

of municipal and CRD funds, and Infrastructure Planning grants. A consultant was engaged to complete the process, which included workshops with City planning, engineering and parks staff, to obtain input and guidance on potential route options, design details, and principles. The DFS integrates engineering, parks/trails and land use planning disciplines to define the optimal corridor for daylighting. The report is informed by City plans and policies. The final report outlines recommended and alternate corridors for daylighting, and creek cross sections.

The *Bowker Creek Blueprint: Framework for Collaborative Inter-municipal Watershed Implementation* (the Implementation Framework) (Appendix B), was developed to provide further guidance to municipalities on strategies that could be used to achieve the goals identified in the Blueprint. Led by a CRD Coordinator, planning staff from the District of Saanich, District of Oak Bay, and City of Victoria reviewed and analysed existing and potential tools available to municipalities. A gap analysis was completed for each watershed-wide action and recommended further collaboration for the municipalities. The key recommendation of the Implementation Framework was the formation of an inter-municipal Greenways Subcommittee, with the aim of proposing updated greenways and multi-use trail routing for the Bowker Creek watershed.

The BCI has also produced the report: *Ten Year Achievements: Bowker Creek Initiative* (Appendix C) which outlines watershed-wide successes, following the endorsement and implementation of the Blueprint. This report looks to the future and identifies next steps in achieving the actions identified in the Blueprint. An update to the Blueprint is recommended to reflect the goals achieved over the past ten years, and to prioritize the actions for the future, including incorporating the findings of the DFS and advancing the implementation of greenways through the watershed.

PURPOSE

The purpose of this report is to present the *Bowker Creek Daylighting Feasibility Study* (Appendix A) which provides a defined route to daylight the existing piped sections of the creek over time; the *Bowker Creek Blueprint: Framework for Collaborative Inter-municipal Watershed Implementation* (Appendix B), which outlines a suite of tools the municipalities can use to consistently implement the Blueprint's watershed-wide actions on private property; and the *Bowker Creek Blueprint 10 Year Achievements* (Appendix C), a summary of the collective achievements towards goals and actions of the Blueprint.

BACKGROUND

The Bowker Creek Initiative

In 2002, a forum of government agencies, community organizations, landowners and residents developed the *Bowker Creek Watershed Management Plan*, which identifies goals and actions to protect and restore Bowker Creek. The Bowker Creek watershed extends from the University of Victoria through the District of Saanich and the City of Victoria, and discharges to the sea through the District of Oak Bay (Map 1).

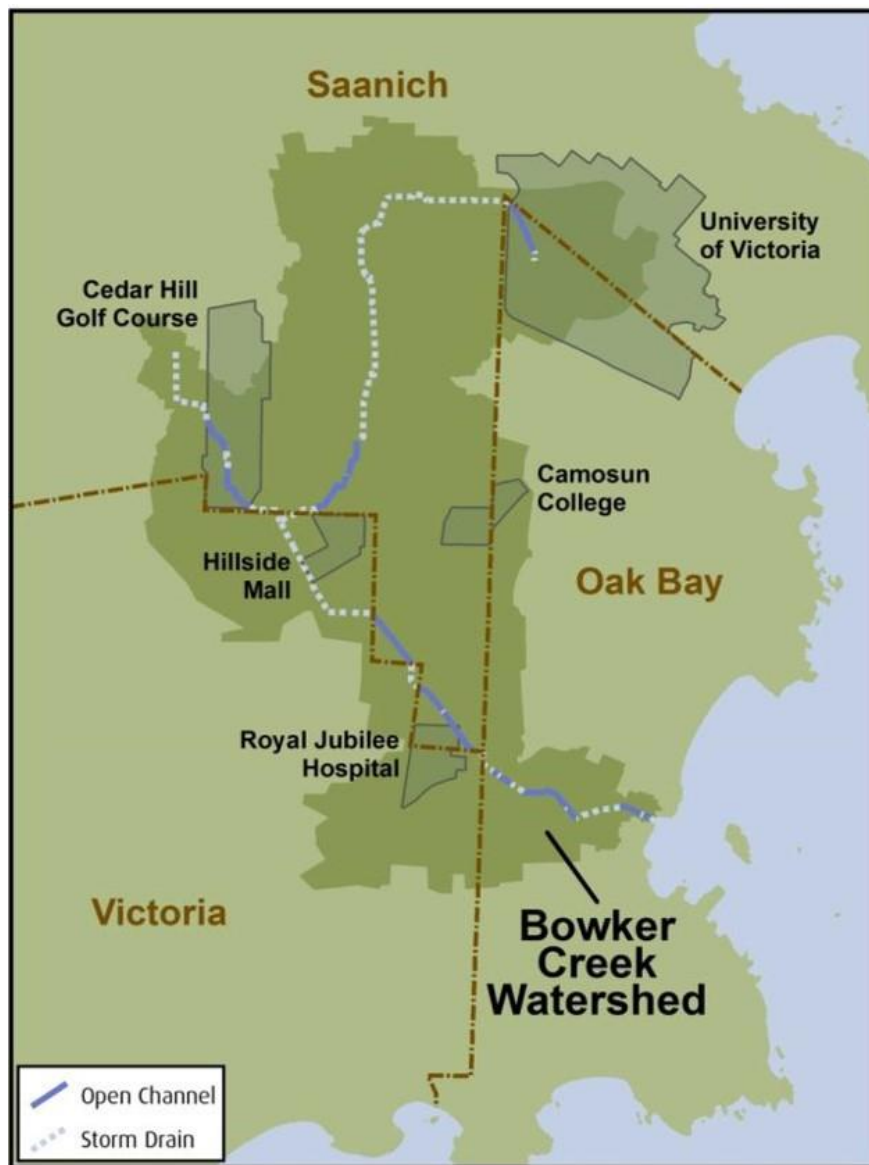
The *Bowker Creek Watershed Management Plan* was approved in 2003 by Victoria, Saanich, Oak Bay and the CRD. In 2004 the Bowker Creek Initiative (BCI) was created as a coalition of community, government, businesses and institutions, including the City of Victoria, the District of Oak Bay and the District of Saanich. The purpose of the organisation is to work together to protect and enhance the ecological, social and economic health of the Bowker Creek watershed and implement the *Bowker Creek Watershed Management Plan*.

In 2010 the BCI partners completed the *Bowker Creek Blueprint: A 100 year plan to restore the Bowker Creek Watershed* (Blueprint), which was subsequently endorsed by the City of Victoria

(2011), District of Saanich (2011), District of Oak Bay (2012) and School District #61 (2018). The Blueprint's watershed-wide and reach-specific recommendations provide guidance to manage and restore the watershed and the creek corridor over the next 50 to 100 years. The Blueprint's unique approach to long-term, multi-stakeholder watershed restoration has garnered accolades and recognition, and is used as a case study in successful watershed planning collaboration.

Municipal and community partners of the Bowker Creek Initiative (BCI) have worked together to implement the Blueprint and have made significant progress. Since completion of the Blueprint, the City has been looking for opportunities to integrate measures to improve watershed health wherever feasible when capital projects have been completed in the watershed.

The CRD chairs the BCI and hosts a part-time position to coordinate the *Bowker Creek Watershed Management Plan* and Blueprint implementation.



Map 1: Bowker Creek Watershed

Bowker Creek Daylighting Feasibility Study

The BCI partners have an overall goal of returning as much of Bowker Creek as possible to a naturalized condition in a cost-effective manner. Past efforts to promote the long-term daylighting of Bowker Creek, although moderately successful, have been constrained by the absence of a well-defined, long-term creek layout and long-term planning processes needed to capitalize on redevelopment opportunities.

The daylighting analysis was funded through a combination of municipal and CRD funds, and Provincial Infrastructure Planning Grants. The BCI established a Daylighting Feasibility Subcommittee to provide input on the study scope, evaluate proposals, guide the process and provide input and review on all project deliverables.

An engineering consultant were engaged to complete the *Bowker Creek Daylighting Feasibility Study* (DFS) (Appendix A). The consultant held a series of workshops that included City planning, engineering and parks staff, to obtain input and guidance on potential route options, design details, and principles. The DFS integrates engineering, parks/trails and land use planning disciplines to define the optimal corridor for daylighting. Some of the key strategies include the following:

- Utilize land use planning processes (e.g., rezoning applications) as a tool to acquire land for both daylighting and stormwater storage facilities.
- Encourage daylighting by considering additional building height allowances as part of redevelopment.
- Pursue daylighting as part of other municipal infrastructure replacement.
- Utilize a flexible approach to achieve the daylighting of Bowker Creek, including re-routing or partially daylighting the creek.

The DFS aligns with and compliments the *Bowker Creek Master Drainage Plan* (MDP), the *Bowker Creek Blueprint: a 100-year action plan to restore the Bowker Creek watershed*, *Regional Soil Infiltration Potential Maps & Report*, *Climate Projections for the Capital Region* (April 2017), in addition to City plans and policies, including the *Official Community Plan*, *Go Victoria*, the *Parks and Open Spaces Master Plan*, and the *Stormwater Master Plan*.

Bowker Creek Blueprint: Framework for Collaborative Inter-municipal Watershed Implementation

Bowker Creek Blueprint: Framework for Collaborative Inter-municipal Watershed Implementation (the Implementation Framework) (Appendix B), is an implementation strategy the municipalities can use to achieve the goals identified in the Blueprint.

Planning staff from the District of Saanich, District of Oak Bay and City of Victoria worked with the BCI coordinator to develop the Implementation Framework. The group completed an extensive review and analysis of existing and potential tools available to municipalities, conducted a gap analysis for each watershed-wide action for all three municipalities and proposed further collaborative action for the municipalities, including formation of an inter-municipal Greenways Subcommittee. This subcommittee will review the greenway recommendations in the DFS and prioritize the creation of additional greenways alongside Bowker Creek. Staff representatives from Parks, Planning and Engineering at all three municipalities will be invited to participate with the aim of recommending updated greenways and multi-use trail routing for the Bowker Creek watershed.

Ten Year Achievements: Bowker Creek Initiative

Over the ten years following Council's endorsement of the Blueprint, there were many successes in implementation of actions identified in the plan. *Ten Year Achievements: Bowker Creek Initiative* (Appendix C) outlines watershed-wide successes, including the following significant achievements for the City of Victoria:

- *Green Stormwater Infrastructure at Hillside Centre (2014)*

Prior to redevelopment, Hillside Centre and its parking area contributed a significant amount of impervious area and stormwater runoff directly to Bowker Creek. In large rainfall events this led to high creek flows, erosion and downstream flooding. The City and BCI engaged with Hillside Centre to encourage the use of onsite green stormwater infrastructure including permeable paving and rain gardens. The stormwater improvements, completed in 2014, improves stormwater quality and reduces flow rates to the creek.

Improvements to the Hillside Avenue rain garden have been scheduled for 2021, and will include native plantings, reflecting the City's commitment to improving biodiversity, pollinator habitat and climate adaptation.

- *Rainwater Rewards Program (2015)*

Rainwater rewards are financial incentives for the installation of green stormwater infrastructure (GSI). GSI is a stormwater management approach that mimics natural watershed processes to treat stormwater. It encourages multi-functional landscapes that offer many co-benefits over grey infrastructure, such as improved stormwater quality, reduced flooding, urban forest enhancement, biodiversity and improved air quality.

The program was developed in conjunction with the stormwater utility, and consists of two components, a one-time rebate for low-density residential property owners, and ongoing annual stormwater credits for all property types. The City's Rainwater Management Standards document was created to provide clear requirements for construction and maintenance of the rainwater management/GSI practices.

- *Stormwater Utility (2016)*

The City is the first municipality in the CRD to adopt a stormwater utility to fund stormwater infrastructure and programs. Stormwater Utilities are considered a best practice for funding stormwater infrastructure, and increasingly are being adopted across Canada and the U.S. The stormwater utility charge is based on property-specific information including the amount of impervious area on site, street cleaning requirements, intensity code (e.g., low density vs multi-family), and participation in the Codes of Practice Program (requirements designed to clean stormwater before it leaves a property). By linking the fee to property characteristics, property owners can influence how much they pay by reducing building footprints in new builds and/or by managing stormwater on-site. The stormwater utility enables the City to encourage practices and development that improves stormwater quality, reduces flows, and improves the health and resilience of our urban ecosystems.

ISSUES & ANALYSIS

The Bowker Creek Daylighting Feasibility Study (DFS)

The DFS (Appendix A) provides alternate options and technical solutions than those currently identified in the Blueprint. In addition, a series of greenways aligned with the proposed daylighting

routes are contemplated. The DFS will enable staff to capitalize on opportunities for daylighting, including integration into underground infrastructure renewal projects and transportation corridor planning. In addition, the daylighting lens can be applied to land use changes such as rezoning and community planning processes such as local area and neighbourhood plans.

The *Bowker Creek Daylighting Feasibility Study* (DFS) achieves the following:

- Documents the role of land use planning and redevelopment planning on the daylighting effort.
- Identifies the best long-term route(s) for a daylighting corridor for Bowker Creek.
- Assesses options for incorporating green corridors (i.e., park trails beside the creek).
- Assesses creek detention and/or constructed wetlands options.
- Takes into consideration both above and below ground structures including natural and physical assets.

Daylighting Feasibility Study – City of Victoria Findings

Findings from the DFS specific to the City of Victoria are summarized in Appendix D (*Bowker Creek Daylighting Feasibility Study – Summary of Findings for City of Victoria*), including existing conditions, opportunities and constraints, route alignment concepts and creek cross section concepts.

Daylighting Feasibility Study Next Steps

The DFS represents a milestone in efforts to improve the Bowker Creek watershed. By outlining all opportunities for daylighting Bowker Creek, it builds upon the Blueprint and specifically defines how creek daylighting could contribute to the overall watershed vision. Implementation of the Daylighting Feasibility Study will enhance the urban setting by providing a natural amenity back to the community, providing increased resilience in adapting to climate change, and improving hydrological function and ecological health of Bowker Creek.

The findings of the DFS will be incorporated into the planned update to the City's Stormwater Management Master Plan in 2021 and incorporated into the next iteration of the Bowker Creek Blueprint. Staff will also review opportunities to implement daylighting projects into planned infrastructure renewal projects, transportation and park upgrades. A confidential list of properties for acquisition was generated in the development of the Blueprint; this list will be updated to reflect the findings of the DFS, and shared with Real Estate.

Bowker Creek Blueprint: Framework for Collaborative Inter-municipal Watershed Implementation

The Implementation Framework describes planning tools (including development guidelines, bylaws, programs) adopted by each of the three municipalities to achieve the 20 watershed-wide actions that apply to private property goals of the Bowker Creek Blueprint. It highlights areas for improvement and outlines recommended areas for municipal collaboration. The objectives of the Implementation Framework are to:

- foster consistent implementation of the Blueprint between the three municipalities such as through action plans, common development permit guidelines, and other tools;
- focus on private land;
- improve stormwater management;
- recognize the different conditions of Bowker Creek throughout the three municipalities;
- entrench the Bowker Creek Blueprint into municipal policies and development review processes; and

- accomplish the vision of the Bowker Creek Blueprint over time.

The BCI seeks to bring together an inter-municipal Greenways subcommittee with staff from Parks and Transportation, to review the DFS from a greenways perspective, and prioritize the creation of additional greenways alongside Bowker Creek. The anticipated outcome is updated recommended greenways and multi-use trail routing for the Bowker Creek watershed.

Ten Year Achievements: Bowker Creek Initiative

There are ten key actions identified in the Blueprint for short-term implementation. In the ten years following endorsement of the Blueprint, the majority of these actions have been achieved and are summarized in the *Ten Year Achievements: Bowker Creek Initiative* (Appendix C).

With the completion of the DFS, the Implementation Framework and the achievement of the ten short-term priority actions, the BCI have identified the need to re-visit the Blueprint. An update to the Blueprint will incorporate the results of the DFS, implement new tools to operationalize the implementation over the long term and to define the next priority actions that will guide the work of the municipalities and community over the next decade. The BCI would seek Council endorsement of an updated Blueprint, expected in 2022-2023.

OPTIONS & IMPACTS

Option 1 – Receive the *Bowker Creek Daylighting Feasibility Strategy (DFS)*, *Bowker Creek Blueprint: Framework for Collaborative Inter-municipal Watershed Implementation*, and *Ten Year Achievements: Bowker Creek Initiative* for information, and direct staff to report back on scope and resources required to support the creation of an update to the Bowker Creek Blueprint. **(recommended)**

The DFS and Implementation Framework will provide staff with the tools and direction to continue to achieve the 100-year vision of a restored Bowker Creek.

An update to the Bowker Creek Blueprint will reflect the achievements and successes of the past ten years, integrate the findings of the DFS, and clarify priorities for the next ten years. This document will be presented to Council for review and endorsement once completed.

Option 2 – Receive the *Bowker Creek Daylighting Feasibility Strategy (DFS)*, *Bowker Creek Blueprint: Framework for Collaborative Inter-municipal Watershed Implementation*, and *Ten Year Achievements: Bowker Creek Initiative*, for information. Do not direct staff to support the creation of an update to the Bowker Creek Blueprint. (not recommended)

Accessibility Impact Statement

The City's Accessibility Framework and the Accessibility and Inclusion Policy will inform future implementation of the Bowker Creek DFS.

2019 – 2022 Strategic Plan

This report and the accompanying Appendices support actions identified in the current Strategic Plan under the Climate Leadership and Environmental Stewardship objective, including:

(9.) Initiate a Parks and Open Spaces Acquisition Strategy to identify priorities for parkland acquisition that align with Official Community Plan, Parks and Open Spaces Master Plan, and other

approved City plans; (21.) Promote rain gardens and improve water quality entering waterways; and (25.) Work with partners to clean up the harbour and steward waterways.

Impacts to Financial Plan

Costs for development of an update to the Bowker Creek Blueprint require further scoping by the BCI, and will be included in future financial plans for Council consideration. The 2021 Financial Plan includes an update to the City's Stormwater Management Master Plan, which will incorporate findings of the DFS. Implementation of the Daylighting Feasibility Study requires significant investment, and costs would be determined on a project-by-project basis and included in future financial plans for Council consideration.

Official Community Plan Consistency Statement

The recommendation is consistent with Official Community Plan Goal 10(B): Victoria's Harbour, coastline, ponds and streams support healthy populations of fish and other aquatic life, specifically Fresh Water Ecosystems sections 10.12 and 10.13:

- 10.12 Support an integrated watershed planning approach for the comprehensive management of surface water, rainwater, and groundwater resources that promotes healthy aquatic ecosystems, resilience to climate change and the maintenance of hydrological functions
- 10.13 Collaborate with the Capital Regional District, neighbouring municipalities, community organizations, property owners and other partners to protect and enhance streams and watercourses, including the potential day-lighting of streams and improvement of riparian habitat, by:
 - 10.13.1 Implementing management plans for the Bowker Creek and Cecelia Creek watersheds;
 - 10.13.2 Exploring the acquisition and designation of creek side ecosystems through a Parks acquisition Strategy or major redevelopment proposals; and;
 - 10.13.3 Integrating the restoration of natural creek side features into the development of greenways, where appropriate.

CONCLUSIONS

The City and its partners in the Bowker Creek Initiative have made significant strides and achieved considerable successes in implementation of the Bowker Creek Blueprint over the past ten years. Staff have presented three reports, *the Bowker Creek Daylighting Feasibility Study*, *the Bowker Creek Blueprint: Framework for Collaborative Inter-municipal Watershed Implementation*, and *the Bowker Creek Blueprint: Ten Year Achievements*, for information. These documents will provide direction and tools to staff to further the 100-year vision of a restored Bowker Creek. In addition, staff seek direction to support the development of and update to the Bowker Creek Blueprint, a document that will update and build on the *Bowker Creek Blueprint: A 100-Year Action Plan to Restore the Bowker Creek Watershed*.

Respectfully submitted,

Brianne Czypyha
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Assistant Director of Engineering

Philip Bellefontaine
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Report accepted and recommended by the City Manager.

List of Attachments

Appendix A: Bowker Creek Daylighting Feasibility Study

Appendix B: Bowker Creek Blueprint: Framework for Collaborative Inter-municipal
Watershed Implementation

Appendix C: Bowker Creek Blueprint: Ten Year Achievements

Appendix D: Bowker Creek Daylighting Feasibility Study – Summary of Findings for City of Victoria