Bowker Creek Developer's Guide

Bowker Creek Watershed Vision

The varied human and natural areas in the Bowker Creek watershed are managed to minimize runoff and pollution, making Bowker Creek a healthy stream that supports habitat for native vegetation and wildlife, and provides a community greenway to connect neighbourhoods.

Watershed Goals

- Take responsibility for actions that affect the watershed
- Manage flows effectively
- Improve and expand public areas, natural areas and biodiversity in the watershed
- Achieve and maintain acceptable water quality in the watershed

Watershed-Wise Development in the Bowker Creek Watershed

What Is a Watershed?

It does not matter how far away you build from a creek, lake or ocean, you are in a watershed. Another word for watershed is "catchment" – a way to describe how rain falling within a watershed's boundaries makes its way downhill into a creek or river and eventually to the ocean.

Bowker Creek extends from the University of Victoria, through the District of Saanich and City of Victoria, and out to the ocean through the District of Oak Bay (see map page 4-5). Most of the rain entering the creek runs off roofs, roads and parking lots, and is collected from curbside gutters, which are directly connected to the creek via underground pipes. Like any urban creek, Bowker Creek needs help from its development community to become clean and healthy.

The Bowker Creek Blueprint, accepted by municipalities, is a guiding document outlining how to manage and restore the watershed and the creek over the long term. For more information, see back page.

Why Should Developers Care?

The choices developers make can contribute to significant improvements in watershed health. Here are some steps developers can take:

- ☑ Talk to the right people early on to ensure no unnecessary delays
- ☑ Demonstrate leadership and take the responsibility for improving watershed health to help gain municipal and public support
- ☑ Consider using green infrastructure and Low Impact Development (LID) to reduce long-term operational costs and increase market value.

Where Do I Start?

- Early in the planning process, call your municipal planning department to ask about their initiatives and expectations for development in the Bowker Creek watershed.
- Talk to the Bowker Creek Initiative (BCI) and local community associations about your project – be sure to articulate your interest in protecting and enhancing the Bowker Creek watershed.

Step 1 - Planning

Time and money can be saved with proper planning and consideration of the watershed and municipal Local Area Plans. Before spending any money or making physical alterations to the site, consider the following:

- ☐ Check to see which watershed principles of the **Bowker Creek Blueprint (see back page)** you can apply on-site and proximity of the creek – whether it be above ground or underground in a pipe (see map).
- ☐ Consider appropriate green infrastructure and LID strategies for your site's landuse and soil type (see map).
- ☐ Plan to make the creek a neighbourhood amenity.
- ☐ Contact the local municipal planning department to learn of any **site-specific requirements.**
- ☐ Conduct an **inventory and analysis** of your site to identify areas to be protected, such as trees, riparian areas, protected or endangered species and ecosystems, stream buffer areas, wetlands, permeable or erosive soils.
- ☐ Remember to check for **streamside setbacks** under the Riparian Areas Regulation or development permit area.

Step 2 - Site Design

When developing a site design, it is important to **know the vision of your municipal council** for future developments before submitting your design for approval. Find out where it will pay to **go above and beyond** in your design:

- ☐ Consider integrating green infrastructure, and LID techniques (pages 6-7), which are used to manage rainwater where it falls. These methods store, infiltrate, detain and treat rainwater runoff allowing for full development of a site.
- ☐ Hire a landscape architect to help incorporate and design features into the site that **reduce the quantity and improve the quality of water** that ultimately enters the creek. This may require the input of a civil engineer and should be checked with your local government officials.
- ☐ Design for **projected climate impacts** of increased frequency and intensity of rainfall events – this will ensure that your project is successful in managing rainwater today and in the future.

Step 3 - Construction

During site construction, there are many things you can do to reduce potential impacts to the watershed, Bowker Creek and the marine receiving environment while saving time and money:

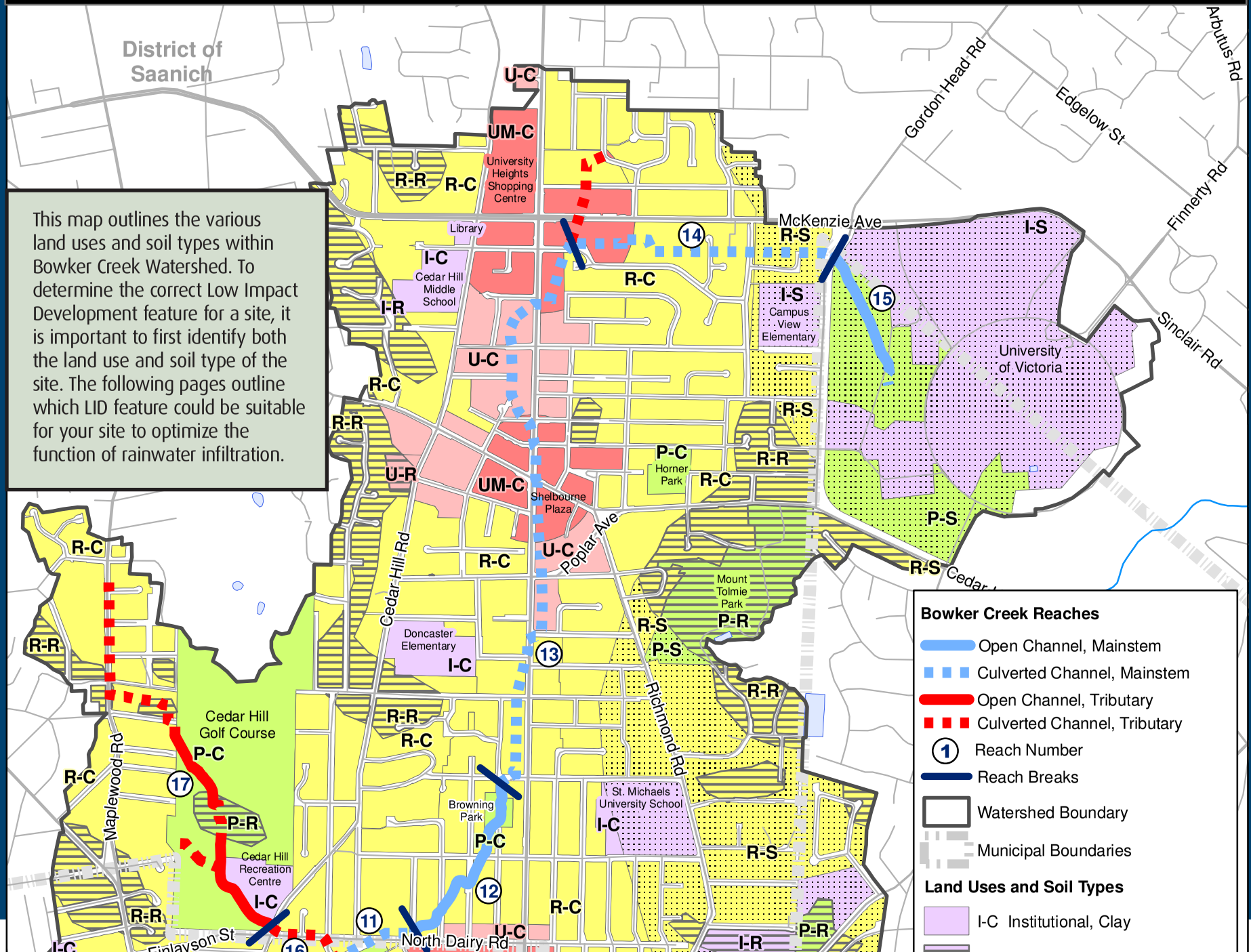
- ☐ **Communicate environmental initiatives** to the construction team, and include any environmental specifications in your contracts.
- ☐ Implement an **Erosion and Sediment Control Plan** to ensure you prevent sediments from entering nearby storm drains and creeks and preserve valuable soils. The plan will also help better prepare the site for storms.
- ☐ **Minimize clearing and grading** to reduce soil disturbance.
- ☐ **Inspect and maintain** your best management practices to ensure they are functioning properly, especially during rainfall events.
- ☐ **Reduce soil compaction** on site to help maintain soil permeability and increase rainwater infiltration.
- ☐ **Control construction wastes** and manage them to prevent water quality impacts.
- ☐ Conserve site soil and apply a **sufficient layer of topsoil** (20-30 cm) to provide additional water storage capacity in your landscaping and help to reduce irrigation needs.

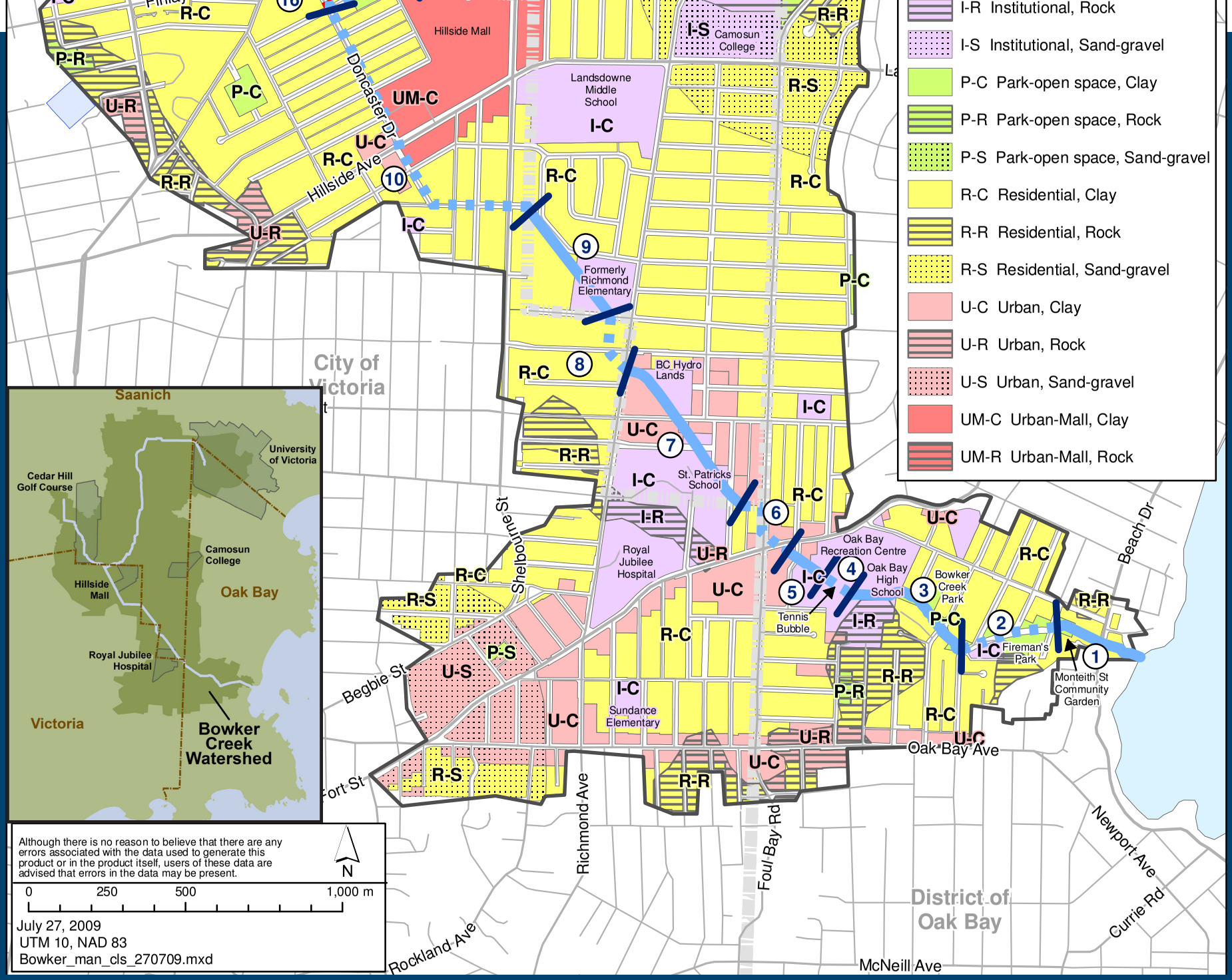
Step 4 - Ongoing Maintenance

Using watershed-wise development techniques, such as green infrastructure, will often prove less costly and require less maintenance in the long run. Consider the following for optimal function and long-term success:

- ☐ The **landscape maintenance plan** for the site should take into account local pesticide bylaws, CRD Cross Connection Bylaw, CRD Water Conservation Bylaw, and should incorporate sustainable landscaping practices, such as the use of **compost and mulch** rather than chemical fertilizers, which will reduce potential nutrient inputs into the creek.
- ☐ When installing irrigation systems make sure they are installed by a **Certified Irrigation Professional** to optimize water consumption and plant heath and survival.
- ☐ When installing green infrastructure and LID best management practices, **operation and maintenance plans** should be provided with the design and passed on to the future owners.
- ☐ **Communicate** the sustainable, watershed-wise features of the site, and **educate purchasers and tenants** to ensure long-term maintenance. People are proud that the places they live or do business in are making efforts to protect and enhance their community!

Bowker Creek Watershed Land Uses and Soil Types

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I-S Institutional, Sand-gravel
P-C Park-open space, Clay
P-R Park-open space, Rock
P-S Park-open space, Sand-gravel
R-C Residential, Clay
R-R Residential, Rock
R-S Residential, Sand-gravel
U-C Urban, Clay
U-R Urban, Rock
U-S Urban, Sand-gravel
UM-C Urban-Mall, Clay
UM-R Urban-Mall, Rock
Hillside Mall
Camosun College
Landsdowne Middle School
Doncaster Dr
Hillside Ave
Formerly Richmond Elementary
BC Hydro Lands
St. Patricks School
Royal Jubilee Hospital
Oak Bay Recreation Centre
Oak Bay High School
Bowker Creek Park
Tennis Bubble
Fireman's Park
Monteith St Community Garden
Sundance Elementary
Shelbourne St
Beach Dr
Begbie St
Fort St
Richmond Ave
Foul Bay Rd
Oak Bay Ave
Rockland Ave
McNeill Ave
Newport Ave
Currie Rd
City of Victoria
District of Oak Bay
Saanich
University of Victoria
Cedar Hill Golf Course
Camosun College
Hillside Mall
Oak Bay
Royal Jubilee Hospital
Victoria
Bowker Creek Watershed
Although there is no reason to believe that there are any errors associated with the data used to generate this product or in the product itself, users of these data are advised that errors in the data may be present.
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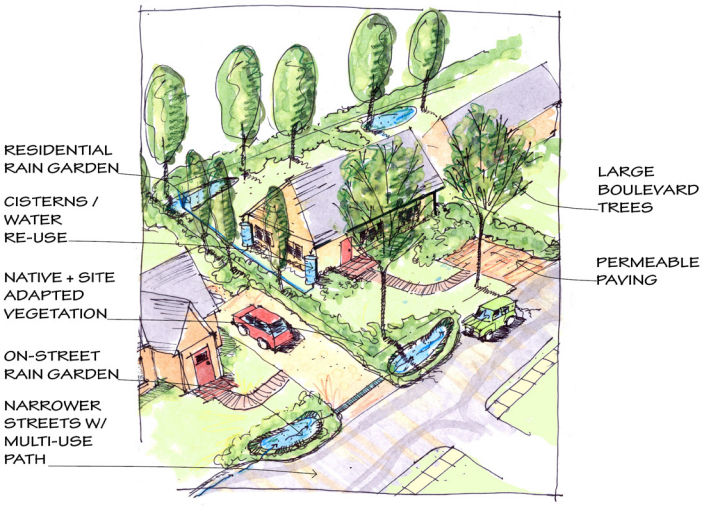
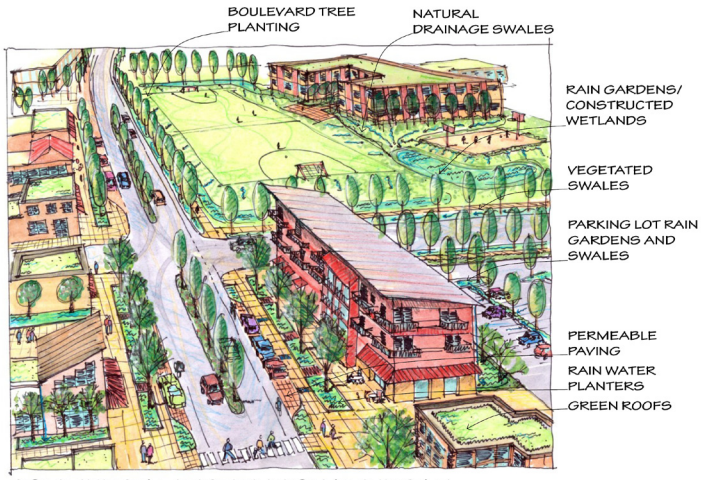


RESIDENTIAL LOW-IMPACT RETROFIT



COMMERCIAL/INSTITUTIONAL/URBAN LOW -IMPACT DEVELOPMENT

Why Use Green Infrastructure and Low Impact Development (LID)?

The low impact development approach to managing rainwater imitates the natural hydrology (or movement of water) of the site by managing rainfall where it falls, and uses green infrastructure and design techniques that allow infiltration and that filter, store, evaporate, and detain runoff close to its source. Healthy urban creeks are assets in a livable community.

Over 60% of the Bowker Creek watershed is **impervious** (i.e., roads, parking lots, roof tops) preventing the rain from soaking into the ground. Rain falls on these impervious surfaces, picks up pollution and drains into storm drains which lead directly to Bowker Creek. This leads to a "flashy" creek during heavy rains; the creek rises very quickly causing erosion, flooding and damage to property and the natural habitat.

Images credit: Murdoch de Greeff Inc.

Infrastructure problems with stormwater.

Innovative Trent Street raingarden solution.

Green Infrastructure and LID helps:

- **Create areas for infiltration.** Rain is able to soak into the ground; soil and plants remove pollutants. Stormwater infrastructure is less burdened, flooding is reduced and the Bowker Creek has more consistent volume and speed of flow year round.
- **Protect the environment.** LID techniques help to remove pollutants from stormwater, reduce the overall volume of stormwater, manage high storm flows and help protect water quality in the creek and the ocean.
- **Reduce flooding and protect property.** Reducing impervious surfaces, increasing vegetation, and dispersing and infiltrating rainwater results in less runoff, reducing the likelihood of flooding from storms.
- **Help the economy.** Developers and builders can also save money because LID projects in many cases are less expensive to build, saving money on overall development costs and protecting your property.
- **Provide cost-effective alternatives to system upgrades.** Land developed prior to the 1990s usually provides little, if any, stormwater treatment. In many cases, LID systems, such as bioretention, are much less expensive to use than costly stormwater vaults or land-consuming stormwater ponds.
- **Create greener communities.** LID projects leave more trees and plants and have less impervious surfaces, which makes for greener developments and communities.
- **Increase public safety.** One of the hallmarks of LID is "green streets". Studies show that when vehicle traffic is slowed, there are fewer pedestrian accidents and fatalities.

Which Feature Should You Use?

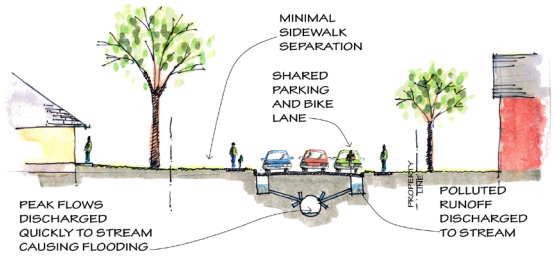
Appropriate rainwater and stormwater management features for different land use are identified in this chart (refer to map on previous pages).

Green Features	Types of Land Use						
	Institutional	Urban	Residential	Park/ Open Space	Mall	Boulevard	Road
downspout disconnect	✓	✓	✓				
harvesting & rainwater	✓	✓	✓				
raingardens	✓	✓	✓	✓	✓	✓	✓
infiltration basins/ tree wells	✓	✓			✓	✓	
pervious pavement	✓	✓	✓	✓	✓	✓	✓
green roofs	✓	✓	✓		✓		
plant & maintain trees	✓	✓	✓	✓	✓	✓	
uncompacted topsoil (30cm+) for landscaping	✓	✓	✓	✓	✓	✓	
swales instead of curb & gutter						✓	✓
minimize road width	✓	✓	✓	✓			✓

Green Streets

Green streets and parking lots are part of a sustainable rainwater management strategy that manages rainwater, reduces storm flow peaks, improves water quality and enhances watershed health. Green streets and parking lots:

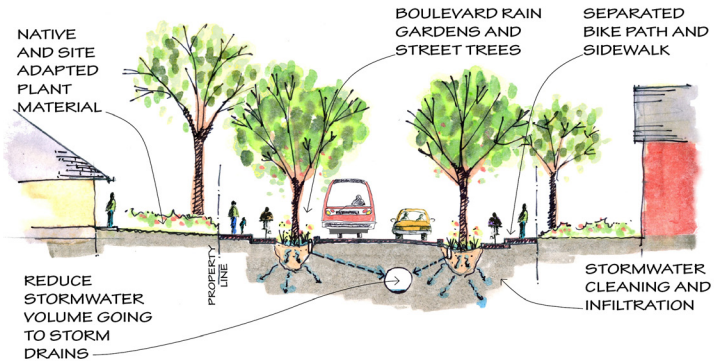
- contribute to traffic calming
- improve pedestrian and bicycle safety
- reduce demand on the city's stormwater infrastructure
- reduce impervious surfaces, allowing rainwater to infiltrate
- recharge groundwater
- deliver cleaner water to Bowker Creek
- increase urban green space
- enhance community and neighbourhood livability



EXISTING STREET SECTION

Drawings courtesy of:

Murdoch de Greeff INC
Landscape Architects



PROPOSED 'GREEN STREET' SECTION

"Revitalizing Bowker Creek creates an opportunity for businesses and developers. By looking after the creek and storm water runoff, property and business owners will benefit by reduced operating costs long term. New developments that incorporate rain gardens and other natural features, such as the creek will be more popular with the public. This will translate into more business as the community will be more inclined to visit business centers that reflect the values of the community."

Travis Lee, President
Urban Development Institute (2010-11)

President, Tri-Eagle Developers Corp.

Member, Bowker Creek Initiative

What Is the "Bowker Creek Blueprint"?

"*The Bowker Creek Blueprint: A 100 –year action plan to restore the Bowker Creek watershed*" is a guiding document for the municipalities of Saanich, Victoria and Oak Bay, and other land stewards such as developers working within the Bowker Creek watershed. The Blueprint:

- Contains general watershed-wide principles for municipalities, developers and citizens.
- Contains specific reach-by-reach information and guidance to manage and restore the watershed and creek corridor for now and over the long term.
- Is to be implemented over a period of decades in recognition that change can be slow in the urban environment.
- Ensures that positive changes can happen incrementally and that opportunities for major improvements can be achieved as they arise.

Principles for a Healthy Watershed for Builders & Developers

As a developer, each of your projects can contribute to a healthy watershed by following these principles:

- Stay informed and ensure your development incorporates municipal community plans, greenways plans and environmental requirements – this will help your project avoid delays
- Use creek-friendly management approaches at all stages of your development
- Reduce effective impervious area
- Construct water infiltration and retention features on your site and partner with municipalities within boulevards
- Plant trees and shrubs and protect existing trees on site
- Include climate change adaptation and mitigation in your planning and design
- Communicate your environmental goals to municipal councils, the community, clients and buyers; this will help "sell" your project

This pamphlet is intended for general guidance only. Applicants should consult their respective municipal planning department for additional information and requirements.

For more information visit:

www.bowkercreekinitiative.ca
www.waterbalance.ca
www.waterbucket.ca
www.crd.bc.ca
www.victoria.ca
www.oakbaybc.org
www.saanich.ca