



Welcome

→ **Sheridan Creek Erosion Control
Study – Lushes Avenue to Clarkson
Road South**





Purpose of the Virtual Public Information Centre

The purpose of this virtual Public Information Centre (PIC) is to share information about the Sheridan Creek Erosion Control Study (Lushes Avenue to Clarkson Road South) and to obtain your comments for consideration by the City of Mississauga.

This presentation will:

- Introduce the Study
- Outline the Municipal Class Environmental Assessment process
- Summarize the problems / opportunities within the Study Area
- Describe the natural and built environmental conditions
- Identify the alternative solutions being considered
- Identify the preliminary recommended solution(s)
- Outline the planned next steps in the Study

Introduction to the Study

The City of Mississauga is undertaking a Study for erosion control and restoration of Sheridan Creek from Lushes Avenue to Clarkson Road South.

Sheridan Creek originates in the industrial lands north of the Queen Elizabeth Way (QEW), flows southeast through the Study Area and ultimately discharges to Rattray Coastal Marsh and Lake Ontario further southeast.

This section of Sheridan Creek, which spans 749 metres, is channelized with many areas being concrete-lined approximately 40 to 50 years ago.

The Study is being carried out in accordance with the Municipal Class Environmental Assessment.

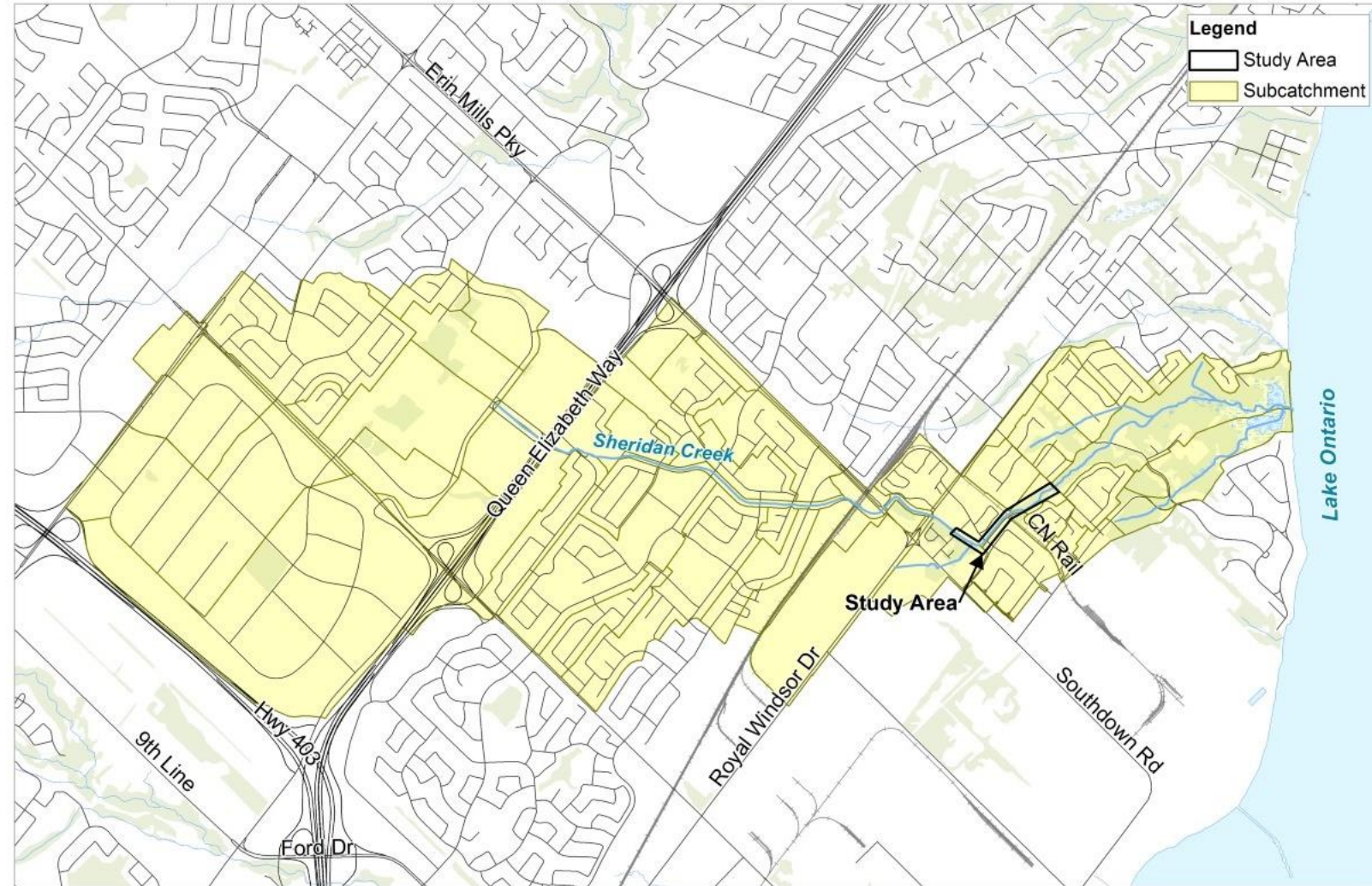
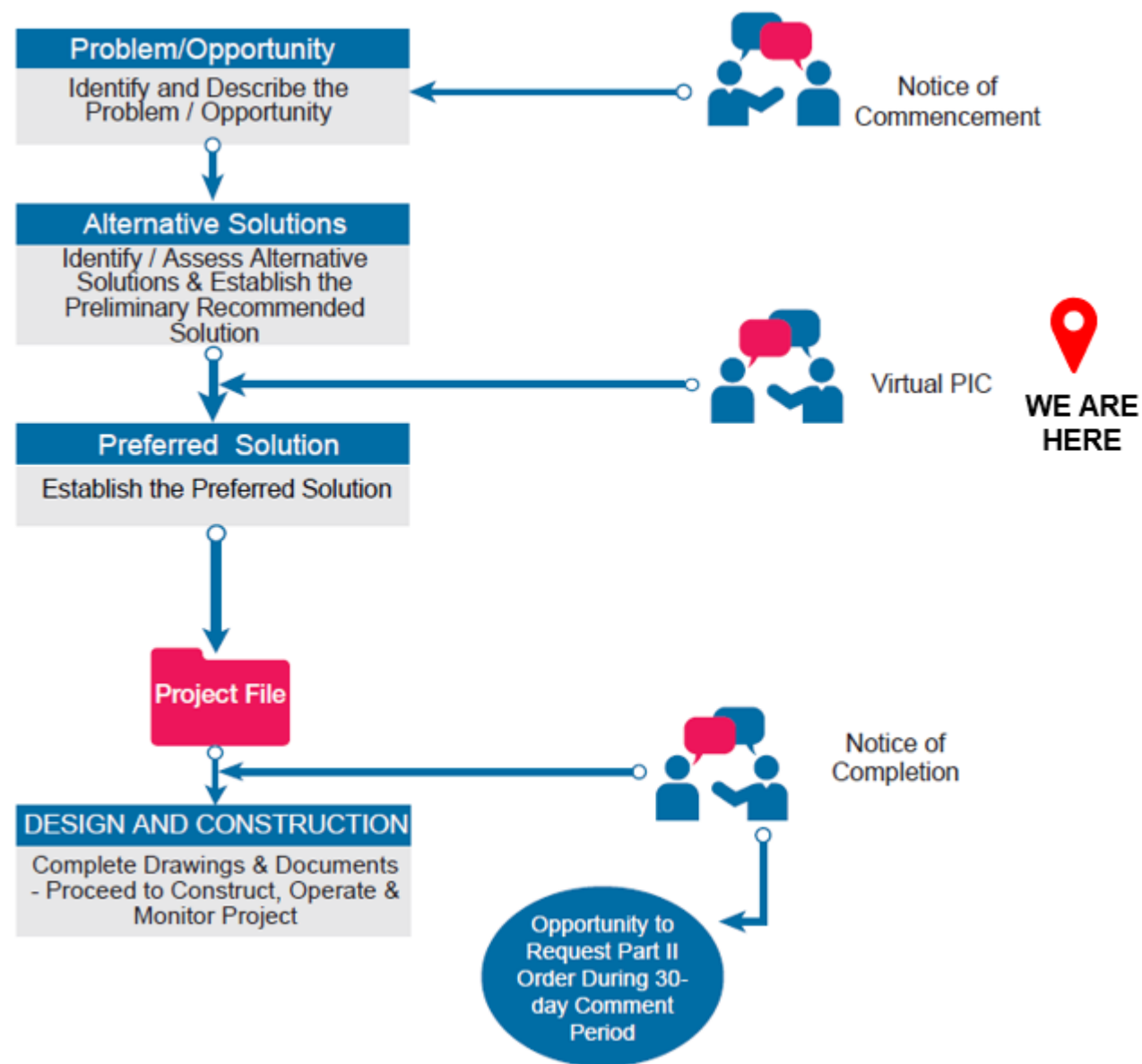


Figure 1: Sheridan Creek Watershed

Municipal Class Environmental Assessment

The Municipal Class Environmental Assessment (MCEA) is an environmental planning and decision-making tool used to assess the potential environmental impacts of a proposed project.

The City of Mississauga is undertaking this Study in accordance with the requirements set out in Schedule B of the Municipal Engineers Association's MCEA (2015).



Problem / Opportunity Statement

As part of Phase One of the MCEA, the problems and/or opportunities associated with the Study need to be defined. The problems include the following:

- The concrete channel and gabion baskets (rock baskets on the banks) are no longer functioning as designed, posing a risk to infrastructure and the environment.
- Excessive erosion has led to some of the following impacts:
 - Bank and valley wall destruction
 - Slumping of gabion banks
 - Elevated storm sewer outfalls

Through the City's ongoing erosion monitoring program, this section of Sheridan Creek has been identified as requiring rehabilitation.

The main goal of the Study is to mitigate the existing erosion problems and ensure long-term stability of the creek using natural design techniques, where feasible, while also protecting or enhancing the existing environment within the Study Area.



Reach 1 Existing Conditions

Reach 1: 136 m of Sheridan Creek from Lushes Avenue to the start of the concrete lined channel.

Existing Condition

- Straight, natural channel confined by valley walls with small segment of riprap bank protection at downstream limit
- No evidence of channel movement or significant erosion
- Watermain and sanitary trunk sewer crossings under the Lushes Avenue pedestrian crossing
- Two drainage culverts on each bank are in good condition
- No identified geomorphic hazards to private property or infrastructure

Issues:

- No significant issues identified
- Lack of variability in the creek shape for optimal aquatic habitat
- Minor channel bank erosion

Opportunities:

- Improve aquatic habitat conditions



Under the Lushes crossing



Minor bank erosion



Minor bank erosion



Transition to the downstream concrete channel

Reach 2 Existing Conditions

Reach 2: 293 m of Sheridan Creek within a concrete lined channel.

Existing Conditions

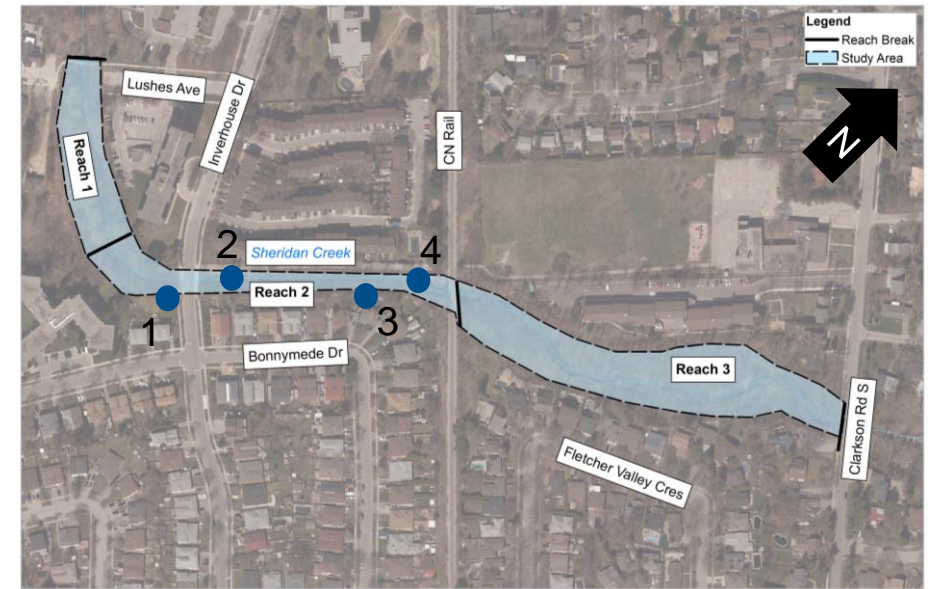
- Completely hardened channel with concrete bed and banks and gabion-lined valley slopes
- Concrete protection is cracked, displaced, and failing in segments along both the channel bed and bank
- Two stormwater outfalls within the reach in poor condition with displaced and failed concrete protection; subsurface infrastructure (sanitary and watermain) crossings under the channel
- Two concrete drop structures at the downstream limit of the reach
- Inverhouse Drive and CN rail bridge crossings within reach

Issues:

- Entire reach is a barrier to fish passage due to lack of low flow channel
- Concrete bed and bank failure poses a risk to infrastructure
- No aquatic habitat or physical stream components

Opportunities:

- Protect stormwater infrastructure and structural integrity of CN rail bridge abutments and Inverhouse Drive crossing through bed and bank protection
- Restore fish passage through removal of barriers and grade control
- Restore aquatic habitat and channel functions, including hydraulic function and sediment transport, through re-establishing a more natural but stable channel



Broken concrete bank



Broken concrete bank and outlet channel



Flat wide concrete bed is a barrier to fish passage



Cracked concrete bank

Reach 3 Existing Conditions

Reach 3: 320 m of Sheridan Creek from CN Rail railway crossing to Clarkson Road South

Existing Conditions

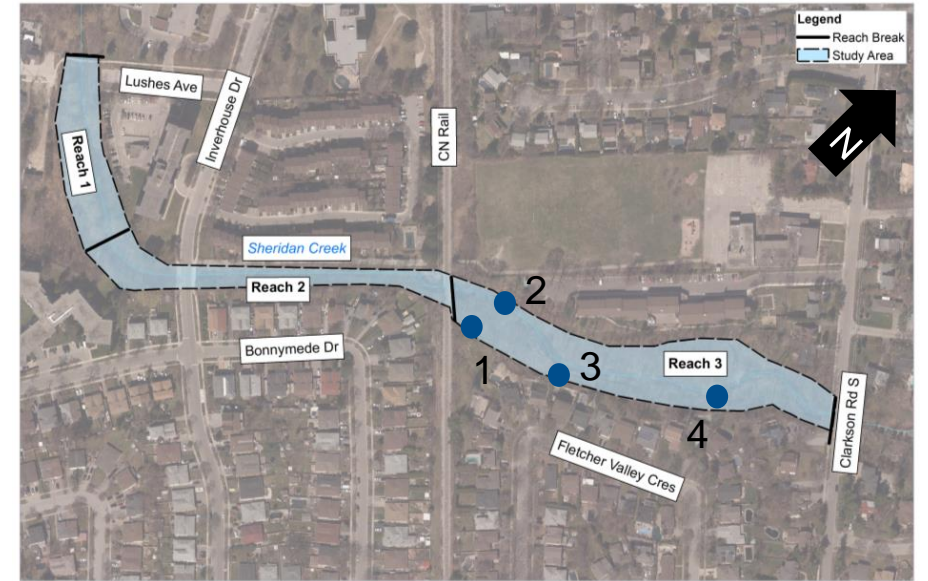
- Gabion bank protection along majority of channel banks in various states of disrepair and exposed shale bedrock along channel bed and toe of channel banks
- Unstable channel with evidence of widening and downcutting placing infrastructure and private property at risk
- Steep valley walls at the upstream and downstream limit of the reach
- Channel banks in close proximity to southern private properties
- Five stormwater outfalls in poor to good condition and Clarkson Road South crossing with associated buried infrastructure at the downstream limit

Issues:

- Failed, undermined, and slumping gabion bank protection leaving banks exposed
- Exposed shale bedrock, difficult to maintain cover once removed
- Valley wall contacts posing risk to private property
- Significant concrete drop posing barrier to fish passage

Opportunities:

- Remove failing bank protection and debris and stabilize banks with alternative treatments to protect stormwater infrastructure and private property from erosion and reduce hazard to public safety
- Restore fish passage through removal of barriers and grade control
- Enhance geomorphic stability and aquatic habitat of the channel through establishment of natural watercourse features



1
Scour of bed and damaged gabion baskets



2
Downcutting of the channel bed



3
Failed gabion baskets



4
Bank erosion and downcutting



Existing Environmental Conditions

Wildlife

All but one native botanical species was found to be tolerant of disturbance. Specifically, Canada Yew was found to have a high sensitivity to disturbance.

Aquatic Habitat

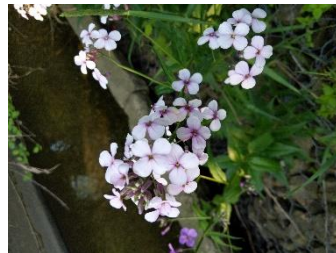
The three fish barriers that were found include the 0.3 m and 1.0 m concrete drops that partially / fully obstruct fish movement and the shallow flow past the concrete-lined channel.

Species at Risk

Two of the 33 bird species (Chimney Swift, Eastern Wood-Pewee) and three bat species (Little Brown Myotis, Northern Myotis & Tri-Coloured Bat) have been designated species at risk.

Designated Areas

There are no regionally or provincially significant wetlands or other provincially designated areas present in the Study Area. The majority of the Study Area is designated as “Significant Natural Areas and Natural Green Spaces” and “Natural Hazard” under the Mississauga Official Plan (2021)



Archaeological

There are no registered archaeological sites located within 1 kilometre of the Study Area. However, there is archaeological potential in the vicinity of the Study Area.

Cultural Heritage

There are no properties within the Study Area that are designated under the *Ontario Heritage Act*.

Land Use

The Study Area is within a highly urbanized portion of Mississauga. There are apartment buildings, detached residential dwellings, a senior’s home, and a public school adjacent to the Study Area.

Other Features

The Study Area includes a narrow strip of Greenland along Sheridan Creek. A CN railway is situated through the center of the Study Area.





Alternative Solutions

Alternative solutions appropriate to each reach were developed as follows:

Alternative Solution	General Description	Reach 1	Reach 2	Reach 3
No. 1 Do Nothing	No changes to Sheridan Creek.	No change to existing conditions.	No change to existing conditions.	No change to existing conditions.
No. 2 Site-based work	Spot treatments to Sheridan Creek would be applied only where existing bank protection measures are failing.	Removal of woody debris. Addition of boulders to channel bed. Plantings along slope.	Local repairs to damaged concrete bed and bank protection. Construct concrete baffles on channel bed.	Local removal of existing gabion and replacement with alternative protection. Raise bed with grade control to protect toe and eliminate fish passage barrier.
No. 3 Reach scale work	Major channel repair to Sheridan Creek over a larger area within existing footprint including improved fish passage.	Channel bank protection with channel bed grade control and creation of pool-riffle sequence.	Removal of concrete channel. Natural channel bed with rock weirs and pools. Bio-engineered bank protection.	Removal of all existing gabion and replacement with alternative protection. Natural channel banks remain mid-reach where no erosion hazards observed. Raise bed with grade control to protect toe and eliminate fish passage barrier.
No. 4 Channel Realignment	Realignment of channel and installation of bank protection throughout the length of the reach.	Not applicable.	Not applicable.	Removal of gabion. Armouring of all banks with alternative protection. Raise bed with grade control to eliminate fish passage barrier. Realignment of channel away from valley wall.



Alternative Solutions Evaluation

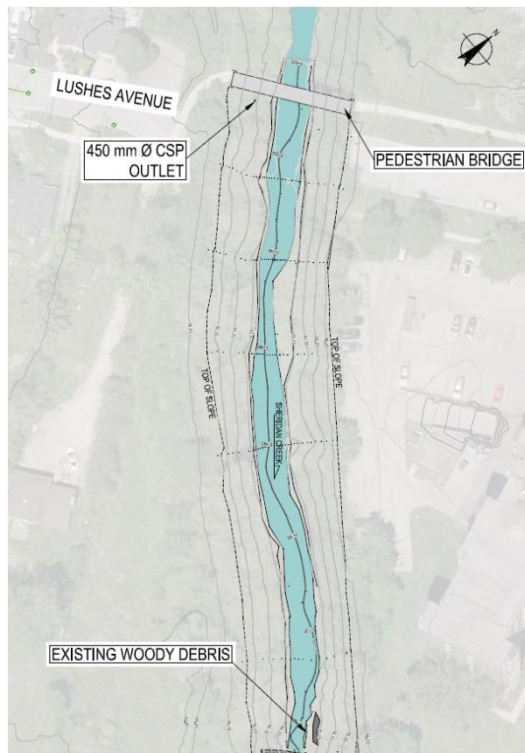
The alternative solutions specific to each reach were evaluated against a set of evaluation criteria which were grouped according to the following categories:

Category	Considerations
Technical	Hazards, agency acceptance, infrastructure protection, lifespan of proposed improvements, geomorphology
Natural Environment	Vegetation, wildlife, fish, surface water, Species at Risk
Social, Economic, and Built Environments	Existing land uses
Cultural Environment	Cultural heritage resources
Financial	Capital and maintenance costs

This evaluation criteria were applied to each alternative solution to identify potential effects (both positive and negative). The effects were then comparatively evaluated to identify a preliminary recommended solution that represented the best balance of advantages and disadvantages.



Sheridan Creek Reach 1

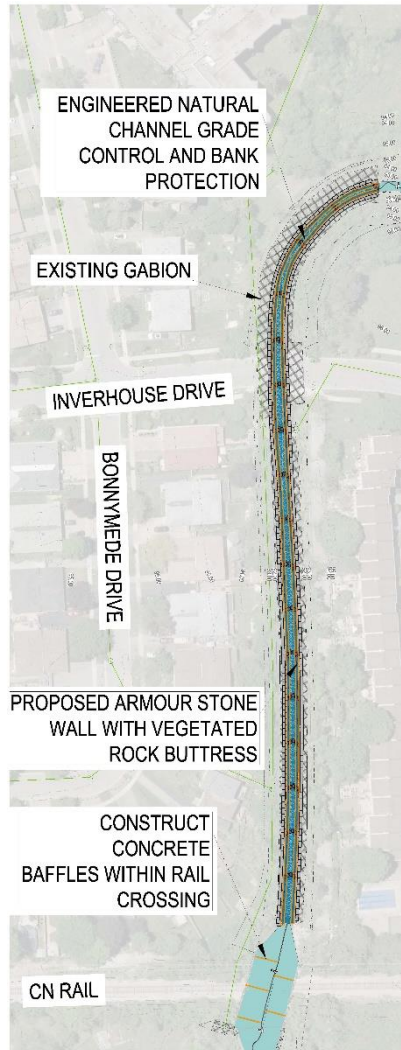


Reach 1 Preliminary Recommended Solution

Alternative 1: Do nothing	Alternative 2: Site-based work	Alternative 3: Reach scale work
Advantages <ul style="list-style-type: none">No disturbance to terrestrial or aquatic habitatsNo negative impacts to flood levelsNo immediate capital costs	Advantages <ul style="list-style-type: none">Improvement to geomorphic channel morphologyImprovements to aquatic habitat	Advantages <ul style="list-style-type: none">Full protection of channel banks from erosionEnhanced lifespan of works
Disadvantages <ul style="list-style-type: none">No increased benefit to long-term aquatic habitatPossible maintenance interventions required in the future	Disadvantages <ul style="list-style-type: none">Potential to initiate instability within the channel and increase erosionModerate level of disturbance to terrestrial and aquatic habitatModerate capital costs	Disadvantages <ul style="list-style-type: none">Reduced certainty of agency approval as protection is not requiredHigh level of disturbance to terrestrial and aquatic habitatLoss of physical components of stream functionFuture failure of protection could cause fish passage barrierNegative impact to flood levelsHighest capital costs
Preliminary Recommended Solution	Not recommended	Not recommended



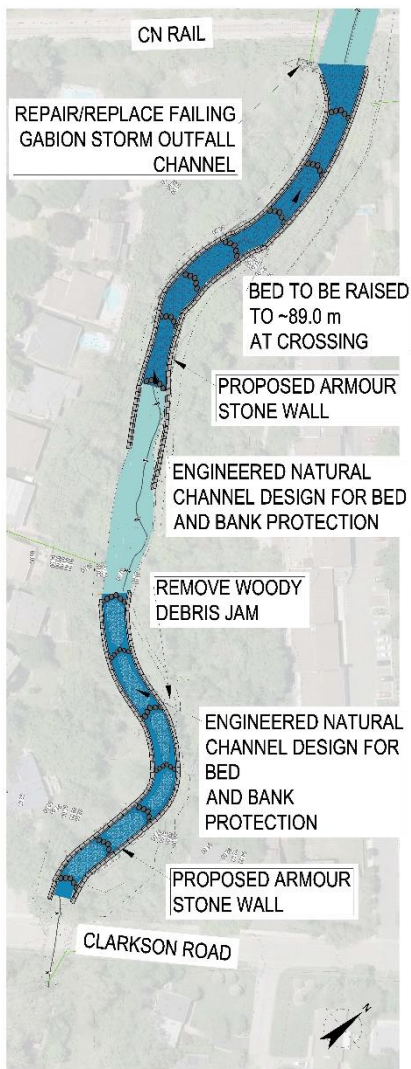
Sheridan Creek Reach 2



Reach 2 Preliminary Recommended Solution

Alternative 1: Do nothing	Alternative 2: Site-based work	Alternative 3: Reach scale work
Advantages <ul style="list-style-type: none">• No disturbance to existing terrestrial habitat or candidate species at risk habitat.• No immediate capital costs	Advantages <ul style="list-style-type: none">• Protection of tableland and infrastructure from erosion• Limited site disturbance to terrestrial habitat• Minor improvements to stream function and aquatic habitat• Cost is comparatively moderate	Advantages <ul style="list-style-type: none">• Protection of tableland and infrastructure from erosion• Long lifespan of works• Natural channel bed with physical components of stream function• Aquatic habitat diversity attractive to candidate species• Improved fish passage• Minimal maintenance requirements
Disadvantages <ul style="list-style-type: none">• Short lifespan of existing works• No protection of infrastructure or tableland from erosion if concrete banks and bed continue to fail• No natural channel features• Entirety of reach acts as a barrier to fish passage; no aquatic habitat present	Disadvantages <ul style="list-style-type: none">• No natural channel features or physical stream function• Poor aquatic habitat and remaining barriers to fish passage• Minor negative impact to flood levels• Moderate lifespan with future intervention anticipated	Disadvantages <ul style="list-style-type: none">• Comparatively high level of disturbance to existing terrestrial habitat and candidate species at risk habitat• Highest capital costs
Not recommended	Not recommended	Preliminary Recommended Solution

Sheridan Creek Reach 3



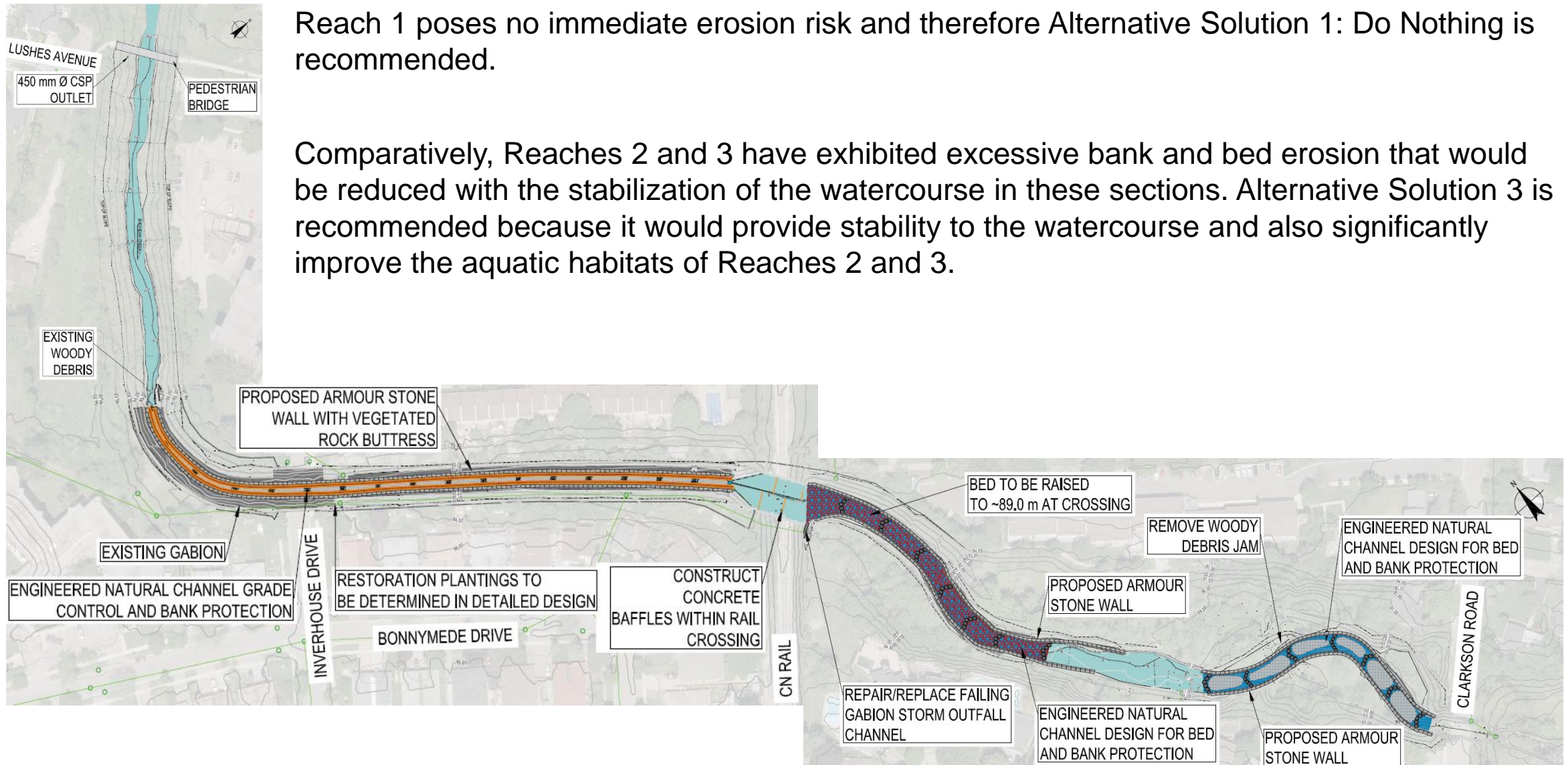
Reach 3 Preliminary Recommended Solution

Alternative 1: Do nothing	Alternative 2: Site-based work	Alternative 3: Reach scale work	Alternative 4: Channel realignment
Advantages <ul style="list-style-type: none"> No disturbance to existing terrestrial habitat or candidate species at risk habitat. No immediate capital costs 	Advantages <ul style="list-style-type: none"> Moderate level of protection for private property and infrastructure from erosion Limited site disturbance to terrestrial habitat Cost is comparatively moderate Fish passage barrier removed 	Advantages <ul style="list-style-type: none"> High level of protection of private property and infrastructure from erosion Long lifespan of works Fish passage barrier removed Improved geomorphic stability and aquatic habitat Reduced public safety hazard 	Advantages <ul style="list-style-type: none"> High level of protection of private property and infrastructure from erosion Long lifespan of works Fish passage barrier removed Improved geomorphic stability and aquatic habitat Reduced public safety hazard
Disadvantages <ul style="list-style-type: none"> Poor channel stability and aquatic habitat No protection of infrastructure or private property from erosion Hazard to public safety Fish passage barrier remains 	Disadvantages <ul style="list-style-type: none"> Poor aquatic habitat Moderate lifespan of works with future intervention anticipated Remaining hazard to public safety Poor geomorphic conditions 	Disadvantages <ul style="list-style-type: none"> Comparatively high level of disturbance to existing terrestrial habitat and candidate species at risk habitat Comparatively high capital costs 	Disadvantages <ul style="list-style-type: none"> Highest level of disturbance to existing terrestrial habitat and candidate species at risk habitat Highest capital costs
Not recommended	Not recommended	Preliminary Recommended Solution	Not recommended

Preliminary Recommended Solution

Reach 1 poses no immediate erosion risk and therefore Alternative Solution 1: Do Nothing is recommended.

Comparatively, Reaches 2 and 3 have exhibited excessive bank and bed erosion that would be reduced with the stabilization of the watercourse in these sections. Alternative Solution 3 is recommended because it would provide stability to the watercourse and also significantly improve the aquatic habitats of Reaches 2 and 3.





Proposed Impact Management Measures

Best Management Practices

- All works shall be inspected and approved by a geomorphologist or designer prior to works commencing.
- Construction limits shall be delineated to prevent unanticipated impacts to natural surroundings, including trees and the watercourse.
- All materials and equipment shall be stored and operated in such a manner that prevents any deleterious substances from entering the water.
- Vehicle and equipment re-fuelling and/or maintenance shall be conducted away from the watercourse and be free of fluid leaks and externally cleaned/degreased to prevent the release of deleterious substances.
- Newly constructed channels are particularly vulnerable to erosion between the initial excavation and the establishment of vegetation along channel banks. Banks shall be stabilized as work progresses and all disturbed areas will be regraded and seeded as required.

Project Specific Measures

- Fish & fish habitat shall be protected with cofferdams, end-of-pipe screens and mitigation of stormwater runoff.
- Disturbance of natural vegetation while avoiding clearance of vegetation during bird nesting periods (April-August) shall be limited.
- Tree clearing shall be avoided during bat roosting periods (April-October).
- Adhering to a warm water in-water works timing window (to be confirmed by permitting regulatory agencies).
- Restoration plans shall be applied and shall utilize native species when soil disturbance is anticipated to avoid the spread of invasive species.
- Temporary tree protection/construction fencing, where required, shall be constructed.



Comments

If you have any questions or comments regarding the Study, or would like to be included in the project mailing list, please contact either one of the following Project team members:

Project Team Contacts

Elizabeth Dollimore, P.Eng., MBA.

Project Manager
City of Mississauga

905-615-3200, ext. 5303
elizabeth.dollimore@mississauga.ca

Jeffrey Doucette, Ph.D, P.Geo.

Consultant Project Manager
GHD Limited

905-814-4355
sheridancreekclassea@ghd.com

COVID-19 Community Engagement Update: While we continue to respond to this pandemic, we are working hard to deliver essential services and projects to keep our City moving and safe. While we can't connect in-person at this time, we still want to connect! Opportunities to connect with the Project Team and share your input are noted above

Please note the information gathered throughout the study is being collected in accordance with the Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments received become part of the public record and may be included in study documentation which will be available for public review.



Planned Next Steps

**Mid-
2021**

- Establish the Preferred Solution
- Prepare the Project File Report
- Complete a Stage 2 Archaeological Assessment in the broader Study Area

**Late-
2021**

- Undertake Preliminary Design
- Issue Notice of Study Completion to review agencies, Indigenous communities, and interested public members
- Commence the 30-day comment period

**Early-
2022**

- Undertake Detailed Design
- Obtain any Project specific approvals and permits to allow construction
- Prepare construction contract drawings

**Mid-
2022**

- Issue construction notice to area residents/property owners
- Construction anticipated to commence in Summer/Fall 2022