat for salmon

- Led by Peninsula Stream Society, completed in November, leading discussions towards a MOU for long-term maintenance and monitoring (CRD, PSS and Langford).



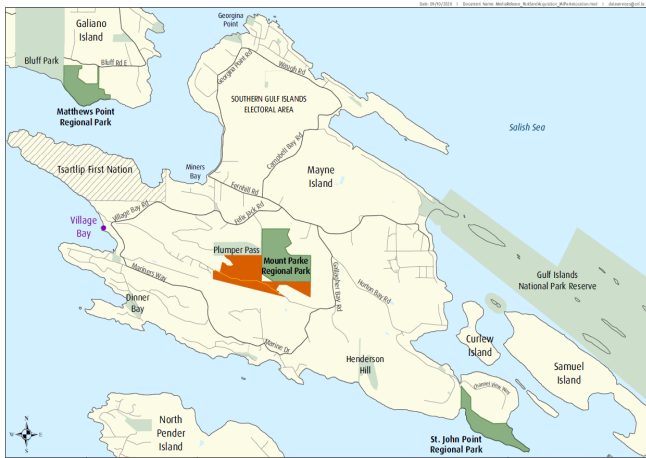
Elk/Beaver Lake Initiative

- Watershed Management Plan approved; seeking funding for 50% of capital costs for an oxygenation system.

Land Acquisition

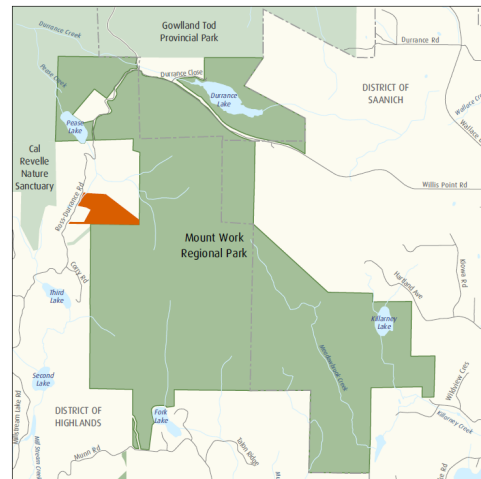
Mount Parke Addition on Mayne Island

- October - acquired a 41-hectare forested parcel, trails and sensitive ecological areas.
- Receiving 2 donations to aid in the \$855,000 purchase (\$50,000 from the Mayne Island Conservancy, \$105,000 from the landowner).



Mount Work Regional Park Addition

- In December, acquired 12.1 hectares of forested land for \$760,000.



Mountain Road Property

- In December - Board agreed to purchase, in partnership with the Habitat Acquisition Trust, a 20-hectare property in Saanich.
- Contributing up to \$2 million, the remainder funded through community fundraising and landowner donation.



Land Acquisition Program

- Land Acquisition Strategy (2020–2021) renewed and 42 Property assessments completed.

Compliance and Enforcement

CRD

Visitation increased 25% in Regional Parks in 2020 to 8,529,256 visits

- 1,700 hrs of patrol (coordinated with CRD Bylaw Enforcement Service)
- 6,000 public relations contacts
 - 3,000 resulting in voluntary compliance
 - 192 written warnings
 - 59 evictions
 - 29 MTIs
- 280 hours on active wildfire mop-up duties



Operations Projects

- Expanded parking at East Sooke Aylard Farm
- Upgraded and re-roofed, picnic, kiosks and rest shelters in East Sooke and Sooke Potholes



Operations Projects

CRD

- Sooke Hills Wilderness Regional Park
- Construction of a 60-vehicle parking lot
- 3 wooden footbridges
- 50-foot clear span aluminum bridge



Operations Projects



- Bridge replacement along the 10K trail at Elk/Beaver Lake
- Trail restoration at Horth Hill
- Rebuild Mount Manuel Quimper Fire Lookout Tower



Pandemic Outreach by the Interpretation Team

In response to the global pandemic and the challenge of increased visitation, interpreters conducted extensive social distancing education, reminding visitors to enjoy parks safely.

- Between March and September, staff spoke to 24,500 visitors in person
- Four rec centre staff joined interpretation staff to conduct outreach
- Many visitors reacted positively to seeing an increased staff presence
- Related social media posts received many comments that supported the decision to keep regional parks open and expressed gratitude towards park staff

"Here's a park system finding ways to say yes. Kudos @crd_bc! And @crd_bc is doing great visitor education on how to visit responsibly. They're finding ways to say yes."

- Social media user



Staff demonstrate physical distancing while conducting outreach

A Return to Programming

Between July and November, staff offered 38 public nature programs and saw 3,020 visitors participate

- New self-guided opportunities reached visitors who may not normally book a guided program

Fall 2020, staff delivered 18 school programs

- Given limited transportation options, programs were offered in more parks, to accommodate schools that could walk to parks

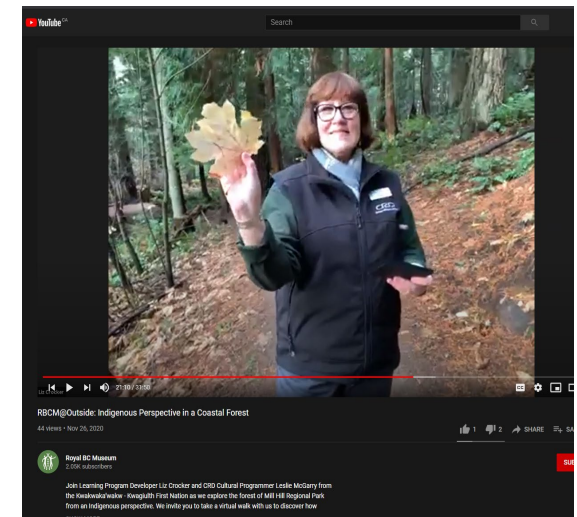
To support teachers in their return to school, staff offered three new professional development workshops on the topic of teaching curriculum outdoors



Adapted programming combining in-person and self-guided learning

Cultural Program

- Meeting with educators from local First Nations to discuss the development of school programs with cultural content
- Developing a cultural display which includes a territorial acknowledgement for the Francis/King Nature Centre
- Piloting a live online park program in partnership with The Royal BC Museum
- Drafting a self-guided walk titled “Exploring Indigenous Perspectives”
- Drafting three cultural school programs
- Evaluating current program offerings for opportunities to include cultural content



Online program “Exploring Indigenous Perspectives in a Coastal Forest” and display items at the Nature Centre

**REPORT TO PLANNING, TRANSPORTATION AND PROTECTIVE SERVICES COMMITTEE
MEETING OF WEDNESDAY, OCTOBER 21, 2020**

SUBJECT South Island Transportation Strategy

ISSUE SUMMARY

To receive the South Island Transportation Strategy for information.

BACKGROUND

Transportation consistently ranks as a significant regional issue due to concerns related to congestion, travel time and greenhouse gas emissions. The CRD's Regional Growth Strategy (RGS) and Regional Transportation Plan (RTP) identify objectives and policies to address these matters of regional concern.

In recognition of the above, the Ministry of Transportation and Infrastructure (MoTI) commissioned the South Island Transportation Strategy (SITS) with the purpose of developing a regional roadmap for future provincial multi-modal investments in transportation infrastructure. The strategy focuses on road networks and agencies within MoTI's jurisdiction.

The strategy advances four key goals:

1. Ensure Sustainable Multi-Modal Travel Options
2. Strengthen Inter-Community and Inter-Modal Connections
3. Improve Safety and Reliability
4. Support and Encourage Active Transportation

SITS emphasizes the need for improved transportation choice, reliability and safety, focusing on green transit and active transportation improvements at mobility hubs and along connecting corridors. The strategy identifies short-, medium- and long-term priorities, as follows:

SITS Priorities	Impact to the Region
Short-Term: transit exchanges, queue jumpers, queue lanes, park and rides and ultimately grade separation of intersections along the highway network to meet provincial climate and transportation objectives.	<ul style="list-style-type: none">• Consolidates provincial projects across the region into one strategy.• Provides clear picture of committed and near-term investments in infrastructure upgrades.
Medium- and Long-Term: variety of potentially significant projects including rail, ferry, bridges, light rail transit (LRT) and bus.	<ul style="list-style-type: none">• Many projects have been previously studied and were identified to have significant costs.• Not identified as immediate provincial priorities.• No level of regional agreement on whether the projects should have priority status.

Appendix A provides the South Island Transportation Strategy. Appendix B summarizes the alignment between the SITS goals and ongoing RTP implementation actions, identifies examples of CRD and partner actions to implement the RTP and outlines CRD involvement in external transportation projects. Appendix C provides a map of recent and planned infrastructure projects.

ALTERNATIVES

Alternative 1

The Planning, Transportation and Protective Services Committee recommends to the Capital Regional District Board:

That the South Island Transportation Strategy be received for information.

Alternative 2

That the South Island Transportation Strategy staff report be referred back to staff for further information based on Planning, Transportation and Protective Services Committee direction.

IMPLICATIONS

Environmental & Climate Implications

SITS was written through a climate action lens. The strategy recognizes that the CRD has declared a climate emergency and focusses on increasing active transportation, transit and the use of electric vehicles in an effort to mitigate climate change. This focus aligns to the CRD's Regional Climate Action Strategy.

Intergovernmental Implications

MoTI staff engaged with municipal and First Nations stakeholders through the development of the strategy. MoTI staff presented and sought feedback from both the CRD Transportation Committee and the Committee of the Whole. Board members provided numerous suggestions with a focus on strengthening the climate change lens, incorporating active transportation more strongly and considering the equity impacts of recommendations. These suggestions were incorporated into the strategy.

Given the current governance and funding models, implementation of regional transportation objectives relies on collaborative partnerships between local, regional and provincial levels of government. With the introduction of SITS, the Province has identified a number of priorities that advance the RTP objectives on roadways within MoTI's jurisdiction, including transit priorities. A key RTP implementation activity at the municipal level has been the development of transportation plans for local street networks. These plans have frequently resulted in infrastructure improvements that advance the RTP objectives to shift mode share.

Regional Growth Strategy Implications

The RGS sets out a settlement concept of complete communities connected by a multi-modal transportation network. SITS reinforces this concept through a focus on mobility hubs and prioritization of transit and active transportation improvements in provincial projects. Implementation of SITS priorities may progress the RGS mode share target of 42% cycling, walking and taking transit by 2038.

Financial Implications

The strategy will have limited cost and funding implications to the CRD. Transportation infrastructure investments, other than the regional trail system, fall outside CRD jurisdiction and service mandate. No new funding was provided with the release of the strategy. Since 2017, the Province has invested or committed to investing more than \$500 million in the South Island. SITS references a need for shared investment from all levels of government. See Appendix C for a map of provincial investments in transportation infrastructure projects around the region.

Service Delivery Implications

The strategy does not make any firm recommendations or commitments in relation to potential new infrastructure projects. It does provide very general time frames for some of the potential projects. Further, the strategy does not address the need for improved east west connectivity in the region (i.e., McKenzie improvements between Highway 1 and 17) or provide recommendations in relation to new potential major transit opportunities. Recommendations related to new governance models were outside the scope of the SITS project. See Table 1 in Appendix B for a summary of the RTP as it relates to SITS.

Given the current governance and funding model, the CRD's role in regional transportation is to provide transportation advocacy, data collection and dissemination, and technical expertise on transportation projects throughout the region. With a focus on maintaining and developing cooperative partnerships, CRD staff will work closely with partners across the region on any future initiatives resulting from the plan. See Table 2 in Appendix B for an outline of how the CRD is involved with transportation projects led by municipal, provincial and agency partners.

Per Board priorities, the RGS and the RTP, CRD staff will continue to:

- convey the need to protect the E&N Corridor for future transportation use;
- work with government/community partners to increase use of public transit, walking and cycling and to plan for and deliver an effective, long-term regional multi-modal transportation system;
- leverage opportunities to take a leadership role to pursue regional carbon neutrality by 2030;
- create and deliver more affordable housing in complete communities across the region;
- work with partners from municipalities, electoral areas and agencies to understand local priorities, share knowledge and facilitate implementation of the RTP; and
- provide data inputs and technical expertise on transportation projects through participation in technical working groups related to priority BC Transit and MoTI measures.

Alignment with Board & Corporate Priorities

SITS aligns to Board and corporate priorities related to transportation, housing and climate action. Making progress on these priorities helps meet community needs for convenient and green transportation options, improved community well-being and reduced GHG emissions.

Alignment with Existing Plans & Strategies

CRD adopted the RTP in 2014 to identify a regional multi-modal transportation system that meets future growth demands with a focus on sustainability. The RTP includes eight regional outcome statements and accompanying actions to guide partner implementation. CRD staff used the RTP and Board priorities as the basis for input in both the technical and advisory groups for this project. Appendix B shows the alignment of SITS goals to the RTP outcome statements and summarizes CRD and partner actions that will progress implementation.

Given that the RTP does not identify any priority transportation infrastructure projects, staff were not in a position to advocate for any individual infrastructure priorities. The biggest challenge for improving multi-modal travel continues to be the relationship of land use to transportation nodes in the region.

CONCLUSION

SITS provides a roadmap for future provincial investments in multi-modal transportation predominately within areas under MoTI jurisdiction. The strategy reflects the CRD RTP objectives and rolls a number of existing plans and current projects into one document. While SITS aligns to Board priorities for transportation, the strategy does not identify any new funding or provide recommendations in relation to potential major infrastructure projects. Implementation of regional transportation objectives will continue to rely on a collaborative partnership approach between local, regional and provincial levels of government.

RECOMMENDATION

The Planning, Transportation and Protective Services Committee recommends to the Capital Regional District Board:

That the South Island Transportation Strategy be received for information.

Submitted by:	Emily Sinclair MCIP, RPP, Senior Manager, Regional & Strategic Planning
Concurrence:	Kevin Lorette, P. Eng., MBA, General Manager, Planning & Protective Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT(S)

Appendix A: South Island Transportation Strategy

Appendix B: Summary Analysis – South Island Transportation Strategy and the Regional Transportation Plan

Appendix C: Recent and Planned Transportation Projects in the CRD



Ministry of
Transportation
and Infrastructure

September 2020

South Island Transportation Strategy

Transforming South
Island Transportation





Galloping Goose Regional Trail

21 DOWNTOWN

9850

BCTransit

9850

Hwy 21

Contents

Message from the Minister	2
Introduction	3
South Island Vision	4
Working with Indigenous, Local, Regional and Provincial Priorities	5
South Vancouver Island's Transportation Network	6
Working with Indigenous and Local Governments, and Stakeholders	8
Why Investments are Needed: Challenges and Opportunities	10
Safety	10
Reliability	12
Sustainability	13
Connectivity	15
Aligning Goals and Aspirations	16
1. Ensure sustainable options for a variety of travel modes	18
2. Strengthen connections between travel modes and improve connections between communities	21
3. Improve the safety and reliability of the transportation network	22
4. Support and encourage active transportation options	24
Summary of Priorities	26
Implementing the Strategy	28
Conclusion	29

Message from the Minister

Over the last few months, the lives of many British Columbians have been disrupted as we have been forced to adapt to the challenges presented by the COVID-19 pandemic. It's been a difficult time for many, but B.C.'s Restart Plan is putting us on a road to social and economic recovery.

This time has also provided a unique opportunity that we don't often get—a chance to see how our communities look and move when we slow down. It also gives us a glimpse at what our transportation future could look like with careful planning.

In neighbourhoods across southern Vancouver Island, you'll see more and more families out for walks. People are exploring their communities by bike. Joggers, skateboarders and people on scooters are bringing our streets and sidewalks alive.

As we reset and carefully find our way to a new normal, it's my sincere hope that the change people have begun to embrace will continue. Fewer gas-powered and single-occupant vehicles on the road; more people walking and biking; an increased emphasis on public transportation to get around.

That's the future we're working toward with our South Island Transportation Strategy.

Improvements to the public transportation network across the South Island are at the centre of this strategy, to make it easier for people to get to transit, and to make transit the quicker, more convenient choice for travel. We'll look at all options to make public transit more accessible, including exploring the possibility of commuter rail between Victoria and Langford.

We see existing regional employment and commercial centres, including Uptown/Mayfair, Sidney, Langford, Colwood and Sooke, becoming nodes for integrated transportation—places close to home that serve as a local hub for all modes of regional travel.

It's an approach to transportation that will strengthen neighbourhoods and help build healthy, sustainable communities that support transportation needs for all ages and abilities.

When we integrate park and ride facilities, and bike and pedestrian trails with transit service at regional hubs, it means that outlying, less expensive areas of the region become more accessible.

This will lead to an increase in affordable housing options across the region. People can choose to live in some of the more affordable areas of the region and still get to key destinations like the university, healthcare facilities and the downtown core quickly and efficiently.

These are all ideas we are exploring in our effort to invoke a bold and lasting change in mobility, and our work begins today. Partnerships with Indigenous, local, regional and federal governments, and transportation agencies like BC Transit and BC Ferries will be integral to moving this plan forward.

In short, we're working to close gaps in local networks and make travel across the region as seamless as possible. I look forward to continuing our good work together as we build liveable, affordable communities and make life better for those who live, work and play across southern Vancouver Island.



Honourable Claire Trevena

Minister of Transportation and Infrastructure

Introduction

The Province is committed to making life better for the people that live, work and travel in the South Island. This is reflected in many initiatives already underway across the province.

The South Island is home to a diverse population and economy situated in an exceptional natural location that continues to attract businesses and people that want to take advantage of all the region has to offer. To ensure the South Island remains prosperous, we've developed an integrated transportation strategy to support sustainable growth. This Strategy aims to connect people, services and goods safely and reliably across the South Island and to the rest of the province, while supporting affordable, accessible, healthy, vibrant communities, and a strong economy and environment.

The Province recognizes a growing need to fundamentally shift how people move around South Vancouver Island. New approaches are essential to address transportation challenges that go beyond reducing our dependence on single-occupancy vehicles. The COVID-19 pandemic has highlighted the true potential of our transportation network and the opportunity to create an integrated network that is desirable to use. People must feel safe using active transportation routes. Using public transportation must be appealing for commuters. This will require careful thought and consideration moving forward.

The pandemic has also highlighted the need for investments in our transportation infrastructure to be dynamic and responsive to rapidly changing situations.

There are many opportunities to improve existing transportation networks in new ways, such as shifting towards sustainable travel choices, improving connections and building integrated transportation networks, and accommodating a variety of transportation options to move people and goods throughout South Vancouver Island.

The South Island Transportation Strategy is an integrated approach to support and encourage many travel choices by focusing policy and investment on increasing the infrastructure needed to build connections, capacity, improve safety and the choices for sustainable travel. The Strategy identifies where there are gaps and barriers to a robust and sustainable inter-regional network.

In developing the Strategy, the Ministry of Transportation and Infrastructure worked with Indigenous and local governments, transportation authorities and key stakeholders to gather information as well as gain Indigenous, local and regional perspectives. What we heard is reflected in the goals we have developed and the priorities set out in this Strategy.

Achieving these goals will require partnerships with Indigenous, local and regional governments, transportation authorities, and key stakeholders. Furthermore, through strong relationships, the strategy will guide the Province in its policies, programs and investments for transportation on the South Island.

South Island Vision

The South Island Transportation Strategy was informed and shaped by multiple priorities. Since 2017, the Provincial Government has implemented a wide range of strategies and plans to make life better for all British Columbians, including those in southern Vancouver Island. This includes building infrastructure that our growing province needs to benefit people and families, regardless of where they live or their economic status.

Additionally, in this year's Budget 2020, the Ministry of Transportation and Infrastructure, alongside the Ministry of Municipal Affairs and Housing, committed to undertaking a new Integrated Transportation and Development Planning (ITDP) process to create a collaborative vision for B.C.'s transportation and affordable development needs. This will contribute to an efficient and accessible transportation network for all travel options that connects communities, regions and global markets. Developing an integrated transportation plan that is founded on land use, affordable housing, sustainability and connectivity is key to making a lasting change in the South Island. It will improve economic prosperity and make life better for the people who live here.

The Province is committed to building a sustainable economy that will create good-paying jobs, help businesses succeed, and ensure we can supply the programs and services needed by our diverse and growing population.

The COVID-19 pandemic has emphasized the need to be responsive and adaptable to changing situations that can affect all aspects of day-to-day life. While it is still unknown what the lasting effects of the pandemic may be, the core values that make up the long-term strategy for a sustainable growth and a healthy economy remain unchanged. The current situation shows the need for a resilient and sustainable transportation system that can aid in our immediate recovery.

As recovery from the pandemic continues, in order for the economy to keep pace with projected population and trade growth, British Columbia needs an integrated transportation strategy aligned across regions, such as the South Island. We must be able to address congestion on our trade corridors, enable the seamless movement of people and goods, and encourage development of diverse, affordable, connected communities.

Providing people with affordable and efficient travel choices in the South Island will allow for better engagement in economic opportunities, partnerships with Indigenous communities, and better social connections.

Improving the connectivity of urban and rural areas for the movement of people and goods will assist the resource sectors and employment centres in the South Island, which support the economy of this region and the province.

Integrating land use, housing, and economic development with transportation investment and policies within the South Island will support sustainable development and have positive impacts on affordable housing, accessibility, climate change and quality of life.

Creating safe and reliable trade corridors in the South Island is a key component of a sustainable economy for the region and the province.

Working with Indigenous, Local, Regional and Provincial Priorities

The Strategy does more than build on the many previous transportation planning initiatives completed in the South Island by the ministry and others. It is a new way of thinking that seeks to develop a distinct set of goals that still align with the current policies, goals, planning and priorities of Indigenous, local and regional governments, and key stakeholders.

The Strategy was developed with input from Indigenous, local, regional and provincial plans and initiatives which are shaping the direction of transportation in the region and across the province, including:

- Move. Commute. Connect. (B.C.'s Active Transportation Strategy)
- CleanBC
- Cowichan Tribes Transportation and Mobility Plan
- 2018 Vancouver Island Economic Alliance Report
- Capital Regional District (CRD) Regional Transportation Plan
- CRD Regional Trail Master Plan
- CRD Regional Growth Strategy
- Victoria Transit Future Plan
- Cowichan Valley Regional District (CVRD) Regional Collaboration Framework
- Municipal plans (Let's Move Saanich; GoVictoria)
- 2020 Island Rail Corridor Condition Assessment Report (Ministry of Transportation and Infrastructure)
- 2019 Westshore Express Passenger Ferry Service Pre-Feasibility Study (SNC Lavalin)

While the Strategy considered these plans and initiatives to ensure alignment with the various priorities across the region, it seeks to take it a step further with a bold and innovative approach to integrated planning.

These documents were developed and reviewed prior to the COVID-19 pandemic, but remain important and relevant to the Strategy.

Aligning with Economic Recovery

As we look forward to implementation, additional engagement will be required to ensure the dynamic nature of the transportation sector continues to respond and react to the changing needs of communities, as we adjust to the new realities of life and work in a post-pandemic environment.

South Vancouver Island's Transportation Network

The study area focused on all transportation corridors in South Vancouver Island and encompassed areas as far north as Duncan, as far west as Sooke, and the entire Saanich Peninsula. Corridors serving a variety of transportation choices, such as commuter corridors, marine and ferry corridors, rail corridors, and the active transportation and road corridors, were also part of the study area.

The current network includes:



One Rail Corridor
(Island Rail Corridor)



One dedicated bus only corridor
(Highway 1/Douglas Street)



Two provincial ferry corridors
(Swartz Bay and Mill Bay/
Brentwood Bay)



Two international ferry corridors (Belleville and
Anacortes)



Four Regional Trail Corridors
(E&N, Galloping Goose, Lochside
and Trans Canada/Great Trail)



Air corridors (Victoria International
Airport, Victoria Harbour and
Camel Point)



Three major highway corridors
(Highways 1, 14 and 17)



Local and arterial corridors
(13 municipalities)

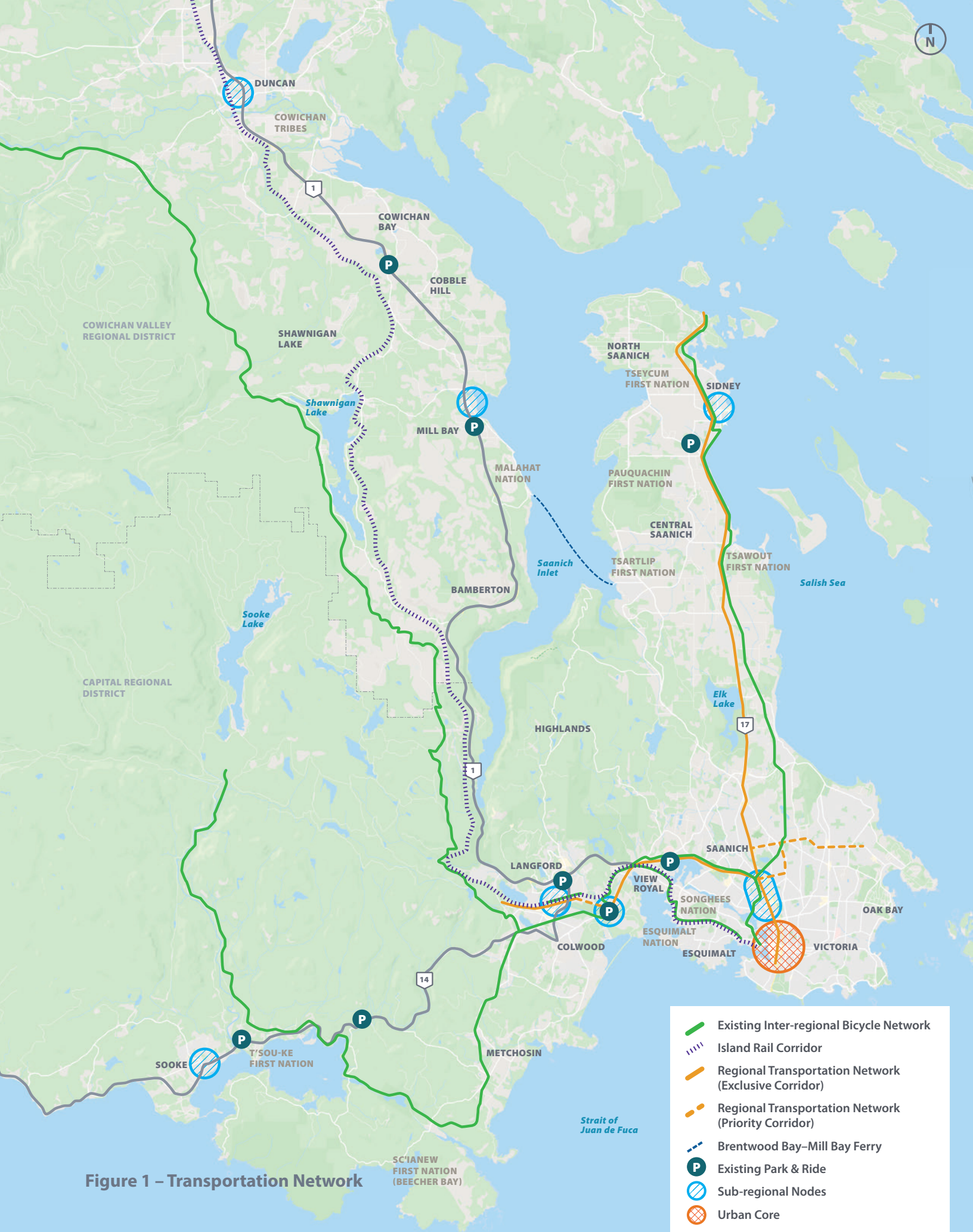


Figure 1 – Transportation Network

Working with Indigenous and Local Governments, and Stakeholders

The Strategy was developed, in part, by building on the extensive consultation that has been undertaken to develop a wide variety of transportation initiatives in the area (for example, the CRD Regional Transportation Plan, BC Transit Future Plan, Active Transportation Strategy, Clean BC and municipal plans).

As part of the process, the ministry worked with Indigenous, local and regional governments, transportation authorities, and key stakeholders who offered valuable perspectives on various modes of transportation in the region.

The ministry engaged with the 16 Indigenous communities represented in the South Island to understand their specific interests and challenges. The ministry will continue to work collaboratively with these Indigenous groups to support safe and more accessible transportation networks for their communities.

A Technical Advisory Group consisting of representatives from the Capital Regional District (CRD), Cowichan Valley Regional District (CVRD), municipalities, BC Transit, BC Ferries and the Department of National Defense was created to provide a wide cross-section of the interests and priorities throughout the South Island.

Feedback received from this group was used by the ministry to ensure that we fully understood regional challenges, and that our priorities and aspirations were aligned. It also reinforced that the successful implementation of the Strategy will require partnerships and collaboration.

Engagement

The ministry held **more than 40 meetings, workshops and presentations** with Indigenous, local and regional governments, transportation authorities and key stakeholder groups over the course of the creation of the Strategy.



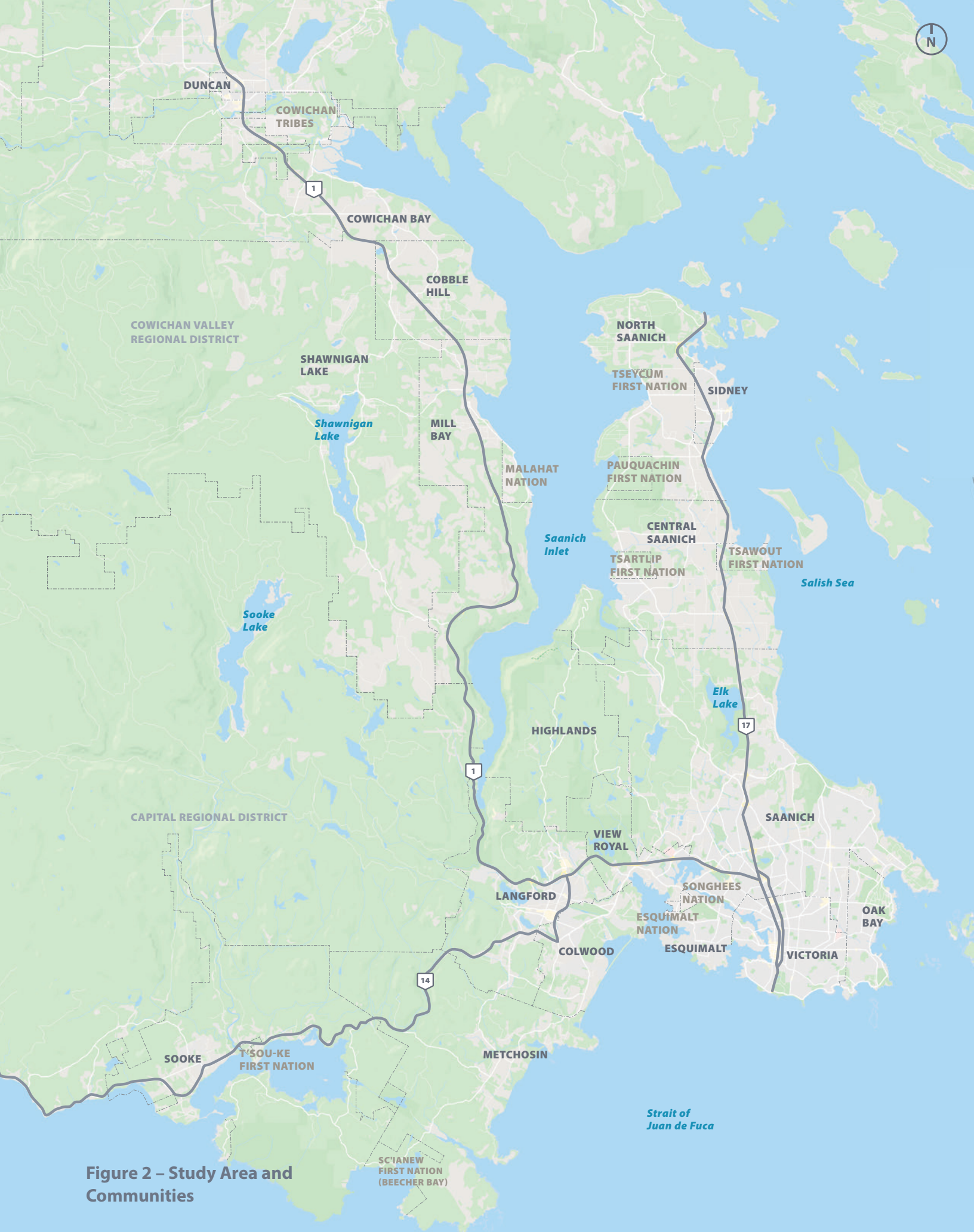


Figure 2 – Study Area and Communities

Why Investments are Needed: Challenges and Opportunities

Safety

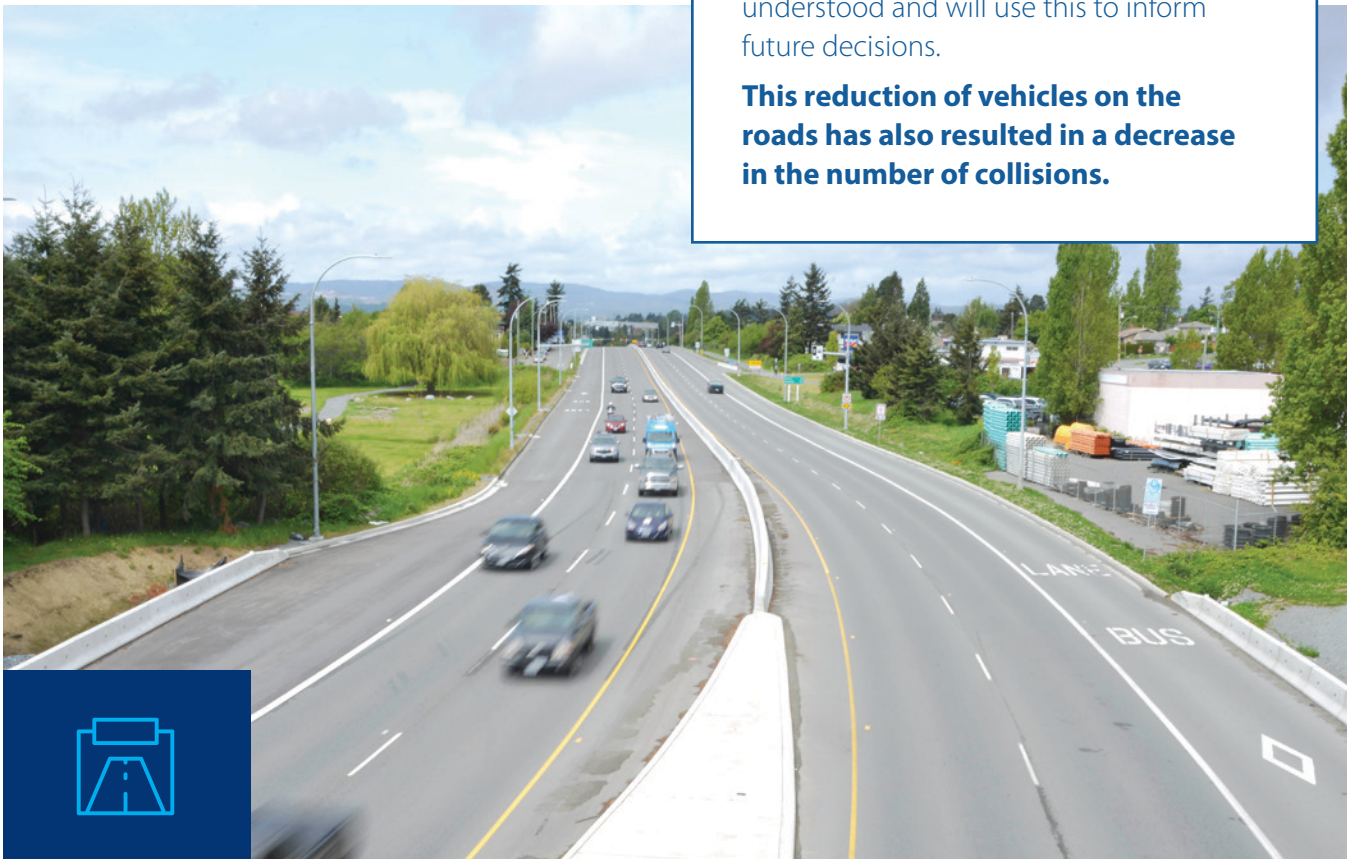
The ministry supports Vision Zero, in which traffic fatalities and serious injuries are eliminated. While safety is a priority throughout the South Island, safety issues are particularly evident along Highway 1 and Highway 17, where collision rates are highest at select major intersections.

Improvements to the active transportation networks, such as crossings and separation from traffic, reduces the conflict with vehicles.

Analysis of traffic volumes during two months of the COVID-19 pandemic (March and April 2020) shows a decrease of traffic on major corridors between 26-53%, when compared to the same period in 2019.

The ministry will continue to monitor travel patterns throughout the year to ensure that the long-term impacts of COVID-19 on the network are better understood and will use this to inform future decisions.

This reduction of vehicles on the roads has also resulted in a decrease in the number of collisions.



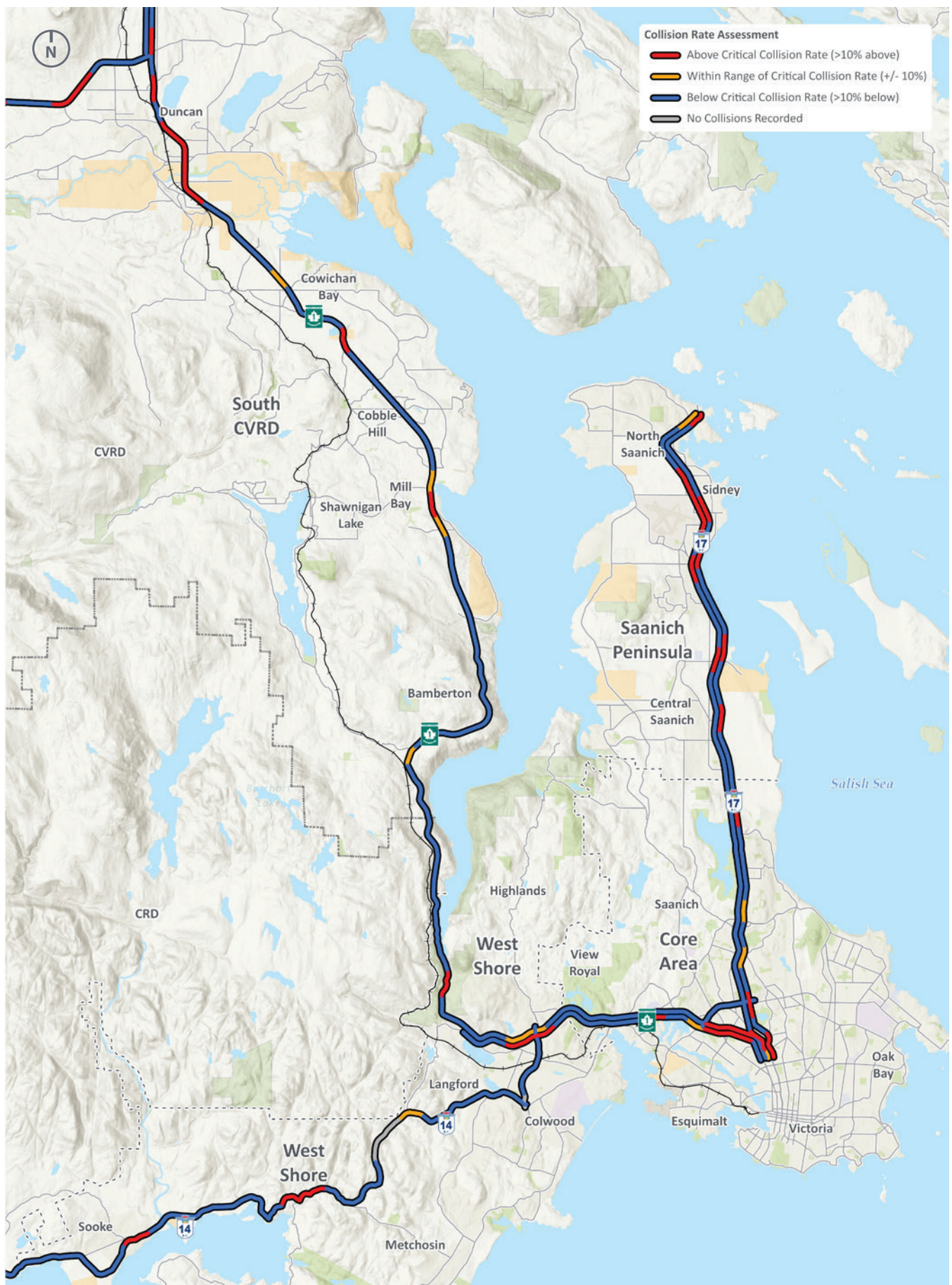


Figure 3 – Collision Rates

Reliability

Greater variation in travel time indicates reduced reliability. The outlying areas of the South Island experience issues with reliability, such as along the Highway 17 and Highway 14 corridors, and sections of Highway 1 outside the core areas.

Reducing the reliance on single occupancy vehicles by increasing transit and active transportation options will result in travel time savings for all modes of transportation.

As people move from their vehicles to alternative modes of transportation, we will need to ensure that the transit and cycling infrastructure is sufficiently robust to afford users with reliable travel times.

Continued improvements to the transit network, such as the bus only Douglas Street Corridor, have led to improved reliability and travel times for transit users.

The COVID-19 situation has impacted travel times and will continue to be monitored to better understand the effects of the pandemic on the network.

Unpredictable Travel Times

A typical vehicle trip in 2019 from Mill Bay to Victoria would take approximately:



43 minutes during the morning peak and **as long as 66 minutes** on some days.

With expected growth, by 2038, this same trip would take:



up to **87 minutes** on a typical day and up to **144 minutes with variability of conditions**.

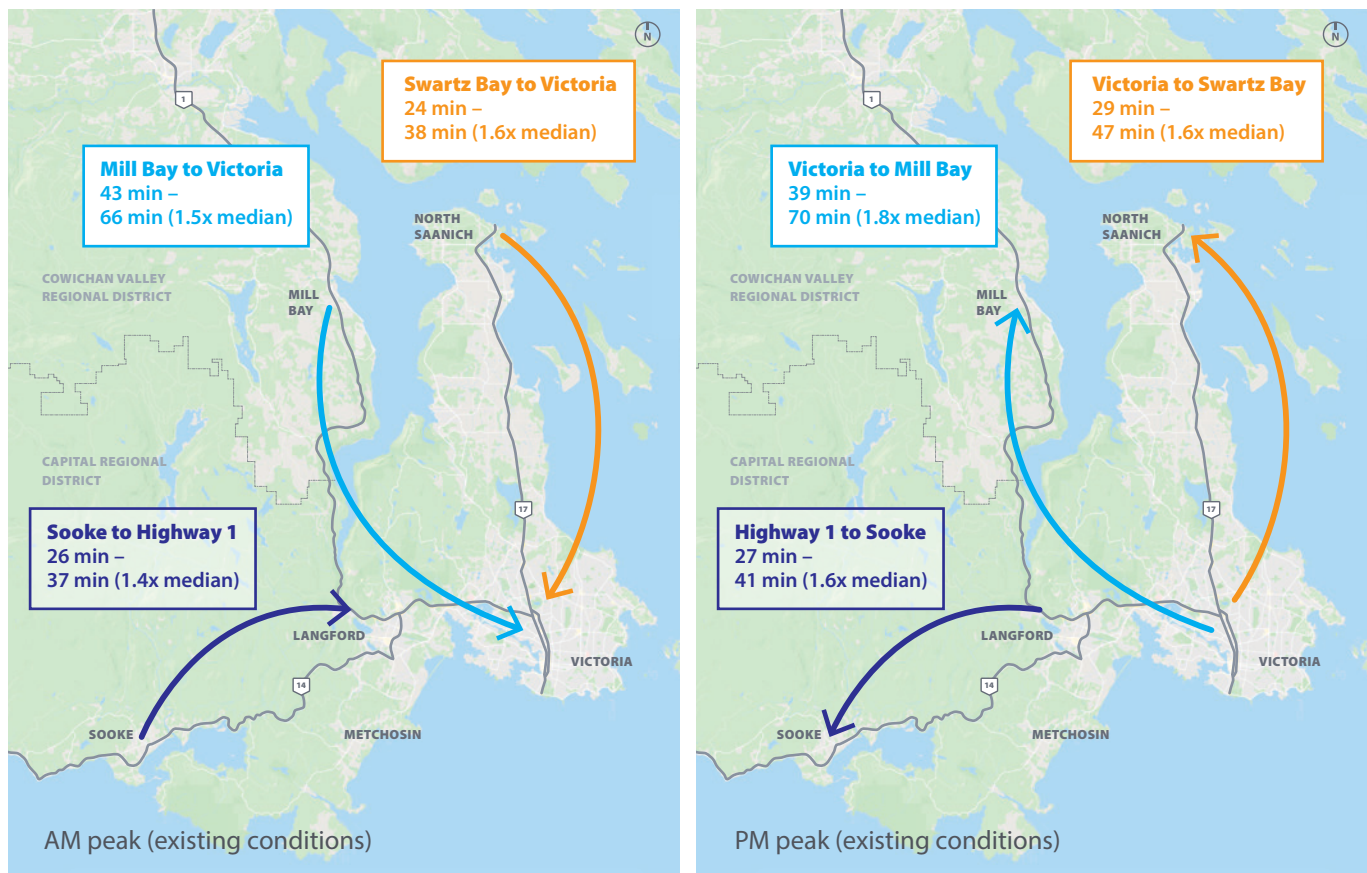
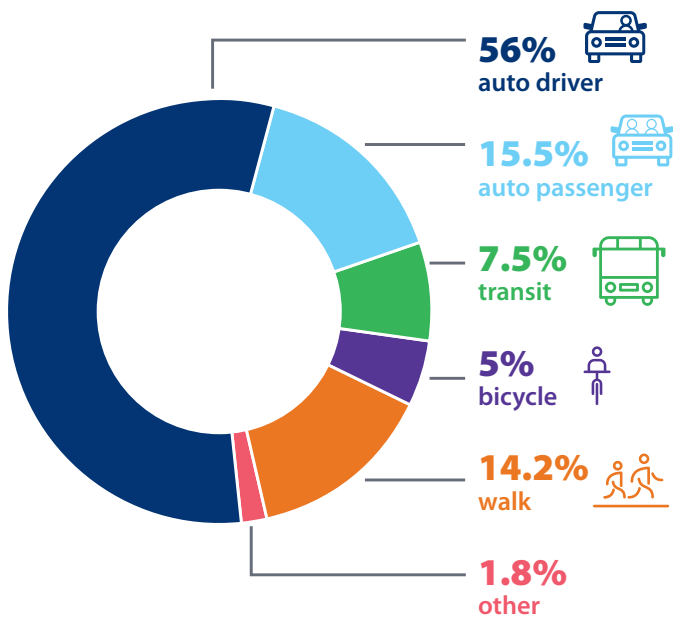


Figure 4 – Reliability

Current Mode Share

2017 Capital Regional District,
Origin Destination Household Travel Survey



Sustainability

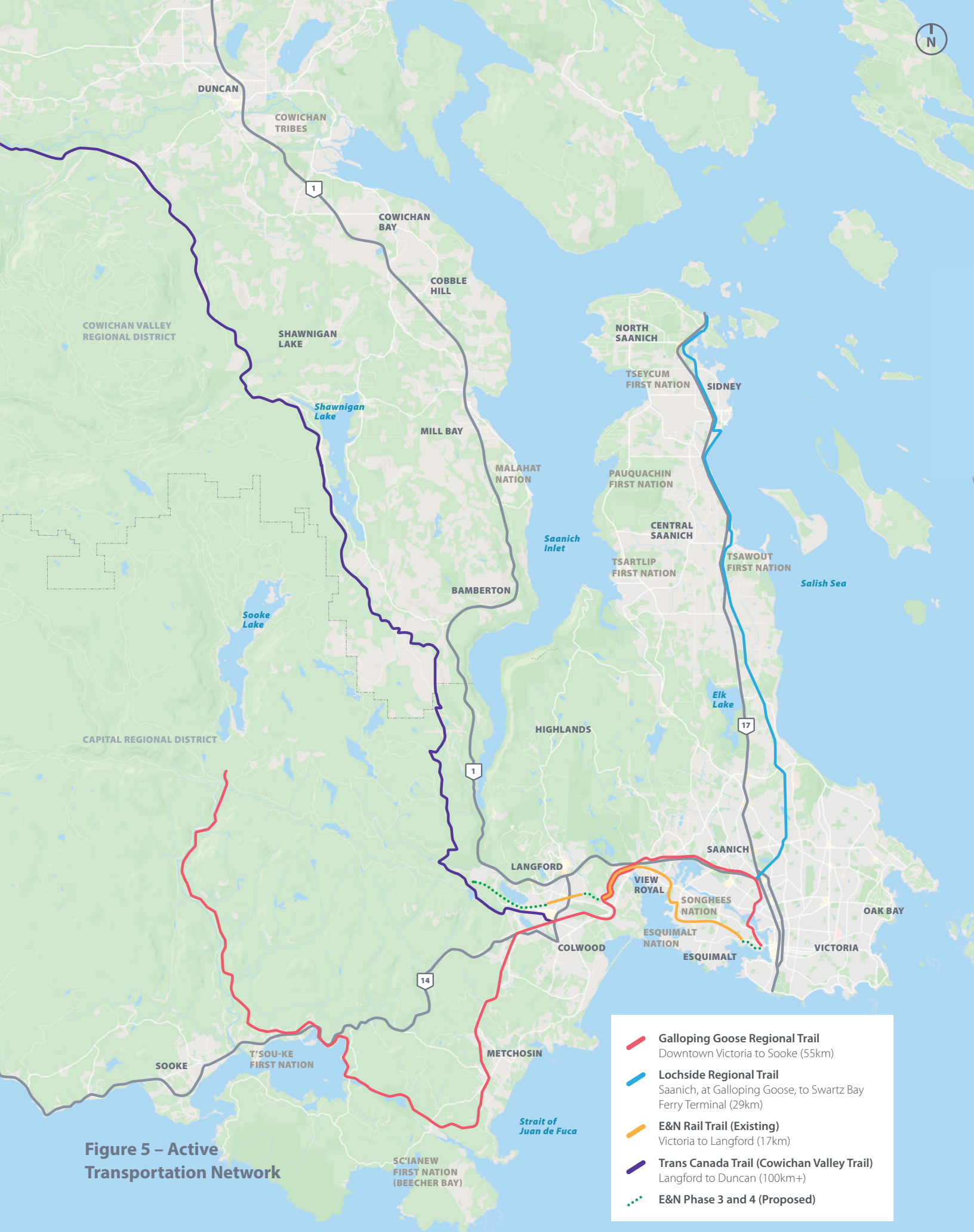
The Capital Regional District declared a climate emergency in 2019. A shift to sustainable transportation modes such as walking, cycling and transit, and the reduction of greenhouse gas (GHG) emissions is a priority throughout the province and South Island.

Priority is highest for investments in sustainable travel modes in core areas and communities along Highway 14 and Highway 17 where travel distances, settlement patterns, and infrastructure make these desirable options.

Compared to 2007 greenhouse gas emission levels, the Province, through the CleanBC initiative, is now **committed to reductions of 40% by 2030, 60% by 2040, and 80% by 2050.**

cleanBC
our nature. our power. our future.





Connectivity

Community connections have been identified as a challenge across the region with the greatest concern in the core areas, including Highway 14 and Highway 1. Affordable housing is often found outside of the core areas, putting added pressure on the transportation network to move people to and from areas of employment in the core.

Improvements targeting better connections are the highest priority in these locations. Strengthening connections between travel modes is also a key opportunity for improvement to support the goals for integrated transportation development.

We will work with municipal partners to create thoughtful development where transportation investment can support growth in the region.

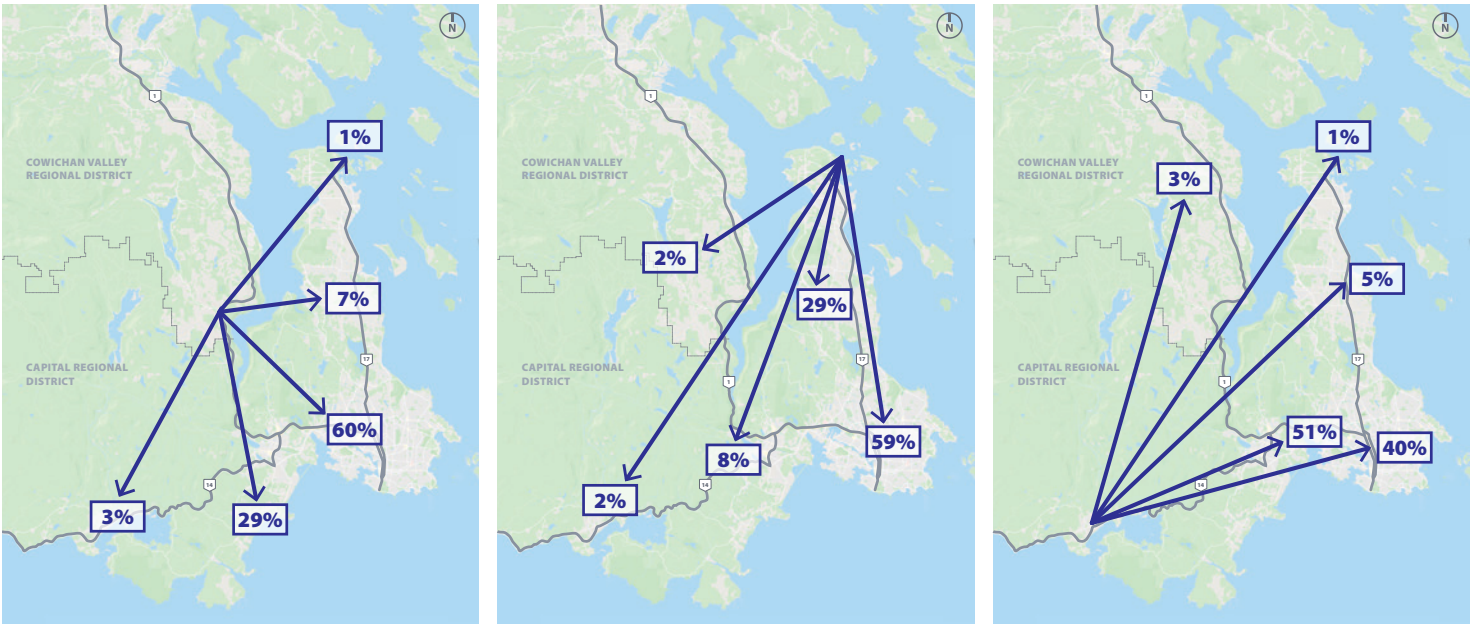


Figure 6 – Distribution of Daily Travel Across Key Gateways

Aligning Goals and Aspirations

Aspirations

Plans and strategies developed for communities throughout the South Island by the Province and Indigenous, local and regional governments share a common vision of an integrated sustainable transportation network.

These aspirations lay the foundation for a vision for the South Island and highlight how an integrated transportation system supporting different travel options plays a vital role in achieving those future goals. Although the plans and strategies are unique and may point to slightly different actions, they are well aligned and point to a common vision. The Strategy supports and reinforces key aspirations from these plans and strategies, including:

✓ **Take Action on Climate Change**

- Reduce greenhouse gas emissions
- Tap into alternative fuel sources
- Support community liveability by complementing transportation investments with land use planning, housing development, economic and employment clusters
- Support CleanBC

✓ **Connect Communities**

- Increase the connections between all modes of travel
- Enhance transit services to sub-regional population centres
- Support projects that lessen barriers to affordability and allow for inclusivity of travel
- Support projects that improve access to economic opportunities and social services

✓ **Reduce Vehicle Dependency**

- Provide sustainable travel choices
- Promote sustainable travel options

✓ **Ensure Sustainable Travel Options**

- Improve reliability of sustainable travel networks
- Increase the connectivity between different modes

✓ **Support Active Transportation and Healthy Living**

- Establish active transportation network plans
- Continued investment in walking and cycling infrastructure

✓ **Grow the Economy**

- Ensure efficient movement of goods and services
- Provide attractive travel options to encourage tourism

Goals

The ministry has developed four goals to advance the South Island Transportation Strategy:

- 1. Ensure sustainable options for a variety of travel modes**
- 2. Strengthen connections between travel modes and improve connections between communities**
- 3. Improve the safety and reliability of the transportation network**
- 4. Support and encourage active transportation options**

Remaining flexible in the face of COVID-19

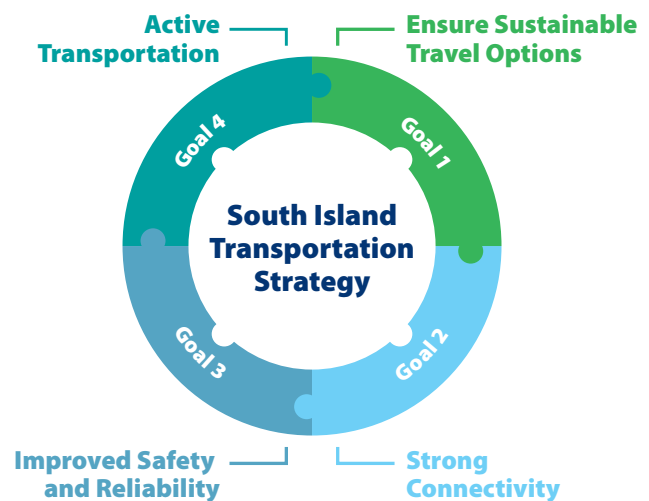
The COVID-19 pandemic poses an immediate and still-evolving challenge to the transportation network and society as a whole. Its long-term effects remain unknown. The pathway of implementation and timing to achieve the goals of the South Island Transportation Strategy will require flexibility as we recover from the pandemic.

The path forward will use this experience to make our communities more resilient and adaptable to respond to the potential for future outbreaks or other disasters that may impact the region in the future.

These goals reflect the priorities and aspirations of the region and the province, and support integrated transportation planning by focusing on:

- Leveraging existing plans, while expanding their geographic scope and time horizon
- Contributing to the design of affordable, liveable communities
- Building efficient transportation networks
- Achieving GHG targets and aligning with CleanBC and the Active Transportation Strategy
- Ensuring innovative solutions that respond to South Island and B.C. conditions
- Advancing an Integrated Transportation and Development Planning strategy

Given the integrated nature of the Strategy, success will require the collective achievement of all of the goals. Strategies and priorities will therefore need to directly support or consider all four goals, rather than focus on any individual goal.



Goal 1

Ensure sustainable options for a variety of travel modes

Integrating transportation investment and policies with land use, housing, and economic development policies to support sustainable development will have positive effects on affordable housing, accessibility, climate change and the quality of life in the region.

Policies, programs and strategies to accelerate the move from gas-powered transport to alternative fuels such as electric vehicles, are also key elements to advance this goal. Sustainability objectives will be addressed by supporting and encouraging people to take public transportation and engage in active transportation wherever possible.

Since the completion of the dedicated bus lane facilities on Douglas Street/ Highway 1, northbound commuters on West Shore routes have seen travel time savings of up to 20 minutes during the PM peak.

Specific strategies include:

- Working with partners to establish an economic vision for the South Island
- Promoting investment, economic development and job opportunities near affordable housing and services
- Encouraging growth and densification in thoughtfully designated growth areas serviced by public transportation and active transportation networks
- Supporting and implementing bus lanes on highways and other inter-regional service corridors
- Implementing transit priority treatments at intersections along highways
- Supporting the provision of strategically located transit exchanges and park and rides
- Improving access to sustainable transportation choices for Indigenous communities
- Adding electric vehicle charging stations
- Developing policies and support infrastructure to increase use of energy efficient vehicles and alternative fuels
- Support policies and programs that encourage the shift away from single occupancy vehicles towards sustainable travel choices

The priorities to support and advance these strategies include:

Short-term

- Prioritizing transit stop improvements servicing Indigenous communities
- Installing electric vehicle charging stations at mobility hubs
- Supporting BC Transit's Low Carbon Fleet Program to electrify its fleet
- Prioritizing transit by installing transit queue jumpers along the Highway 17 corridor

Medium-term

- Supporting and advancing the Rapid Transit Corridor along Highway 1 between Victoria and the Western Communities through partnership with BC Transit
- Supporting BC Transit, View Royal and Colwood in establishing a Transit Priority Corridor along Old Island Highway

Long-term

- Exploring the viability of future marine transportation corridors
- Exploring the potential of commuter rail on the Island Rail Corridor between Westhills and Victoria

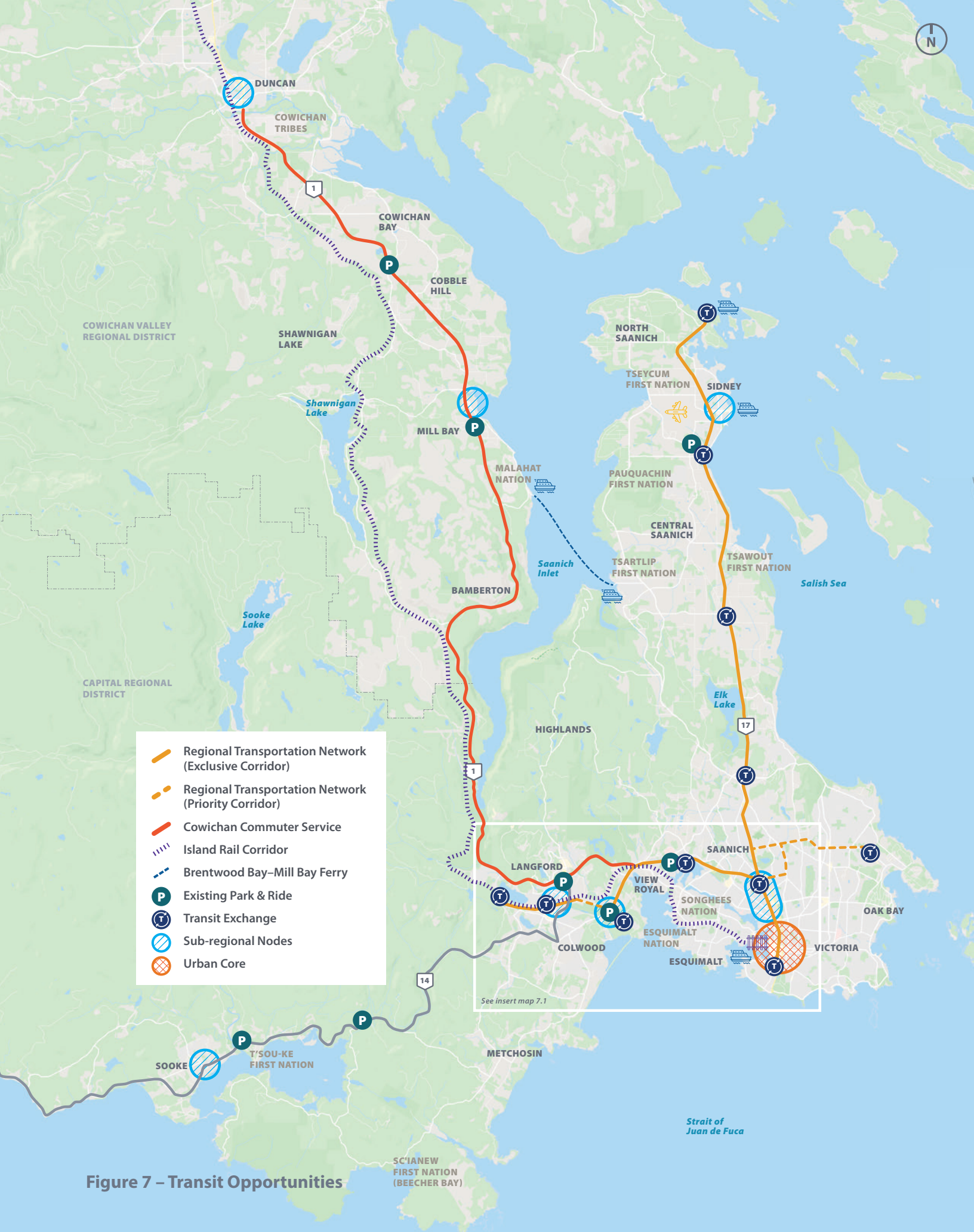
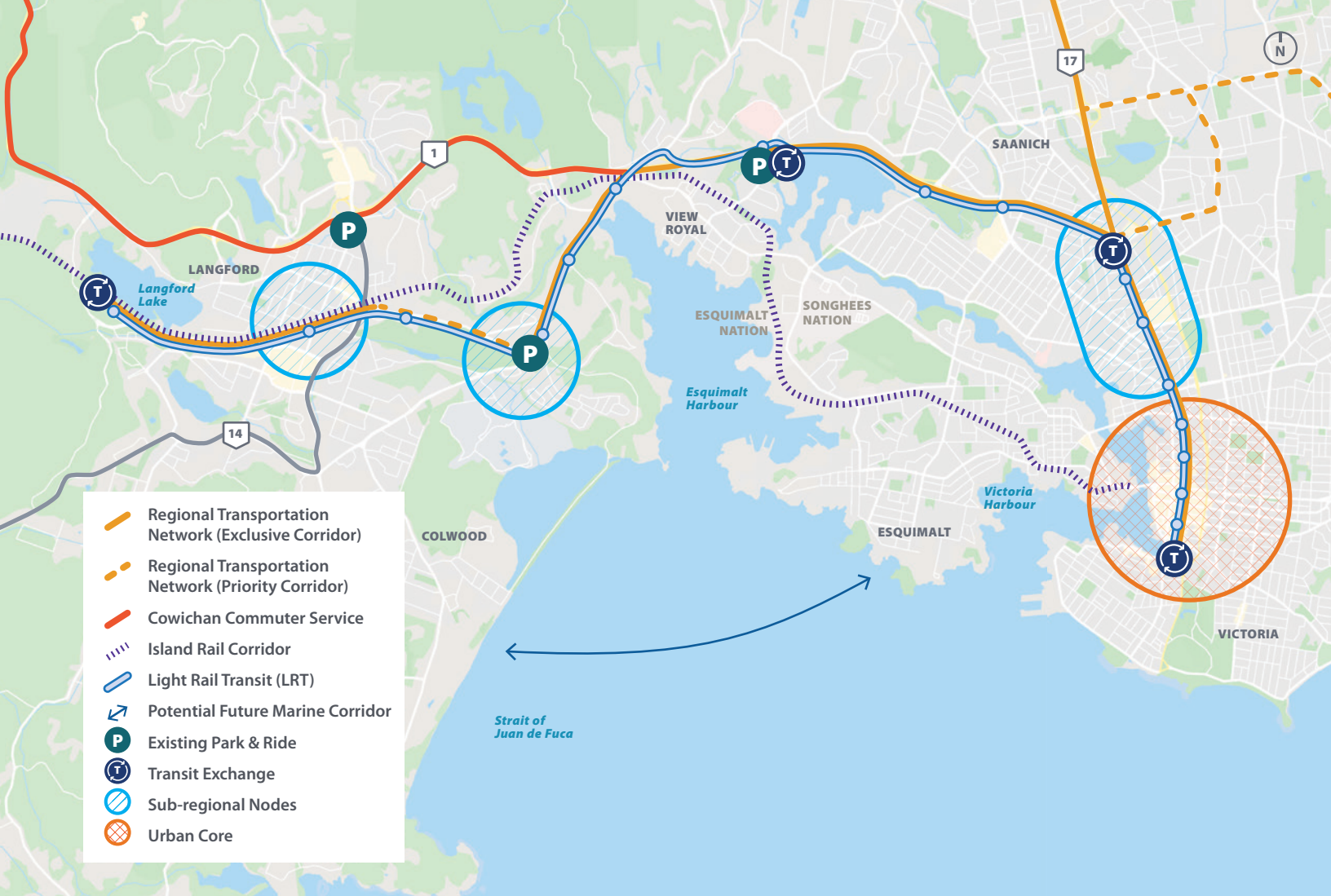


Figure 7 – Transit Opportunities



Insert Map 7.1 – Core Transit Opportunities



Goal 2

Strengthen connections between travel modes and improve connections between communities

Better integration between communities, and employment and industry centres, will enable more people to access services, participate in economic opportunities and support resource sectors across the South Island and beyond.

Integrating travel will be accomplished by identifying the missing links that prevent or discourage people from using sustainable choices, and partnering with Indigenous, local and regional agencies to close those gaps. This will include addressing the ‘first and last mile’ barriers within the region. By providing better travel choices in land use and development that align with regional growth strategies, the Strategy will support sustainable growth and the creation of integrated communities.

Specific strategies include:

- Connecting communities in the South Island, including Indigenous communities
- Supporting attractive intermodal connections at mobility hubs serving inter-regional travel
- Implementing policies and regulations to support new forms of mobility for sustainable choices that are aligned with regional growth strategies
- Identifying and prioritizing gaps in and between the networks
- Working with local and regional government to expand bike share and car share

The priorities to support and advance these strategies include:

Short-term

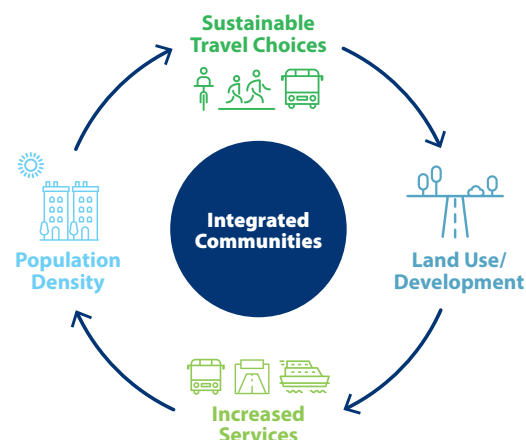
- Advancing development of key transportation hubs that accommodate all travel modes across the region in partnership with BC Transit
- Advancing the development of new park and ride stalls in the CRD and CVRD to increase capacity
- Adding secure bike parking/storage at key locations

Medium-term

- Continuing to assess the need for enhancement of inter-city transit commuter services (Cowichan Commuter Service)
- Working with Indigenous, local and regional governments to include Active Transportation Infrastructure in rehabilitation projects that improve inter-regional connections

Building Sustainable Communities

The Capital Regional District (through the Regional Growth Strategy) and the Cowichan Valley Regional District (through the Cowichan 2050 Regional Collaboration Framework) have identified growth management, housing affordability and liveability and sustainable transportation as key policy areas.



Goal 3

Improve the safety and reliability of the transportation network

Safe, reliable and cost-effective networks for all travel modes are critical for the movement of people of all ages and abilities and goods throughout the region, and are necessary to support all of the goals of this Strategy.

The safety and reliability of inter-regional travel will be addressed through upgrades that improve travel times for transit, active transportation users and general-purpose traffic, and that target high crash locations.

Specific strategies include:

- Exploring regional trail enhancements to increase safety of people walking and cycling
- Focusing on intersection improvements to protect vulnerable road users
- Implementing facilities that support sustainable modes and goods movement
- Supporting Vision Zero initiative
- Implementing highway safety and reliability improvements
- Targeting investments to improve network connectivity and redundancy

The priorities to support and advance these strategies include:

Short-term

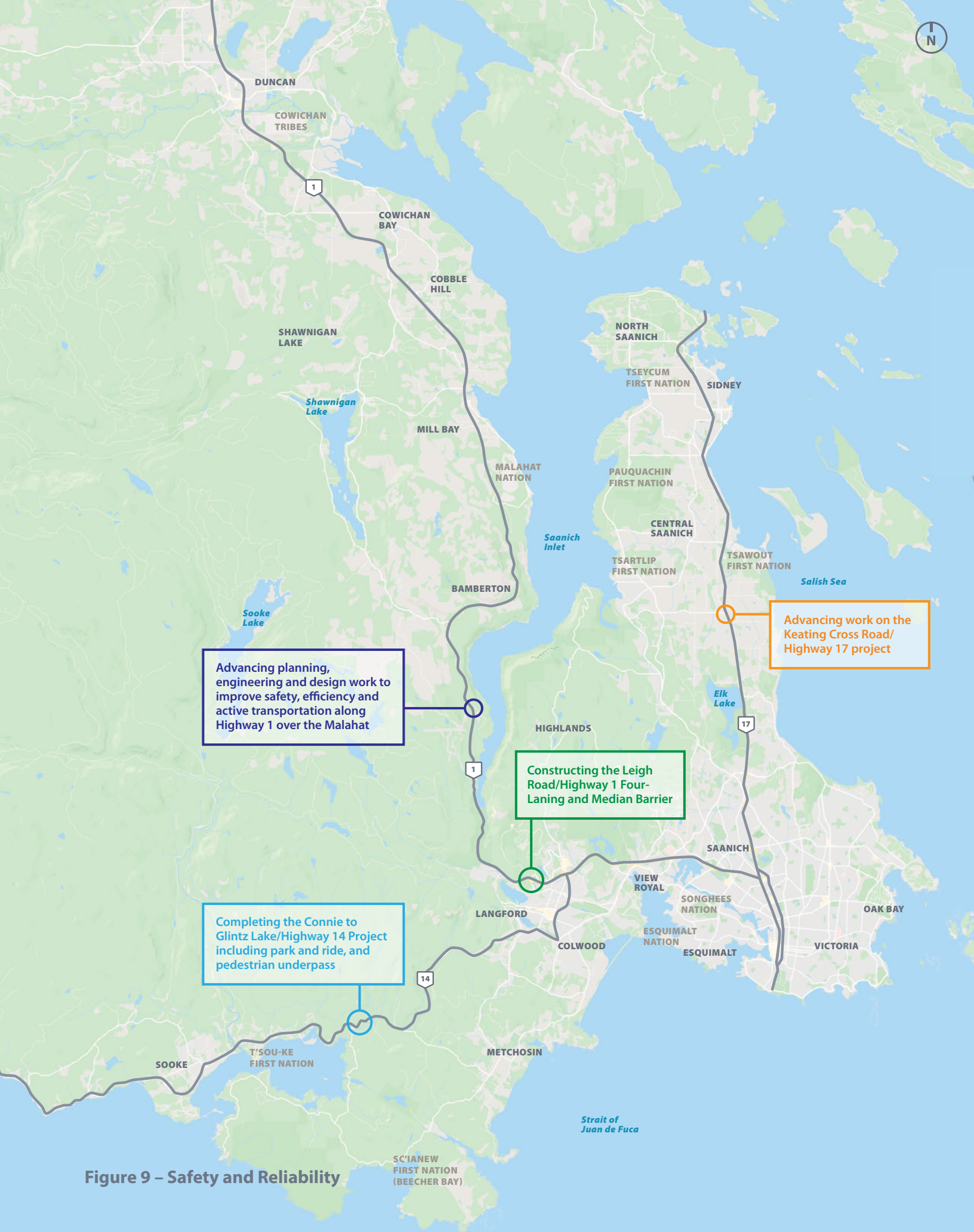
- Prioritizing active transportation and pedestrian accessibility during project development within ministry projects
- Prioritizing transit facilities and improvements during project development within ministry projects
- Constructing the Leigh Road/Highway 1 Four-Laning and Median Barrier
- Completing the Connie to Glintz Lake/Highway 14 Project including park and ride, and pedestrian underpass

Medium-term

- Advancing work on the Keating Cross Road/Highway 17 project
- Advancing planning, engineering and design work to improve safety, efficiency and active transportation along Highway 1 over the Malahat



Safety is the ministry's number one priority for all modes of transportation. Work will continue to identify and address the remaining priority sites. Future infrastructure projects will incorporate active transportation and transit priorities during planning, design and construction.



Goal 4

Support and encourage active transportation options

Active transportation infrastructure facilities and networks for all ages and abilities provide transportation options that are accessible to all, and create effective connections to essential community services.

They are also a key component to sustainable land use, housing and economic development and reduce the reliance of single-occupancy vehicles, resulting in lower GHGs. Support for active transportation will be accomplished primarily through partnerships to establish and improve active transportation infrastructure, as well as identifying gaps in inter-regional networks. This aligns with the Province's Active Transportation Strategy, as well as strategies developed by Indigenous, local and regional governments.

Specific strategies include:

- Implementing active transportation facilities along corridors serving inter-regional travel
- Supporting upgrades to active transportation facilities and crossings of highways
- Exploring pedestrian and cycling separations for regional trail networks
- Improving comfort and safety of active transportation crossing highways around key urban and sub-regional population centres
- Identifying and prioritizing intersection accessibility issues on urban highways
- Expanding funding for regional active transportation priorities
- Encouraging and supporting regional policies and directions for incentives for sustainable travel modes serving designated urban centres, gateways and sub-regional population centres

The priorities to support and advance these strategies include:

Short-term

- Encouraging growth of inter-regional trails in the CRD and CVRD: Galloping Goose Regional Trail, Lochside Regional Trail, E&N Rail Trail, Trans Canada Trail
- Supporting Active Transportation Infrastructure Grant applications that align with the British Columbia Active Transportation Design Guide
- Prioritizing the installation of bike lockers at mobility hubs

Medium-term

- Working with regional and local governments to advance grade separation of inter-regional trails, add specific bike signals and remove conflict points

With CleanBC, we're building a more sustainable transportation system through BC's Active Transportation Strategy, Move. Commute. Connect.

Active transportation means helping people get out of their cars, with safe, easier options for everyone which includes:

- Double the trips taken with active transportation by 2030
- Provide incentives that encourage safe active transportation for all ages and abilities
- Help communities build integrated and accessible active transportation systems
- Deliver universal design principles for active transportation infrastructure



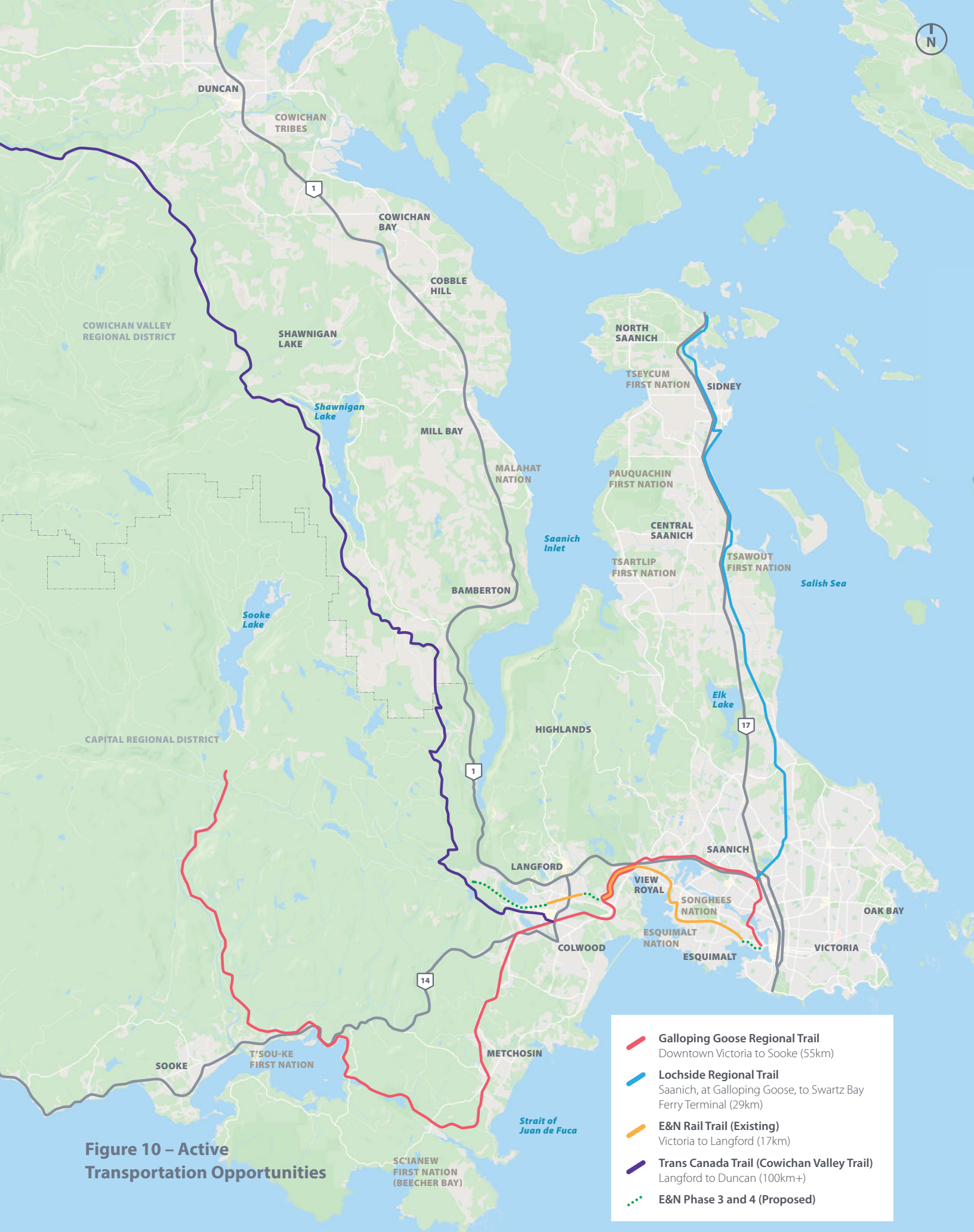


Figure 10 – Active Transportation Opportunities

- **Galloping Goose Regional Trail**
Downtown Victoria to Sooke (55km)
- **Lochside Regional Trail**
Saanich, at Galloping Goose, to Swartz Bay Ferry Terminal (29km)
- **E&N Rail Trail (Existing)**
Victoria to Langford (17km)
- **Trans Canada Trail (Cowichan Valley Trail)**
Langford to Duncan (100km+)
- ... **E&N Phase 3 and 4 (Proposed)**

Summary of Priorities



South Island Transportation Strategy



Goals

Strategies

Priorities

1. Ensure sustainable options for a variety of travel modes		2. Strengthen connections between travel modes and improve connections between communities		3. Improve the safety and reliability of the transportation network		4. Support and encourage active transportation options	
<ul style="list-style-type: none">Working with partners to establish an economic vision for the South IslandPromoting investment, economic development and job opportunities near affordable housing and servicesEncouraging growth and densification in thoughtfully designated growth areas serviced by public transportation and active transportation networksSupporting and implementing bus lanes on highways and other inter-regional service corridorsImplementing transit priority treatments at intersections along highwaysSupporting the provision of strategically located transit exchanges and park and ridesImproving access to sustainable transportation choices for Indigenous communitiesAdding electric vehicle charging stationsDeveloping policies and support infrastructure to increase use of energy efficient vehicles and alternative fuelsSupport policies and programs that encourage the shift away from single occupancy vehicles towards sustainable travel choices		<ul style="list-style-type: none">Connecting communities in the South Island, including Indigenous communitiesSupporting attractive intermodal connections at mobility hubs serving inter-regional travelImplementing policies and regulations to support new forms of mobility for sustainable choices that are aligned with regional growth strategiesIdentifying and prioritizing gaps in and between the networksWorking with local and regional government to expand bike share and car share		<ul style="list-style-type: none">Exploring regional trail enhancements to increase safety of people walking and cyclingFocusing on intersection improvements to protect vulnerable road usersImplementing facilities that support sustainable modes and goods movementSupporting Vision Zero initiativeImplementing highway safety and reliability improvementsTargeting investments to improve network connectivity and redundancy		<ul style="list-style-type: none">Implementing active transportation facilities along corridors serving inter-regional travelSupporting upgrades to active transportation facilities and crossings of highwaysExploring pedestrian and cycling separations for regional trail networksImproving comfort and safety of active transportation crossing highways around key urban and sub-regional population centresIdentifying and prioritizing intersection accessibility issues on urban highwaysExpanding funding for regional active transportation prioritiesEncouraging and supporting regional policies and directions for incentives for sustainable travel modes serving designated urban centres, gateways and sub-regional population centres	
<div><h2>Transforming South Island Transportation</h2><div><div>S</div>Short-term<div>M</div>Medium-term<div>L</div>Long-term</div></div>							
<div><div>S</div> Prioritizing transit stop improvements servicing Indigenous communities</div> <div><div>S</div> Installing electric vehicle charging stations at mobility hubs</div> <div><div>S</div> Supporting BC Transit’s Low Carbon Fleet Program to electrify its fleet</div> <div><div>S</div> Prioritizing transit by installing transit queue jumpers along the Highway 17 corridor</div> <div><div>M</div> Supporting and advancing the Rapid Transit Corridor along Highway 1 between Victoria and the Western Communities through partnership with BC Transit</div> <div><div>M</div> Supporting BC Transit, View Royal and Colwood in establishing a Transit Priority Corridor along Old Island Highway</div> <div><div>L</div> Exploring the viability of future marine transportation corridors</div> <div><div>L</div> Exploring the potential of commuter rail on the Island Rail Corridor between Westhills and Victoria</div>		<div><div>S</div> Advancing development of key transportation hubs that accommodate all travel modes across the region in partnership with BC Transit</div> <div><div>S</div> Advancing the development of new park and ride stalls in the CRD and CVRD to increase capacity</div> <div><div>S</div> Adding secure bike parking/storage at key locations</div> <div><div>M</div> Continuing to assess the need for enhancement of inter-city transit commuter services (Cowichan Commuter Service)</div> <div><div>M</div> Working with Indigenous, local and regional governments to include Active Transportation Infrastructure in rehabilitation projects that improve inter-regional connections</div>		<div><div>S</div> Prioritizing active transportation and pedestrian accessibility during project development within ministry projects</div> <div><div>S</div> Prioritizing transit facilities and improvements during project development within ministry projects</div> <div><div>S</div> Constructing the Leigh Road/Highway 1 Four-Laning and Median Barrier</div> <div><div>S</div> Completing the Connie to Glintz Lake/Highway 14 Project including park and ride, and pedestrian underpass</div> <div><div>M</div> Advancing work on the Keating Cross Road/Highway 17 project</div> <div><div>M</div> Advancing planning, engineering and design work to improve safety, efficiency and active transportation along Highway 1 over the Malahat</div>		<div><div>S</div> Encouraging growth of inter-regional trails in the CRD and CVRD:<div><div>›</div> Galloping Goose Regional Trail<div>›</div> Lochside Regional Trail<div>›</div> E&N Rail Trail<div>›</div> Trans Canada Trail</div></div> <div><div>S</div> Supporting Active Transportation Infrastructure Grant applications that align with the British Columbia Active Transportation Design Guide</div> <div><div>S</div> Prioritizing the installation of bike lockers at mobility hubs</div> <div><div>M</div> Working with regional and local governments to advance grade separation of inter-regional trails, add specific bike signals and remove conflict points</div>	

Implementing the Strategy

Implementing the South Island Transportation Strategy will require a collective effort from the Province and Indigenous, regional and local governments. Together, we must establish and support decisions on how to plan and build for future growth, while recognizing that people will continue to make individual choices based on their lifestyle goals and preferences.

By bringing land use, transportation and regional growth planning together, we will be better poised to focus government policy and coordinate economic development initiatives. This will allow for distribution of some of the anticipated growth we will see in future decades, and the building of affordable, liveable communities and supplying convenient, efficient and comfortable transportation systems as a realistic alternative to driving.

Since 2017, the Province has invested or committed to investing over \$500 million in the South Island. We remain committed to further investments which will help achieve the goals of this Strategy. But the successful creation of a fully integrated transportation network across all modes of travel will require more than just provincial investment in infrastructure.

This Strategy represents a shift in our collective approach to building capacity in the South Island network. This will take meaningful collaboration and partnerships with Indigenous, local, regional and federal governments to effectively implement the priorities and commitments outlined in this Strategy.

As we move forward, additional work with our partners will be paramount to better understanding their specific economic, environmental, climate change and land use development goals to advance specific priorities.

While the long-term effects of COVID-19 remain unclear, the immediate impacts highlight the need for resilient and integrated transportation networks with the goal moving forward to build back better.



Conclusion

The COVID-19 pandemic has affected all British Columbians and has served as an important lesson about building communities and transportation networks that can adapt to rapid and wide-spread changes.

While many aspects of our daily lives have been impacted, the long-term effects of the pandemic remain unknown. What has not changed is our core values and vision for improving the lives of British Columbians. An integrated transportation strategy represents one aspect of a holistic approach to sustainable development, a healthy and competitive economy, climate action, and more equity for everyone that lives in this region and across the province.

The South Island Transportation Strategy demonstrates the Province's commitment to increasing the capacity of all transportation networks through sustainable travel choices and smart investment decisions.

It provides a clear path forward to addressing the transportation challenges in the South Island and advancing the many opportunities in the region to support an integrated transportation network for all modes of travel.

The Sooke River Road Intersection Project was completed in 2019. This project improved safety for drivers, transit users, cyclists and pedestrians on a busy section of Highway 14 near the local school.





Ministry of
Transportation
and Infrastructure

Transforming South Island Transportation





Making a difference...together

Appendix B: Summary Analysis – South Island Transportation Strategy and the Regional Transportation Plan

The Capital Regional District (CRD) adopted the Regional Transportation Plan (RTP) in 2014 to identify a regional multi-modal transportation system that meets future growth demands with a focus on sustainability. The RTP includes eight regional outcome statements and accompanying actions to guide partner implementation. The RTP recognizes that achieving the regional multi-modal transportation system requires collaboration among all municipalities, electoral areas and key partners such as the Ministry of Transportation and Infrastructure (MoTI) and BC Transit.

The table below summarizes how the South Island Transportation Strategy (SITS) confirms the RTP outcomes and support implementation at the provincial level.

Plans & Policies		Actions & Infrastructure
RTP Outcome Statement	SITS Goal	CRD and Partner Actions
Outcome # 1: Movement between communities, mobility hubs and major destinations is facilitated through a Regional Multi-modal network of transportation corridors.	Goal 1: Ensure Sustainable Multi-Modal Travel Options Goal 2: Strengthen Inter-Community and Inter-Modal Connections	Staff from MoTI, Saanich and CRD working collaboratively on Uptown Hub Plan and dedicated transit and cycling infrastructure improvements along key corridors. Inclusion of upgraded active transportation and transit infrastructure on MoTI projects e.g., McKenzie Interchange dedicated busways and active transportation bridges.
Outcome #2: Mobility Hubs align with the RGS and provide people with access to housing, employment, services, amenities and transportation choice.	Goal 1: Ensure Sustainable Multi-Modal Travel Options Goal 2: Strengthen Inter-Community and Inter-Modal Connections	The RGS identifies a settlement concept of connected nodes along the regional multi-modal network. Approximately 20% of net new dwelling units are located in areas where 42% of trips involve active transportation or transit. A significant proportion of new growth is concentrated in areas that is not efficiently serviced by transit or active travel.

Plans & Policies		Actions & Infrastructure
RTP Outcome Statement	SITS Goal	CRD and Partner Actions
Outcome #3: Transportation and land use planning tools are integrated at the local and regional levels.	Goal 1: Ensure Sustainable Multi-Modal Travel Options Goal 2: Strengthen Inter-Community and Inter-Modal Connections	<p>Municipalities have adopted transportation plans that generally align road networks with growth concepts set out in Official Community Plans.</p> <p>Municipalities employ planning tools such as subdivision bylaws to set out requirements for sidewalk and trail design, street trees, lighting, and traffic calming.</p> <p>Recent provincial plans include the Active Transportation Design Guide and BC Transit infrastructure design guidelines.</p>
Outcomes #4 and #5: Walking and cycling are appealing safe, convenient and viable transportation options for residents and visitors of all skill levels.	Goal 1: Ensure Sustainable Multi-Modal Travel Options Goal 4: Support and Encourage Active Transportation	<p>Many municipalities have created dedicated active transportation plans.</p> <p>Inclusion of upgraded all ages and abilities cycling and pedestrian infrastructure on MoTI projects e.g., McKenzie Interchange and active transportation bridges.</p> <p>Municipalities and the CRD are expanding dedicated all ages and ability cycling and pedestrian infrastructure across the region.</p>
Outcome #6: Public transit is a preferred choice, attracting new riders through comfortable, safe, accessible and convenient service.	Goal 1: Ensure Sustainable Multi-Modal Travel Options Goal 2: Strengthen Inter-Community and Inter-Modal Connections	<p>Victoria Regional Transit Commission fleet greening to include 80 compressed natural gas busses and planned introduction of 10 electric busses in 2021.</p> <p>Expansion of dedicated bus only lanes.</p>

Plans & Policies		Actions & Infrastructure
RTP Outcome Statement	SITS Goal	CRD and Partner Actions
Outcome #7: Existing regional transportation infrastructure is optimized and enhanced by new technology where appropriate.	Goal 1: Ensure Sustainable Multi-Modal Travel Options	<p>The CRD is modernizing its information and data service including traffic modelling and automobile, cycling and pedestrian counts.</p> <p>Other modernization initiatives include introduction of ride hailing services and a move towards flexible payment options on transit.</p>
Outcome #8: Regional programs and initiatives provide residents and visitors with the tools, confidence and knowledge to use active transportation, transit and trip reduction measures.	<p>Goal 3: Improve Safety and Reliability</p> <p>Goal 4: Support and Encourage Active Transportation</p>	<p>CRD Traffic Safety Commission research and safety campaigns communicate critical information about road safety.</p> <p>Active School Travel Planning and Go by Bike Week celebrations build active transportation capacity within key sectors.</p>

Recent and Planned
Transportation Projects in the CRD

Appendix C

