Schneider and Shoemaker Creeks Naturalization Environmental Study Report

Schedule ‘C’ Municipal Class Environmental Assessment – Phase 4

April 24, 2024

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Project Number:
161414319

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Executive Summary

The City of Kitchener (the City) is situated in the Regional Municipality of Waterloo. Based on the 2021 Canadian census, the City covers an area of 136.86 km^2 and had a population of 256,885 (Statistics Canada 2023). As much of the City landscape is urbanized with the development of buildings, roads, parking lots, and other hard surfaces, stormwater management has become increasingly important. The City of Kitchener stormwater management program manages stormwater in the urban area. Stormwater comes from rain and snow melt and drains into the City drainage system. Stormwater also travels through natural areas such as creeks and wetlands.

In 2001, the City completed the Kitchener Stormwater Management Master Plan, and in 2002 the City began monitoring the stormwater management plan effectiveness (City of Kitchener 2024). Stormwater report cards measure physical, chemical, and biological health of streams and the overall stormwater management plan. The 2011-2015 Report Card highlighted opportunities for increasing riparian cover throughout the City (City of Kitchener 2024). Riparian cover is vegetation along stream banks that stabilizes banks, reduces soil erosion, filters nutrients, and increases habitat. Based on the past report cards, the City decided to prioritize improving natural function of streams, maintaining and upgrading stormwater facilities, and restoring streams (City of Kitchener 2024). Overall, 75% of urban areas in Kitchener do not have adequate stormwater management (City of Kitchener 2024). The *Schneider Creek Floodplain Mapping & Two-Zone Policies* update (MMM 2016) modeled possible scenarios to evaluate reduction in flood risk. The study identified opportunities for modification of the channel corridor as a way to reduce flood risk. In addition, with the intention of creating a framework to guide growth and stability in areas surrounding rapid transit stations, the City's Planning Around Rapid Transit Stations (PARTS) program identified Schneider and Shoemaker Creeks as natural heritage assets. Findings showed there are opportunities to create signature greenspaces which would reduce flooding impacts, restore parts of the ecosystem, and provide better greenspace connection in the City.

Based on the preferred alternative solution, the Schneider and Shoemaker Creeks Naturalization Project (the Project) will remove the existing concrete lined channels in the floodway and replace them with a natural channel design. The Study Area is bound by Courtland Avenue East at the southern limit, Charles Street East at the northern limit, Madison Avenue South at the western limit, and Sydney Street South at the eastern limit. The goal of the Project is to restore the system to a functional floodplain.

Stantec Consulting Ltd. (Stantec) was retained by the City to undertake the Municipal Class Environmental Assessment (Class EA) process for the Project. The Project was carried out in accordance with a Schedule C undertaking. The Environmental Study Report (ESR) is the documentation of the Class EA process for the Project.

The City has undertaken Phases 1 through 3 of the Class EA process, which establishes the need for the Project, evaluates alternative solutions, and evaluates alternative design concepts. The City is carrying out Phase 4 with the release of this ESR. This ESR documents the activities undertaken as part of the Class EA process and recommendations for Schneider and Shoemaker Creeks. In Phase 2, four Alternative Solutions were evaluated and the Preferred Alternative Solution involved a full naturalization of the channels. In Phase 3, four Alternative Design Concepts were developed based on the preferred alternative solution. The evaluation concluded that the Preferred Alternative Design Concept, as confirmed by feedback received through consultation, includes naturalization of the creeks with improvements to the Iron Horse Trail (IHT) and up to three amenity features. This also allows the Project to:

- Reduce the flood risk of the creeks
- Improve the biodiversity of the surrounding area
- Enhance recreational value of the IHT and creeks
- Be in accordance with priorities of Indigenous Peoples and Municipal Policies

A number of environmental management measures have been identified to mitigate potential adverse environmental impacts. Recommendations to monitor the effectiveness of the proposed mitigation measures are also provided in Section 6 of this ESR. Potential effects are considered with regards to variety of factors including surface water, groundwater, terrestrial environment, social environment, and climate change.

Consultation with the public, stakeholders, Indigenous Nations and Indigenous Organizations, , and government agencies was done as per the requirements of the Class EA process. The following are highlights of the consultation activities undertaken through each Class EA phase:

- A Project contact list was compiled and maintained that included agencies, Indigenous Nations, special interest groups, and interested members of the public
- Study notices were published in the local newspaper (*Kitchener Record*) and on the City website, and mailed and emailed to those on the contact list
- Three in-person Public Information Centres (PIC) were held; on April 13, 2023, June 28, 2023, and December 12, 2023

Comments received during the Class EA process related to design of the naturalization, impacts to adjacent properties and to the IHT, assessment of alternatives, and timing, cost, and next steps of the Project. Feedback regarding access to the water has been considered and will be incorporated into the design. Further feedback will be incorporated during detailed design.

The work undertaken in preparing this report represents the completion of the Class EA process for the Project after the public review and comment period. The ESR will be made available for the mandatory 30-day public review period. Provided all concerns from stakeholder, agencies, and Indigenous Peoples are addressed, the City may proceed with detailed design and implementation.

Table of Contents

List of Figures

List of Tables

List of Appendices

Acronyms / Abbreviations

AA	Archeological Assessment
DBH	Diameter at Breast Height
DMAF	Disaster Mitigation and Adaptation Fund
EA	Environmental Assessment
ECCC	Environment and Climate Change Canada
ESA	Endangered Species Act
ESR	Environmental Study Report
GHG	Greenhouse Gas
GRCA	Grand River Conservation Authority
IHT	Iron Horse Trail
MBCA	Migratory Birds Convention Act
MCEA	Municipal Class Environmental Assessment
MECP	Ministry of the Environment Conservation and Parks
MNRF	Ministry of Natural Resources and Forestry
NHIC	Natural Heritage Information Centre
PIC	Public Information Centre
SAR	Species at Risk

1 Background

The City of Kitchener (the City) is situated in the Regional Municipality of Waterloo. Based on the 2021 Canadian census, the City covers an area of 136.86 km^2 and had a population of 256,885 (Statistics Canada 2023). As the landscape is highly urbanized with buildings, roads, parking lots, and other hard surfaces, stormwater management has become increasingly important. The City of Kitchener's stormwater management program manages stormwater in the urban area. Stormwater comes from rain and snow melt and ideally drains into the City's drain system. Stormwater also travels through natural areas such as creeks and wetlands.

In 2001, the City completed the *Kitchener Stormwater Management Master Plan*, and in 2002 the City began monitoring the stormwater management's effectiveness (City of Kitchener 2024). Stormwater report cards measure physical, chemical, and biological health of the city's streams and effectiveness of overall stormwater management compared to the Plan. Overall, 75% of urban areas in Kitchener do not have adequate stormwater management (City of Kitchener, 2024). The 2011-2015 Report Card highlighted opportunities for increasing riparian cover throughout the City (City of Kitchener 2024). Riparian cover is vegetation along stream banks that stabilizes banks, reduces soil erosion, filters nutrients, and increases habitat. Based on the past report cards, the City decided to prioritize improving natural function of streams, maintaining and upgrading stormwater facilities, and restoring streams (City of Kitchener 2024). The *Schneider Creek Floodplain Mapping & Two-Zone Policies* update (MMM 2016) modeled possible scenarios to evaluate reduction in flood risk. The study identified opportunities for modification of the channel corridor as a way to reduce flood risk. In addition, with the intention of creating a framework to guide growth and stability in areas surrounding rapid transit stations, the City's Planning Around Rapid Transit Stations (PARTS) program identified Schneider and Shoemaker Creeks as natural heritage assets. Findings showed there are opportunities to create signature greenspaces which would reduce flooding impacts, restore parts of the ecosystem, and provide better greenspace connection in the City.

1.1 Study Purpose

The City of Kitchener is undertaking a Municipal Class Environmental Assessment (Class EA) to review the environmental risks of Schneider and Shoemaker Creeks and present design options to mitigate those risks. Schneider and Shoemaker Creeks are currently lined with concrete at their confluences, near Kent Avenue and Courtland Avenue East. As a result, the floodplain at this location has expanded past the concrete boundaries; this affects adjacent properties and presents potential concerns related to public safety.

The Government of Canada launched the Disaster Mitigation and Adaptation Fund (DMAF) to support large-scale Projects that help communities manage the effects of natural disasters. This funding presented a unique opportunity for the City to initiate and complete Projects related to flood mitigation, such as the Schneider and Shoemaker Creeks naturalization.

1.2 Study Area

The area surrounding the junction of Schneider and Shoemaker Creeks (herein referred to as the Study Area) is lined with concrete. The Study Area includes approximately 900 m of Schneider Creek, (from Sydney Street to Stirling Avenue) and approximately 300 m of Shoemaker Creek (from the confluence with Schneider Creek upstream to Courtland Avenue). The Study Area boundaries are irregularly shaped, however, the Study Area generally straddles Schneider Creek in an east to west orientation and contains a central south component that straddles Shoemaker Creek. The Study Area is bound by Courtland Avenue East at the southern limit, Charles Street East at the northern limit, Madison Avenue South at the western limit, and Sydney Street South at the eastern limit. The Study Area for the Schneider and Shoemaker Creeks Naturalization EA is shown in Figure 1.

Stantec

Legend

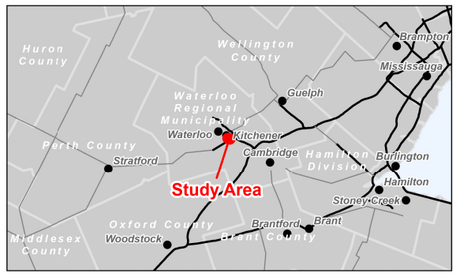
- Study Area
- Floodplain Limit
- Railway
- Watercourse (Permanent)

0 100 200 Meters

1:4,000 (At original document size of 11x17)

Notes

1. Coordinate System:NAD 1983 UTM Zone 16N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2023.
3. Orthomagery © First Base Solutions, 2023. Imagery Date, 2022.



Project Location
City of Kitchener

161414319 REVA
Prepared by bakaur on 2024-04-23
Technical Review by SB on 2024-02-09

Client/Project
CITY OF KITCHENER
SCHNEIDER AND SHOEMAKER CREEK NATURALIZATION MUNICIPAL CLASS EA

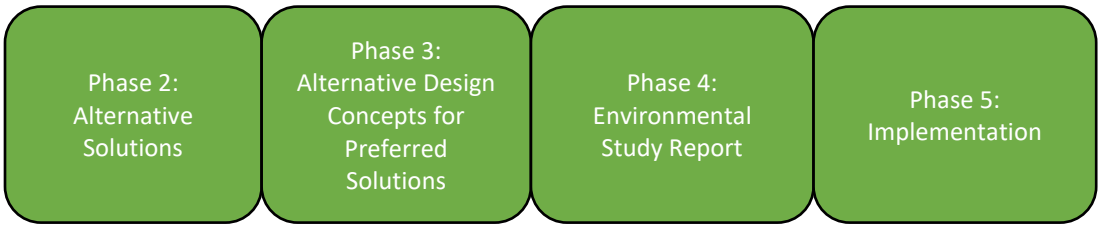
Figure No.
1

Title
Study Area

1.3 Municipal Class Environmental Assessment Process

The Class EA process provides a consistent method of identifying and assessing technical and environmental impacts and concerns before improvements or additions to municipal infrastructure are undertaken. Planning in this way provides reassurance that potential impacts from all municipal Projects are addressed and mitigated, prior to implementation.

Figure 2: Steps in the Municipal Class Environmental Assessment process.



The Class EA document defines four schedules under which Projects may be planned and the associated processes required for each. The four types of Projects are referred to as schedules and Projects can be classed as either Schedule A, A+, B, or C, depending on the anticipated level of environmental impact, and for some Projects, the anticipated construction costs.

Schedule A Projects are minor operational and/or maintenance activities and may go ahead without further assessment once Phase 1 of the Class EA process is complete (i.e., the problem is reviewed, and a solution is confirmed).

Schedule A+ Projects are limited in scale, have minimal adverse environmental impacts, and require no documentation. However, the public is to be advised of the Project prior to implementation.

Schedule B Projects must proceed through the first two phases of the process. Proponents must identify and assess alternative solutions to the problem, inventory impacts, and select a preferred solution. They must also contact relevant agencies and affected members of the public. Provided that no significant impacts are found, and no requests are received to undertake the Project as an individual Environmental Assessment, the Project may proceed to detailed design (Phase 5).

Schedule C Projects require more detailed study, public consultation, and documentation, as they may have more significant impacts. Projects categorized as Schedule C must proceed through the first four phases of assessment. Schedule C Projects may potentially result in adverse impact(s), and as such, a public consultation program is needed to ensure that stakeholders and residents in the Study Area are provided with the opportunity to provide meaningful input.

As per the Class EA Guidelines (MCEA 2024), the Schneider and Shoemaker Creeks Naturalization Project is classified as a Schedule “C” undertaking.

2 Problem and Opportunity Statement

In the Study Area, Schneider and Shoemaker Creeks are heavily lined concrete urban creeks and floodplains spill onto adjacent lands, posing potential concerns for public safety. The City has secured DMAF funding to build climate change resilience and adaptability into Schneider and Shoemaker Creeks. In particular, the DMAF funding supports the creation of natural assets that increase resilience and adaptability, such as creek naturalization. The objectives of the DMAF are closely aligned with those of the City's Integrated Stormwater Management Master Plan (ISWM-MP) and the funding will accelerate the implementation of the City's strategic components of the ISWM-MP (City of Kitchener 2024a). The Project also provides an opportunity to realize components of several other City plans including Places and Spaces, the Official Plan, and the Transportation Master Plan. Places and Spaces is the City's Parks Strategy, which is focuses on the quality and quantity of park land in the City (City of Kitchener 2024b).

As the neighbourhood redevelops as part of the PARTS program and above noted plans, there is an opportunity to improve public safety through floodplain improvements by reducing impacts to nearby properties, improving the natural heritage system by contributing to the restoration of the ecosystem, and increasing connectivity with surrounding development by providing better greenspace connections. Overall, naturalization of the creeks provides opportunities for climate change resiliency, and improved aesthetics, wildlife habitat and active transportation experience.

3 Alternative Solutions

3.1 Existing Conditions

An inventory of existing environmental conditions was undertaken for this Project, as described herein. Information included in this section was taken directly from the Summary of Natural Features Report (Appendix A), Tree Management Plan (Appendix B), Cultural Heritage Report (Appendix C), the Stage 1 Archeological Assessment (Appendix D), and Stage 2 Archeological Assessment (Appendix E).

3.1.1 Surface Water

Surface water in the Grand River watershed is used largely as a resource for the five cities located within the watershed – Guelph, Kitchener, Waterloo, Cambridge, and Brantford (GRCA 2020). The main pressures facing water resources in the Grand River watershed are people and population growth, agricultural production, and a changing climate (GRCA 2020). The current water management plan in the area has four major goals: (1) ensure water supplies are protected for communities, economies, and ecosystems; (2) improve water quality to improve river health and reduce impacts on Lake Erie; (3) reduce flood damage potential; and (4) increase watershed's resilience to climate change (GRCA 2020).

Within the Study Area, Schneider and Shoemaker Creeks are the primary features. Schneider Creek drains a 65 km^2 watershed area that drains most of the western side of the City of Kitchener and covers a distance of about 20 km from its headwaters to its outlet to the Grand River. The Schneider Creek system and each of the tributaries are summarized as follows:

- Schneider Creek (65 km^2 watershed)
  - Concrete lined channel from Victoria Park Lake to Sydney Street
  - Natural channel from Sydney Street to the confluent with the Grand River near the village of Doon
- Henry Sturm Greenway (12 km^2 watershed)
  - Includes Sandrock Greenway, Detweiler Greenway and Henry Sturm Greenway.
  - Combination of natural, engineered and concrete lined channels draining into Victoria Park Lake.
- Westmount Drain
  - 1 km long grass lined channel draining into the Henry Sturm Greenway

- Shoemaker Creek (11 km^2 watershed)
  - Tributaries include Voisin Greenway (channelized) and Borden Greenway (grass lined and channelized).
  - Shoemaker Creek is grass lined and concrete lined system that joins Schneider Creek upstream of Borden Ave.
- Balzer Creek (3 km^2 watershed)
  - Grass lined and natural channel that joins Schneider Creek downstream of Blockline Road
- Montgomery Creek (9 km^2 watershed)
  - Grass lined channel that joins Schneider Creek downstream of Blockline Road
- Strasburg Creek (15 km2 watershed)
  - The largest tributary of Schneider Creek; joins Schneider Creek upstream of Homer Watson Road.
  - The north branch has been urbanized and the main and south branches are natural.
- Doon Creek (3 km^2 watershed)
  - Natural channel that joins Schneider Creek at Homer Watson Road.

Within the Study Area both Schneider Creek and Shoemaker Creek are 6-20 m wide, concrete lined channels with no significant riparian features and are surrounded by urban development that consists of industrial, commercial and residential land uses. The concrete channels generally contain most flows, but the floodplain extends up to 300 m beyond the channel boundaries (see Figure 1). The channel is traversed by four roads and two pedestrian crossings associated with the Iron Horse Trail.

3.1.2 Groundwater

The Grand River watershed supports one of the largest populations in Ontario primarily through an inland river system and groundwater system for water supply and wastewater disposal (GRCA 2020). Most of the drinking water supply in the Grand River watershed comes from groundwater (GRCA 2020). There are no municipal wellheads in the Study Area (City of Kitchener 2014), however the Study Area is located in a Wellhead Protection Area and Issue Contributing Area associated with the Manitou Well, located approximately 3 km southeast of the Study Area (MECP 2024). There are two areas mapped as highly vulnerable aquifers (vulnerability score of 6) in the Study Area (MECP 2024).

As noted in the Assessment of Past Uses (APU) (Appendix F), historical groundwater levels in 2020 were measured at depths between 1.90 m and 3.64 m below ground surface. The local groundwater flow is inferred to be towards Schneider and Shoemaker Creeks, with regional groundwater inferred to flow to the southeast toward the Grand River, which is 5.3 km east of the Study Area. The regional groundwater flow follows a southeasterly direction, and as such the groundwater elevations in the western portion of the Study Area were higher than in the easter portion. The local shallow groundwater flow pattern is expected to be influenced by subsurface structures present in the vicinity, including building foundations, weeping tiles, and utility trenches (Appendix F).

Based on the Assessment of Past Uses (Appendix F), there may be historical groundwater contamination in the Study Area. Groundwater testing has not been completed as part of this Project. Groundwater testing will be completed as part of detailed design of the Project.

3.1.3 Terrestrial Environment

The Natural Heritage Information Centre (NHIC) database and the City of Kitchener Natural Heritage System Technical Background Report (City of Kitchener 2011) do not identify wetlands, woodlands, or significant landforms in the Study Area. The City of Kitchener has identified Schneider Creek as a Locally Significant Valleyland for future restoration (City of Kitchener 2011).

A tree inventory of the Study Area identified the species, diameter at breast height (DBH), and condition of coniferous and deciduous Trees. A total of 618 trees were assessed and included the following tree species and quantities:

- Apple sp. (4)
- Basswood (2)
- Bitternut Hickory (1)
- Black Walnut (91)
- Bur Oak (1)
- Cherry sp. (4)
- Colorado Spruce (4)
- Easter White Cedar (3)
- European Buckthorn (23)
- Green Ash (5)
- Hackberry (6)
- Little-Leaf Linden (1)
- Manitoba Maple (179)
- Norway Maple (14)
- Norway Spruce (5)
- Poplar sp. (30)
- Pryamidal Oak (1)
- Red Oak (1)
- Redbud (1)
- Russian Olive (5)
- Scots Pine (1)
- Shadbush (1)
- Siberian Crab Apple (3)
- Siberian Elm (111)
- Silver Maple (17)
- Slippery Elm (1)
- Sugar Maple (2)
- Sweet Crab Apple (2)
- White Mulberry (58)
- White Oak (2)
- White Pine (1)
- White Spruce (27)
- Willow sp. (10)
- Yew (1)

The following is a summary of the number of trees by DBH. Trees with a DBH of < 10 cm are identified as ‘small’, 10 cm – 25 cm as ‘medium’ and > 25 cm as ‘large’:

- 5 small trees
- 369 medium trees
- 244 large trees

Each tree’s condition was assessed as ‘Good’, ‘Fair’, ‘Poor’ or ‘Dead’, according to their trunk integrity, crown structure, crown vigour and overall condition. Results indicated the following:

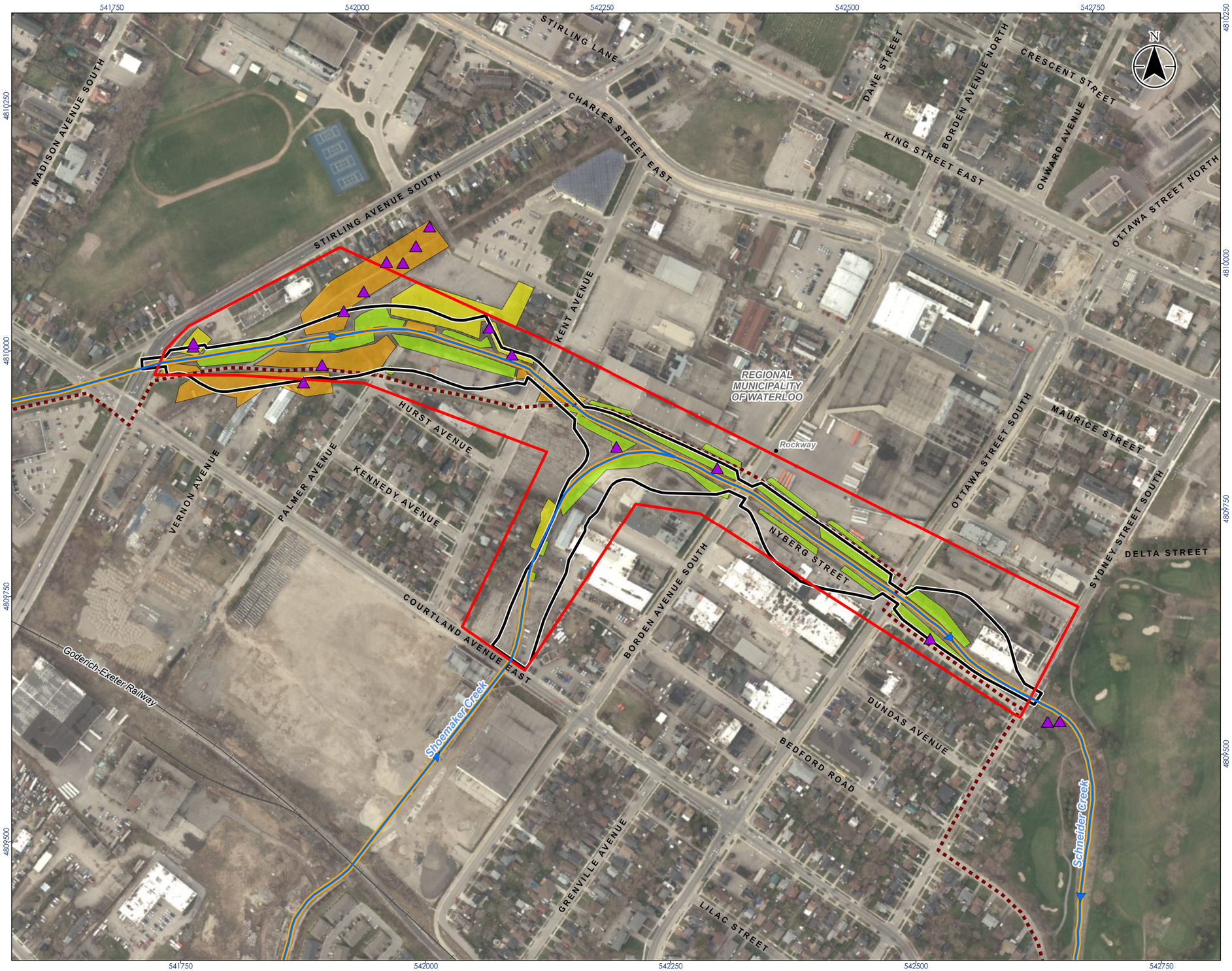
- 55 trees in ‘Good’ condition
- 392 trees in ‘Fair’ condition
- 156 trees in ‘Poor’ condition
- 15 trees in were considered ‘dead standing trees’

The trees were also classified by High, Medium and Low priority in order to signify the importance of:

- High Priority – Naturalized and Landscape plantings on public and private property.
- Medium Priority – Naturalized mature trees within a group and open area, some location within private properties.
- Low Priority – Naturalized area containing low quality invasive species. Trees growing from concrete foundations, within chain link fences along Schneider Creek.

Nine trees were identified in the Study Area that provide suitable bat maternity roost habitat. These trees were all deciduous, and included Black Walnut (*Juglans nigra*), Siberian Elm (*Ulmus pumila*), White Willow (*Salix alba*), Silver Mape (*Acer saccharinum*) and Norway Maple (*A. platanoides*). The trees had a large DBH (i.e., >25cm), and had cavities and/or peeling bark. Of these bat maternity roost trees, three were identified to be in ‘Good’ condition, and six in ‘Fair’ condition.

Detailed results of the tree quality assessment and tree inventory are available in Appendix B.



Stantec

Legend

- Study Area
- Potential Bat Habitat
- Iron Horse Trail
- Flow Direction
- Railway
- Thermal Regime, Warm
- Watercourse (Permanent)
- Construction Footprint (approximate)

Tree Quality (by area)

- High Quality
- Medium Quality
- Low Quality

0 100 200 Meters

1:4,000 (At original document size of 11x17)

Notes

1. Coordinate System:NAD 1983 UTM Zone 16N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © King's Printer for Ontario, 2024.
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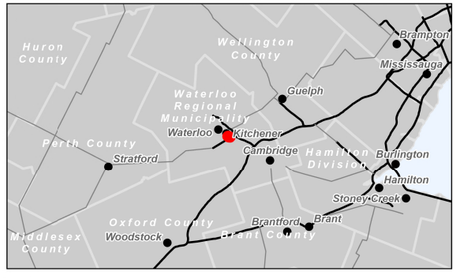


Project Location
City of Kitchener

161414319 REVA
Prepared by bakaur on 2024-04-23
Technical Review by AW on 2024-01-08

Client/Project
CITY OF KITCHENER
SCHNEIDER AND SHOEMAKER CREEK NATURALIZATION

Figure No.
1

Title
Existing Conditions - Ecosystems

3.1.4 Aquatic Environment

Schneider and Shoemaker Creeks have a warmwater thermal regime and permanent flow regime (Appendix A). Fish species documented in the watercourse are summarized in Table 1. There are no records of aquatic species at risk (SAR) in Schneider or Shoemaker Creeks (Appendix A). The upstream end of the Study Area is located approximately 1 km downstream of the outlet of Victoria Park Lake.

Table 1: Fish Community Data from Schneider Creek and Shomaker Creek

Species	Schneider Creek (2020 data)1	Schneider Creek (2012 data)2	Shoemaker Creek (2019 data)3
Blacknose Dace (Rhinichthys atratulus)	✓	✓	✓
Bluntnose Minnow (Pimephales notatus)	✓	-	-
Brook Stickleback (Culaea inconstans)	✓	-	✓
Common Carp (Cyprinus carpio)	✓	-	✓ (carps and minnows)
Common Shiner (Luxilus cornutus)	✓	-	-
Creek Chub (Semotilus atromaculatus)	✓	✓	✓
Fathead Minnow (Pimephales promelas)	✓	✓	-
Longnose Dace (Rhinichthys cataractae)	-	-	✓
Pumpkinseed (Lepomis gibbosus)	✓	-	✓
Rock Bass (Ambloplites rupestris)	✓	-	✓
White Sucker (Catostomus commersonii)	-	-	✓

NOTES

1 1 km downstream of Sydney Street

2 1 km upstream of Stirling Avenue

3 750 m upstream of Courtland Avenue

"✓" Indicates species is present

"-" Indicates species is absent

Data taken/adapted from Appendix A.

In the Study Area, Schneider and Shoemaker Creeks are concrete trapezoidal or rectangular channels (Stantec 2024). The creek bottom is flat, with no structure to provide cover for fish and no natural pool / riffle morphology. An area of gravel on the concrete bottom was present near the downstream end of the Study Area. Some portions of Schneider Creek receive partial shade due to trees located at the top of the channel walls; however, most of the surface water of the creek is not shaded. In the Study Area, there are several elevation drops in Schneider Creek that may restrict upstream fish passage, particularly during periods of low water.

Despite the low-quality fish habitat in Schneider and Shoemaker Creeks, schools of small fish and a Great Blue Heron were observed during the Stantec field investigation on May 29, 2023 (Appendix A). Habitat availability is dependent on the water level, as the margins of the channel can be dry during low water. In the absence of roughness and flow breaks, small-bodied fish likely become displaced to downstream habitat when water velocity increases under high flow conditions.

3.1.5 Species at Risk Screening

The background data search identified 13 SAR that have been recorded in the vicinity of the Study Area (Table 2) (Appendix A). The bird and reptile SAR identified in the background data are not expected to inhabit the Study Area due to the lack of suitable habitat. Stantec conducted a bat maternity roost survey to assess potential bat habitat in the Study Area.

Table 2: SAR Records in the Schneider Creek and Shoemaker Creek Study Area1

Common Name	Scientific Name	S-Rank2	SARO Status
BIRDS			
Bobolink	Dolichonyx oryzivorus	S4B	THR
Loggerhead Shrike	Lanius ludovicianus	S1B	END
Barn Swallow	Hirundo rustica	S4B	THR
Eastern Meadowlark	Sturnella magna	S4B, S3N	THR
Bank Swallow	Riparia riparia	S4B	THR
Chimney Swift	Chaetura pelagica	S3B	THR
Red-headed Woodpecker	Melanerpes erythrocephalus	S3	END
Northern Bobwhite	Colinus virginianus	S1?	END
REPTILES			
Blanding's Turtle	Emydoidea blandingii	S3	THR

Common Name	Scientific Name	S-Rank2	SARO Status
MAMMALS			
Eastern Small-footed Myotis	Myotis leibii	S2S3	END
Little Brown Myotis	Myotis lucifugus	S3	END
Northern Myotis	Myotis septentrionalis	S3	END
Tricolored Bat	Perimyotis subflavus	S3?	END

1 Records from background data sources listed in Section 1

2 Subnational Rank (S-Rank) is the conservation status of a species or plant community in the province; rank

definitions available at: Conservation Status Categories | NatureServe Explorer.

3.1.6 Soil

An APU was conducted at the Study Area to determine potential areas of environmental concern based on past activity (Appendix F). The APU was conducted in anticipation of the removal of excess soil from the Study Area. The APU supports planning for the removal of soil off-site for reuse of disposal. The objective of the APU is to determine if Areas of Potential Environmental Concern (APECs) exist in the Project area, which may be present as a result of current and/or past Potentially Contaminating Activities (PCAs) at the Project area or adjacent/neighbouring properties within at least 250m of the perimeter of the Study Area (Appendix F).

Summary of Areas of Potential Environmental Concern:

- APEC #1 – PCA 46 – Rail Yards, Tracks and Spurs: metals and inorganics including electrical conductivity (EC) and sodium absorption ratio (SAR), petroleum hydrocarbons (PHC) fractions F1 to F4, benzene, toluene, ethylbenzene and xylenes (BTEX), volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs)
- APEC #2 – PCA 30 – Importation of Fill Material of Unknown Quality: Metals and inorganics including EC and SAR, PHC F1 to F4/BTEX, PAHs
- APEC #3 – PCA B – known soil and groundwater impacts at 170 Borden Avenue South; PCA 27 – Garages and Maintenance and Repair of Railcars, Marine Vehicles, and Aviation Vehicles; PCA 34 – Metal Fabrication: PHC F1 to F4/BTEX Metals and Inorganics including EC and SAR, VOCs
- APEC #4 – PCA 27 Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles; PCA 28 – Gasoline and Associated Products Storage in Fixed Tanks: PHC F1 to F4/BTEX Metals and Inorganics including EC and SAR, VOCs

- APEC #5 – PCA B – Known Metals Impacts in Soil near 20 Hurst Avenue; PCA 27 – Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles; PCA 28 – Gasoline and Associated Projects Storage in Fixed Tanks: Metals and inorganics including EC and SAR, PHC F1 to F4/BTEX, VOCs
- APEC #6 – PCA B – Known off-site VOC groundwater impacts; PCA 34 – Metal Fabrication; PCA 39 – Paints Manufacturing, Processing, and Bulk Storage; PCA C – Generation of Hazardous Wastes: Metals and inorganics including EC and SAR, PHC F1 to F4/BTEX, VOCs, PAHs, PCBs
- APEC #7 – PCA 58 – Waste Disposal and Waste Management, including thermal treatment, landfilling and transfer of waste, other than use of biosoils as soil conditioners: Metals and inorganics including EC and SAR, PHC F1 to F4/BTEX, PAHs, VOCs
- APEC #8 – PCA 34 – Metal Fabrication – Metals and inorganics including EC and SAR, PHC F1 to F4/BTEX, VOCs
- APEC #9 – PCA B – Known soil and groundwater impacts at 108 Syndey St. S., PAH soil impacts near 123 Ottawa Street South; PCA C – Generation of Hazardous Wastes; PCA 33 – Metal Treatment, Coating, Plating and Finishing; PCA 34 – Metal Fabrication; PCA 43 – Plastics (including Fibreglass) Manufacturing and Processing; PCA 57 – Vehicles and Associated Parts Manufacturing: Metals and inorganics including EC and SAR, PHC F1 to F4/BTEXT, PAHs, VOCs
- APEC #10 – PCA B – Known PHC Soil Impacts along Nyberg Street; PCA 27; Garages and Maintenance and Repair of Railcards, Marine Vehicles and Aviation Vehicles; PCA 28 – Gasoline and Associated Products Storage in Fixed Tanks; PCA 37 – Operation of Dry Cleaning Equipment (where chemicals are used): Metals and inorganics including EC and SAR, PHC F1 to F4/BTEX, VOCs
- APEC #11 – PCA B – Known soil and groundwater impacts at 405-409 Nyberg Street and along Nyberg Street; PCA C – Generation of hazardous wastes; PCA 28 – Gasoline and Associated Products Storage in Fixed Tanks; PCA 33 – Metal Treatment, Coating, Plating and Finishing; PCA 34 – Metal Fabrication; PCA 43 – Plastics (including Fibreglass) manufacturing and Processing; PCA 55 – Transformer Manufacturing, Processing and Use: Metals and inorganics including EC and SAR, PHC F1 to F4/BTEX, VOCs, PCBs
- APEC #12 – PCA A – Spills; PCA 10 – Commercial Autobody Shops; PCA 27 – Garages and Maintenance and Repair of Railcars, Marine Vehicle’s and Aviation Vehicles; PCA 28 – Gasoline and Associated Products Storage in Fixed Tanks: Metals and inorganics including EC and SAR, PHC F1 to F4/BTEX, VOCs

- APEC #13 – PCA B – Known metals impacts in soil; PCA 58 – Waste Disposal and Waste Management, including thermal treatment, landfilling and transfer of waste, other than use of biosoils as soil conditioners: Metals and inorganics including EC and SAR, PHC F1 to F4/BTEX, VOCs

3.1.7 Noise and Vibration

The Study Area is located in a residential area. The City of Kitchener By-Law Number 2010-191 (Noise By-Law) prohibits commercial construction-related noise from 7:00 PM to 7:00 AM, and all day on Sundays and holidays (City of Kitchener 2010). Sensitive receptors primarily include residential properties adjacent to the Study Area and concrete channel. No substantive noise generating sources or activities were identified in the Study Area.

3.1.8 Built Heritage Resources and Cultural Heritage Landscapes

Part of the Trans Canada Trail is located in the Study Area and referred to as the Iron Horse Trail. It represents a significant part of Kitchener and Waterloo's heritage. The Iron Horse Trail is the former right-of-way of the Preston & Berlin Street Electric Railway. The Railway was started in 1900 by John Patterson of Hamilton and became operational on August 21, 1903. The route started in east Preston and ran through Preston Junction, Hagey's Siding, Freeport, Centreville, Kitchener Junction before reaching a station on Queen Street, west of the downtown. From here, it ran to Waterloo, paralleling Belmont Street, and eventually along Caroline to Erb. It connected with a street rail section at Stirling and this route took passengers along King Street north to Water Street in downtown Kitchener.

The Railway operated under the name of the Preston & Berlin Electric Railway until 1909 when it was amalgamated with the Galt Preston & Hespler Street Railway. It was renamed the Grand River Railway in 1914. The change to the "Grand River Railway" was made under lease to the Canadian Pacific Railway. It eventually connected with the Grand Trunk Railway in Kitchener, the Canadian Pacific Railway in Galt and the Lake Erie & Northern Railway in south Galt which provided service to Port Dover. Electrical power was provided by a powerhouse in Preston and a substation in Berlin. The Grand River Railway provided passenger service until 1955. The rail line was eventually closed completely on July 6, 1993.

Today, the pedestrian trail runs approximately 5.5 kilometres between Ottawa Street and Erb Street West in Waterloo. The Iron Horse Trail not only connects downtown Kitchener to uptown Waterloo, reflecting the close-knit fabric of the two cities, it also links Victoria Park to Waterloo Park. The Iron Horse Trail became a reality in 1997 when both Kitchener and Waterloo formed a partnership to purchase the abandoned rail line and preserve it as an important part of the heritage of both cities. The Iron Horse Trail today provides a scenic and historic route linking the two cities.

The MCEA Manual considers cultural heritage, including built heritage resources and cultural heritage landscapes, as well as archaeological resources, as one in a series of environmental factors to be considered when undertaking an MCEA, particularly when describing existing and future conditions, development alternatives, and determination of the preferred alternative. To facilitate this Project, the City retained Stantec to conduct a *Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment* (CHR). For the *Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment*, Stantec defined a Study Area for the assessment that includes a 50-metre boundary around the Project Location.

Historical research, municipal and agency data requests, and the field program identified a total of three potential CHLs, four previously identified Cultural Heritage Landscapes (CHLs) (Iron Horse Trail, Shoemaker Creek, Schneider Creek, and Rockway Golf Course), 29 potential Built Heritage Resources (BHRs), and three previously identified built heritage resources (179 Kent Avenue, 183 Kent Avenue, and 161 Stirling Street South).

The following properties within the Project Location contain cultural heritage landscapes within the footprint of the recommended design concept and are therefore at risk of potential direct impacts:

- Iron Horse Trail (CHL-1)
- Schneider Creek (CHL-2)
- Shoemaker Creek (CHL-3)

The following BHRs and CHLs may be at potential risk of indirect impacts due to land disturbance as they contain built heritage resources within 50 metres of the footprint of the recommended design concept:

- 216 Stirling Avenue South (BHR-2)
- 212 Stirling Avenue South (BHR-3)
- 208 Stirling Avenue South (BHR-4)
- 204 Stirling Avenue South (BHR-5)
- 196 Stirling Avenue South (BHR-6)
- 161 Stirling Avenue South (BHR-7)
- 139 Stirling Avenue South (BHR-8)
- 135 Stirling Avenue South (BHR-9)
- 131 Stirling Avenue South (BHR-10)
- Streetscape of west side of Kent Avenue north of Schneider Creek, including 86, 90, 94, 98, and 102 Kent Avenue (CHL-4)
- 33 Hurst Avenue (BHR-14)
- 207 Kent Avenue (BHR-22)

- 203 Kent Avenue (BHR-23)
- 199 Kent Avenue (BHR-24)
- 195 Kent Avenue (BHR-25)
- 191 Kent Avenue (BHR-26)
- 187 Kent Avenue (BHR-27)
- 179 Kent Avenue (BHR-28)
- 173 Kent Avenue (BHR-29)
- Streetscape of south side of Nyberg Road between Ottawa Street South and Sydney Street South (CHL-6)
- Streetscape of north side of Dundas Avenue between 202 and 222 Dundas Avenue and Sydney Street South north of Dundas Avenue and south of Nyberg Street (CHL-7)
- 183 Kent Avenue (BHR-32)

3.1.9 Archaeological Resources

A Stage 1 Archaeological Assessment (Stage 1 AA) was undertaken on July 13, 2023, by Stantec in support of this Class EA. A Stage 1 AA consists of a review of geographic, land use, and historical information for the property and the relevant surrounding area. Its purpose is to identify areas of archaeological potential and further archeological assessment (e.g., Stage 2-4) as necessary. The Stage 1 AA has been entered into the Ontario Public Register of Archeological Reports. The Stage 1 AA is included in Appendix D.

The background information demonstrated that there were specific parcels of land in the Study Area that retained potential for the recovery of archaeological resources. The property visit demonstrated that much of the Study Area contained low to no archaeological potential due to previous disturbance and assessment (Appendix D). A Stage 2 archeological assessment is not required for any portion of the Project which will occur in the area of low to no archeological potential. Approximately 3.9% of the area retained potential for archeological resources. Therefore, a Stage 2 AA was required prior to any activities on the area of archeological potential.

Field work for the Stage 2 AA was undertaken on October 31, 2023 (Appendix E). No archeological resources were found during the Stage 2 AA, and therefore no further archeological assessment is required. The Stage 2 AA is included in Appendix E.

3.1.10 Social Environment & Land Use

The IHT is located in part of the Project area. The IHT is a part of the Trans Canada Trail and is a significant feature of the Kitchener and Waterloo area (City of Kitchener 2024a). The IHT represents a historical section of early rail lines that linked Ontario communities together (City of Kitchener 2024a). The trail provides transportation and recreational use in both the City of Kitchener and City of Waterloo communities. With a population of 256,885 (Statistics Canada 2023), there are approximately 140,000 trail users on this portion of the Iron Horse Trail every year (City of Kitchener 2015), signifying the popularity of the trail. The majority of the trail within the Study Area contains pedestrian level lighting.

The types of land use present in the area include a mix of industrial, commercial, and residential. Land use zoning in the Project area includes Existing Use, General Industrial Zone, Commercial Residential, and Community Institutional Zones (City of Kitchener 2024). Residential areas are located adjacent to the Project area and in the floodplain, however, surrounding residential homes are not being removed.

Both Schneider Creek and Shoemaker Creek are concrete lined channels with extensive floodplains through the Study Area. There is some variation as follows:

- Schneider Creek
    - From Stirling Avenue South to Kent Avenue, the concrete channel is largely trapezoidal (except at culvert entrances) with grass and other vegetation at the top of the slope - two pedestrian crossings exist through this reach
    - From Kent Avenue to Borden Avenue South, the concrete channel is trapezoidal in shape with little vegetation present
    - From Borden Avenue South to Ottawa Street South, the concrete channel is trapezoidal in shape with little vegetation present
    - From Ottawa Street South to Sydney Street South, the concrete channel starts as a trapezoidal shape but transitions to vertical steel and concrete walls closer to Sydney Street South. Little vegetation is present in this reach.
- Shoemaker Creek
    - From Courtland Avenue East to the confluence with Schneider Creek, the concrete channel has vertical concrete sides without any vegetation.
    - A parking lot on the north side of Shoemaker near Courtland was developed for the original Schneider's plant across the street. A second access to that parking lot is from Bedford St., however as the parking lot is now in private ownership, the crossing is now also private.

3.1.11 Economic Environment

The Study Area includes commercial and industrial land uses and activities, which includes a number of businesses located north and south of Schnieder Creek. These include auto repair shops, storage buildings, and retail (i.e., cameras, music, cabinets, etc.).

3.1.12 Air Quality

Air Quality refers to the presence or absence of substances in the air that could cause harm to humans in large quantities. This includes substances in gaseous or solid (particulate) form. The current state of either creek does not create notably unique air quality conditions. The limited vegetation provides limited capacity for the creek to act as a carbon sink (i.e., places that absorb more carbon than they release). Air quality in Kitchener, Ontario is generally high and suitable for outdoor activities. Kitchener has a pollution level well below the threshold for suitable outdoor air quality based on 6.8 µg/m³, which is below the 10 µg/m³ World Health Organization target goal (IQ Air 2024).

3.1.13 Infrastructure and Utilities

There are several utilities that exist in the Study Area, including under the current creek channel, these include gas (Enbridge Gas Inc.), electricity (Kitchener-Wilmont Hydro Inc.), communications (Bell), and City water/sewer (Kitchener Utilities). Identification of utility conflicts will occur in detailed design. Crossings that are included in the Study Area include Kent Avenue, Borden Avenue S, Ottawa Street S, Sydney Street S, LRT tracks on both Borden and Ottawa, and two pedestrian crossings between Kent and Stirling.

3.1.14 Health and Safety

The current state of Schneider and Shoemaker Creeks potentially creates a health and safety concern due to the flooding and lack of resilience to extreme weather events. The current Scheider Creek floodplain extends beyond the concrete channel therefore causes potential safety concerns to nearby properties.

3.1.15 Climate Change Considerations

Climate change can lead to more frequent and/or more intense extreme weather events, which can stress city water infrastructure. With climate change, high and low extreme water levels are more likely to occur. Low water levels can pose issues with habitat and water quality in the creeks while high water levels can create risks of flooding in the Study Area.

The 2014 Provincial Policy Statement issued under the *Planning Act* advises of the need to consider climate change adaptation and mitigation. The MECP provides further guidance on considering climate change adaptation and mitigation in the environmental assessment process (MECP 2024). With climate change leading to highly variable conditions, adaptation measures may be required in the future to ensure the infrastructure's resiliency and mitigate the impact of extreme weather events. Climate change and the potential impact to infrastructure is highly uncertain. This uncertainty should be considered in engineering planning and design initiatives.

In 2018 the Government of Canada introduced the Disaster Mitigation and Adaptation Fund (DMAF), which is to provide communities with financial assistance in infrastructure activities related to stormwater management with relation to climate change (City of Kitchener 2024). The City of Kitchener was awarded $49.99 million from the DMAF in 2019. The City of Kitchener aims to use the DMAF finances to fund Projects that mitigate flooding, protect the environment, homes, and houses, and maintain drinking water supply (City of Kitchener 2024). The proposed Schneider Creek naturalization Project will remove existing infrastructure in the floodway and then proceed with an engineered natural channel design to restore the system to an improved floodplain (City of Kitchener 2024).

The potential impacts of climate change and extreme weather events on the Project include:

- Flooding during higher river flows due to increased precipitation
- Low flows impact on habitat and water quality due to decreased precipitation/prolonged droughts
- Water quality issues linked to temperature increases

To address potential climate change impacts and increase resilience to climate change, different measures could be integrated in the selected alternative. Opportunities for climate change adaptation include:

- Adaptation to flooding risks
    - Design and construct new channel with capacity to convey flood flows
    - Design and construct new channel features to withstand expected erosive forces
    - Build new buildings above the floodplain limit, with a buffer to accommodate future floods
    - Relocate buildings away from flood-prone areas
    - Verify and update emergency measures for flooding
- Adaptation to low water levels due to drought

- Design and construct new channel to function and maintain critical habitat conditions during low water levels

3.2 Alternative Solutions

As part of the Class EA planning process, reasonable and feasible alternatives solutions to the Phase 1 problem statement were identified and described in Phase 2. The magnitude of the net positive and negative effects of each alternative solution, as well as mitigating measures, were identified and evaluated. Based on this evaluation, a preferred alternative solution was selected and confirmed based on consultation with Indigenous Nations, public, agencies, and other stakeholders.

3.2.1 Development of Alternative Solutions

The alternative solutions developed and evaluated as part of Phase 2 of Class EA process each proposed a unique approach for removing all or a portion of the concrete channels. Feasible alternatives were identified based on the ability to support the Problem and Opportunity Statement. Based on the review of possible alternatives for this Project, the following short-list was brought forward for evaluation to address the needs for the City of Kitchener:

- Alternative 1 – Do Nothing
- Alternative 2 – Concrete Channel with Naturalized Valley Bottom
- Alternative 3 – Natural Channel with Retaining Structure at One or Both Valley Walls
- Alternative 4 – Natural Channel and Valley

The full evaluation of alternative solutions undertaken is included in the *Municipal Class Environmental Assessment – Phase 2: Evaluation of Alternative Solution* in Appendix G.

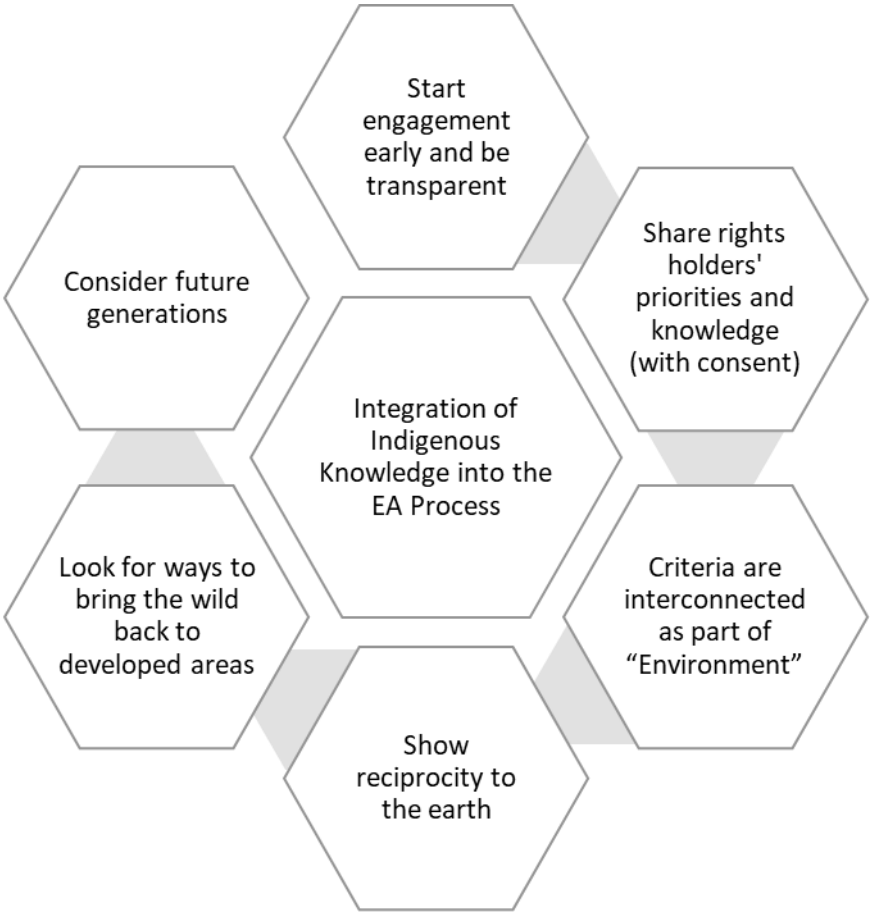
3.3 Alternatives Assessment & Impacts

The alternative solutions were evaluated against environmental factors and specific criteria to recommend a preferred alternative.

3.3.1 Integrating Indigenous Knowledge and Priorities

The criteria were developed in close consultation with Indigenous Nations who had requested Indigenous knowledge and rights holder priorities be integrated into the evaluation criteria. Indigenous knowledge was communicated by these Nations as priorities, values, and interests. These included the interconnectedness of evaluation criteria, commitment to public education, reciprocity for the earth, re-wilding, and considering future generations. (Figure 4).

Figure 4: Indigenous Knowledge and Rights Holder Priorities



Based on this input from Indigenous Nations, the number of categories included in the evaluation criteria was reduced to three to indicate the interconnectivity within categories. Financial factors were embedded within the other categories.

3.3.2 Evaluation Criteria

The criteria for the evaluation of the alternative fell into three main categories that will be used in Phase 3 of the Class EA process.

- Natural Environment
  - Aquatic Environment
  - Terrestrial Environment
- Socio-Economic and Cultural Environment
  - Air Quality
  - Aesthetics
  - Health and Safety
  - Community Access
  - Archaeological Resources
  - Built Heritage Resources / Cultural Landscape
  - Socio-Economic
- Technical Environment
  - Functionality
  - Constructability and Feasibility
  - Cost
  - Climate Change

3.4 Evaluation of Alternative Solutions

Below is a summary of the Alternatives Evaluation. The full evaluation of the Alternatives is included in the *Municipal Class Environmental Assessment – Phase 2: Evaluation of Alternative Solution* in Appendix G. The Evaluation of Alternative Solutions evaluates the alternatives against the environmental criteria in the Natural Environment, Socio-Economic and Cultural Environment, and Technical Environment sections. This environmental criteria was presented to the public and Indigenous Nations and confirmed through consultation to be the appropriate criteria to conduct the evaluation.

Natural Environment

Factors considered in the natural environment component included surface water, groundwater, aquatic, terrestrial, and species at risk screening. Alternative 4 was the preferred choice for the natural environment as it presented the largest opportunity to include targeted habitat and largest area of vegetation naturalization proposed, the largest opportunity to incorporate Indigenous Knowledge for planting plans, had the highest positive impact long-term. The remaining evaluation criteria were equal for all the alternatives except Alternative 1 where no impacts to the natural environment were indicated.

Socio-Economic and Cultural Environment

Factors considered in the socio-economic and cultural environment section included social environment, air quality, noise and vibration, aesthetics and land use, health and safety, community access, utilities, built heritage resources, cultural landscapes, archeological resources, and the economic environment. Alternative 4 was the preferred choice for the socio-economic and cultural environment because of the long-term impacts with aesthetics, specifically with additional opportunities for enhanced, accessible recreation and the full removal of the concrete channel. Alternative 4 also had the highest amount of private land converted to valley land with the highest opportunity for public access and highest conformance with municipal planning objectives. Alternative 4 was noted as the safest, however it was also indicated to have the highest need for potential property acquisition. Other elements were equal between all the alternatives except Alternative 1 where impacts were low or had no changes.

Technical Environment

Factors considered in the technical environment included functionality, constructability and feasibility, cost, and climate change. Alternative 4 was the preferred choice for Technical Environment since it has the highest potential to improve flooding conditions downstream, has the most flexibility when it came to future improvements for road crossings, stormwater controls, enhanced access to the channel/valley floor area and the most opportunity for future greenspace and habitat improvements. Alternatives 4 and 3 did have the highest capital costs for implementation and similar maintenance costs for Alternatives 2, 3, and 4.

Based on a comparative evaluation of impacts associated with the alternative evaluation criteria and rating system, Alternative 4: Natural Channel and Valley was identified as the preferred alternative solution and further confirmed through consultation with Indigenous Nations and the public.

3.5 Selection of Preferred Alternative Solution

Alternative 4: Natural Channel and Valley was identified as the preferred alternative solution because:

- Full naturalization of the channels allows the Study Area to reduce the flood risk of the creeks.
- The biodiversity of the surrounding area will be improved.
- Social benefits of the trails and creek
- Aligned with Indigenous Knowledge and priorities and supported by Indigenous Nations and municipal policies.

The preferred alternative of full naturalization of the channels allows the for the reduction of the flood risk of these creeks. Further, the biodiversity of the surrounding area will be improved. Although this option occupies the largest footprint and property acquisitions will be required, the social benefits of the trails and creek as well as support by Indigenous and Municipal Policies outweigh the other alternatives. While from a technical perspective, the ‘Do Nothing’ approach is a strong alternative, considering the purpose of the funding for this Project and the goal of reducing climate risk, the naturalization alternative was preferred over the Do Nothing alternative.

4 Alternative Design Concepts

In Phase 3 of the Class EA process, once a preferred solution is identified, alternative design concepts are developed for the preferred solution, to further expand on the preferred approach. The alternative design concepts developed for the preferred solution provided varying approaches on incorporating the IHT into the naturalized channel corridors Schneider and Shoemaker Creek.

4.1 Development of Alternative Design Concepts

Based on reviews of the preferred solution, and recognition that the creek itself would meander, the following design concepts were developed with consideration for the alignment of the IHT and additional amenity features (e.g., seating areas, garbage containers, signage, lookouts, etc. to create interest in the location and attract members of the public) to enhance recreational value of the IHT:

- Alternative 1a – Naturalized Creeks with Multi-Use Trail along the South side of Schneider Creek and East side of Shoemaker Creek
- Alternative 1b – Naturalized Creeks with Multi-Use Trail along the South side of Schneider Creek with Trail Amenity Features (Up to Three) and Trail East side of Shoemaker Creek
- Alternative 2a – Naturalized Creeks with Multi-Use Trail along a Combination of the North and South side of Schneider Creek and West side of Shoemaker Creek
- Alternative 2b – Naturalized Creeks with Multi-Use Trail along a Combination of the North and South side of Schneider Creek with Train Amenity Features (Up to Three) and West side of Shoemaker Creek

The full evaluation of alternative solutions undertaken is included in the *Municipal Class Environmental Assessment – Phase 3: Evaluation of Alternative Design Concepts* in Appendix H.

4.2 Evaluation of Alternative Design Concepts

The alternative design concepts have been evaluated against environmental factors and specific criteria to recommend a preferred design concept as was conducted in Phase 2.

Below is a summary of the *Municipal Class Environmental Assessment – Phase 3: Evaluation of Alternative Design Concepts* report (Appendix H).

Natural Environment:

Factors considered in the natural environment component included surface water, groundwater, aquatic, terrestrial, and species at risk screening. There were no significant differences between the alternatives for all measures for Natural Environment criteria. There was low potential for negative effects during construction for both aquatic and terrestrial environments. The high positive outcome of naturalization for all four alternatives created an equal weighting on long-term effects on the natural environment criteria, therefore no preferred was selected based on this criteria.

Socio-Economic and Cultural Environment

Factors considered in the socio-economic and cultural environment section included social environment, air quality, noise and vibration, aesthetics and land use, health and safety, community access, utilities, built heritage resources, cultural landscapes, archeological resources, and economic environment. Noise and vibration, air quality and cultural land use had no significant differences in impact for construction or long-term impacts for all the alternatives. From a built heritage perspective, Alternatives 2a and 2b presented the least impact to the IHT. Alternatives 1b and 2b has the highest positive long-term impact with respect to aesthetics. This was due to adding access to views of the creek vegetation and the inclusion of up to three amenity features. The social benefits outweigh the minor safety risk resulting from the potential for increased access into the naturalized valley (access to the water). Prioritizing access to the water was identified as an important symbolic feature in consideration for Indigenous heritage. Alternatives 2a and 2b would improve the trail connection to Sydney Avenue by replacing the existing on-road cycling route along Nyberg Road with a multi-use trail, which provides improved connectivity. Therefore, Alternative 2b results in the highest net benefit from a socio-economic and cultural perspective.

Technical Environment

Factors considered in the technical environment included functionality, constructability and feasibility, cost, and climate change. All alternatives were scored the same for functionality and constructability and feasibility, however Alternatives 1a and 1b would require the highest capital costs due to the additional trail construction; IHT would be replaced between Kent Street and Ottawa Street and two pedestrian bridge crossings over the creeks are required. Therefore, Alternatives 2a and 2b were the preferred choice for technical environment.

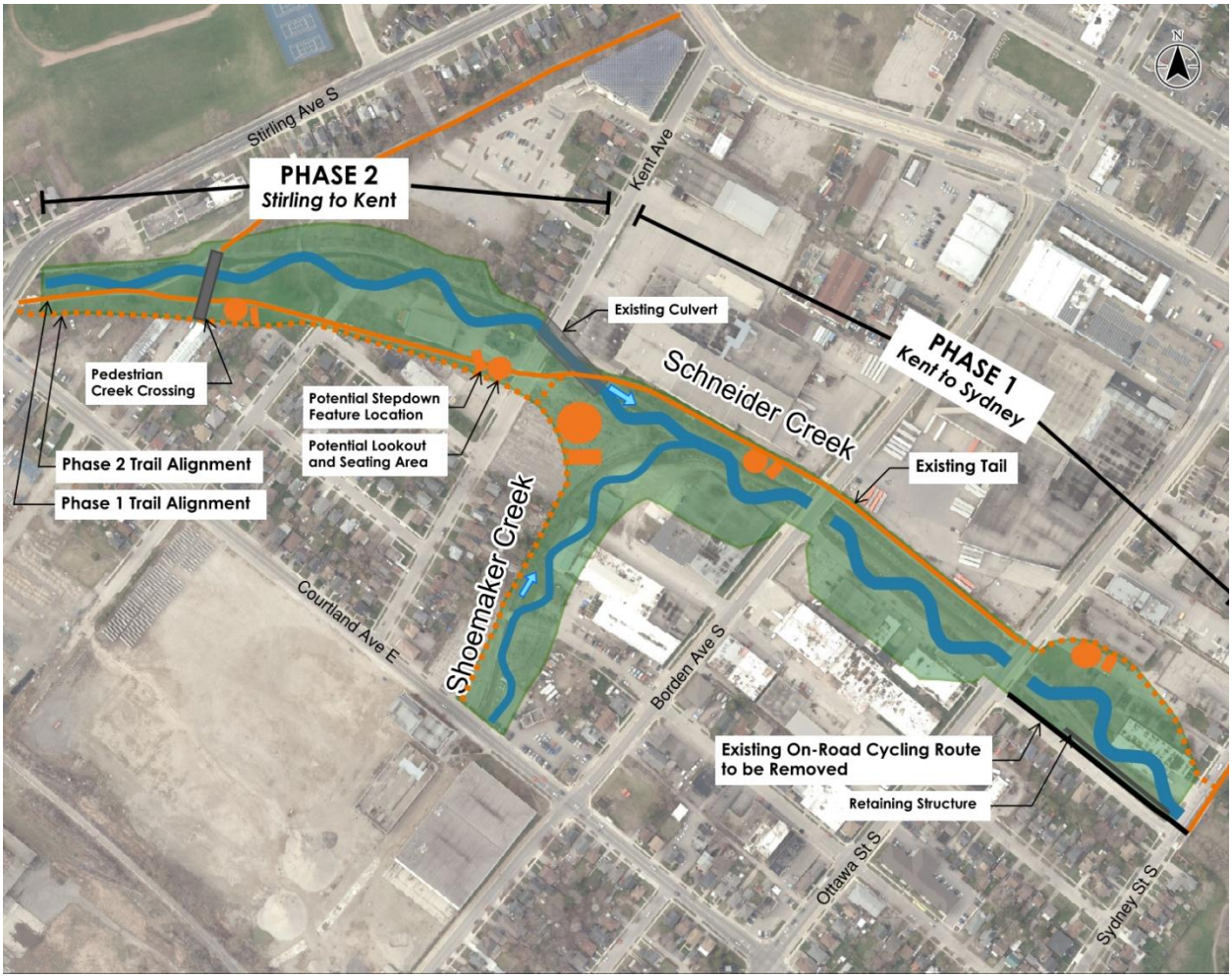
4.3 Overall Design Recommendation

The recommended preferred design concept was Alternative 2b which includes locating the IHT along a combination of the north and south side of Schneider Creek, up to three amenity areas, and a connecting trail on the west side of Shoemaker Creek. This design concept reduces the flood risk of these creeks while enhancing the recreational value of the IHT. This alternative largely maintains the existing IHT and provides opportunities to enjoy and interact with naturalized areas with step-down features. Although there is potential risk related to increased access into the naturalized valley with the step-down features (e.g. high flows during floods, exposure to ticks), the safety risk can be mitigated with the integration of signage (i.e., slippery when wet, avoid during high flows, etc.).

4.4 Description of the Recommended Design Concept

The recommended design concept positions the IHT along the top of the valley on the south side of the naturalized Schneider Creek corridor between Stirling Avenue and Kent Avenue. The trail alignment in the upstream portion of the Study Area requires a new pedestrian crossing of Schneider Creek, which would replace an existing culvert crossing. Downstream of Kent Avenue, the trail alignment switches to the north side of the valley corridor, maintaining the current IHT between Kent Avenue and Ottawa Street. A new section of trail would be constructed along the north side of the corridor between Ottawa Street and Sydney Street. This new trail would replace the on-road cycling route along Nyberg Street and eliminate the existing gap in the trail network. Additionally, a new section of trail along the west side of Shoemaker Creek will be incorporated and extend the existing IHT network south by connecting the trail to Courtland Ave. The recommended design incorporates additional amenity features along Schneider Creek such as seating areas (providing lookout views of the naturalized channel valley) and step-down features (providing public access from the trail down to the valley lands). Up to three amenity features would be incorporated into the Schneider Creek trail and naturalization. Figure 5 illustrates the preferred alternative, the potential amenity features and including the expected construction phasing, which will be further discussed in Section 5.0.

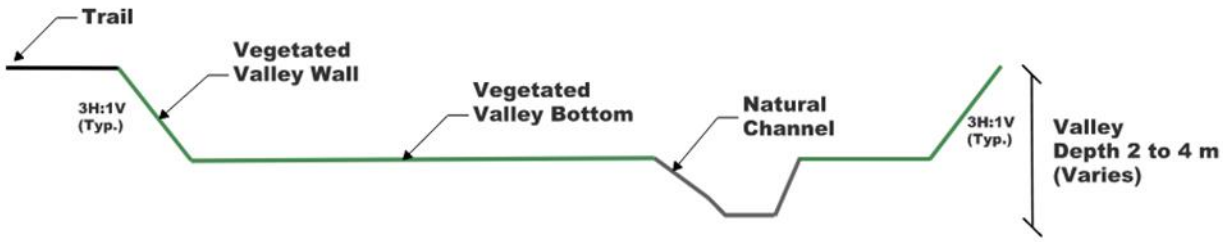
Figure 5: Preferred Alternative 2b: Naturalized Creeks with Multi-Use Trail along a Combination of the North and South side of Schneider Creek with Train Amenity Features (Up to Three) and West side of Shoemaker Creek



5 Project Description

The Project will involve removal of the concrete channel and replacement with a naturalized low flow channel and valley corridor. The corridor will be naturalized by planting native vegetation along the valley wall and bottom. The low flow channel will meander and will be constructed to mimic the form of natural watercourses. This form will include riffle and pool bed features, a variety of wood channel structures, vegetated channel banks and riparian areas. The valley walls along the edges of the corridor will be gradated at a 3-horixontal: 1-vertical slope form the valley bottom to the adjacent ground above the channel. A multi-use trail will be incorporated into this alternative. The trail is expected to be positioned along the top of the valley (Figure 6).

Figure 6: Project conceptual cross-section.



To manage the Project, construction and funding windows, the City proposes that construction be phased. The first construction phase is proposed to include Shoemaker Creek from Courtland Avenue East to the confluence with Schneider Creek and Schneider Creek from Kent Avenue to Sydney Street South. The first construction phase is expected to occur from 2025 to 2026. The second construction phase will include Schneider Creek from Stirling Avenue South to Kent Avenue. The timing of the second construction phase is yet to be determined. The construction phases are illustrated on Figure 3.

The highest-risk areas for flooding are called floodways. Reducing the extent of the floodway around Schneider Creek requires more room for the creek to flow unimpeded during storms. This is accomplished by increasing the channel width and removing the buildings in the floodway. Flood risk will be reduced throughout the Study Area as the Project progresses There are a total of seven non-residential buildings being impacted in Phase 1 and four non residential buildings in Phase 2 as part of this Project.

The Project (Alternative 2b) will have moderate capital costs as the existing trail will be maintained (compared to the other alternative design options) and only one pedestrian crossing is required. As the IHT is not significantly changing in length, operational costs for lighting and snow plowing are expected to remain similar to current conditions after Project completion. Maintenance costs for minor landscaping and channel repairs are expected to be less than current costs, as the naturalized channel is largely self-maintaining.

6 Effects Assessment, Mitigation and Monitoring

Phase 3 of the Class EA process involves identifying the impact of the preferred design concept on the environment as well as corresponding mitigation measures and monitoring activities. The construction and operation of the Project has potential impacts on the natural, social, economic, cultural environment and climate change and technical factors which are described in the following sections. Potential impacts were determined based on the environmental inventory described in Section 3 and the evaluation criteria discussed in Section 4.2. In general, the operation of the preferred design concept will have limited effect on the environment. Environmental effects due to construction activities will require a permit.

6.1 Effects

6.1.1 Surface Water

Isolate watercourse during construction and will divert the water around the active construction areas. Potential effects to the aquatic environment from the Project include runoff and sedimentation to Schneider and Shoemaker Creeks from excavation and construction activities. The long-term effects will be the reduction in the flood risk within the Study Area. GRCA mapping will be updated to reflect final design details.

Impacts to the surface water environment shall be mitigated through design and construction management measures including:

- Appropriate erosion and sediment controls shall be employed during all phases of construction to reduce erosion and sediment transport to downstream areas the extent possible.
- Silt fencing shall be used along all construction areas adjacent to natural features to prevent sediment migration. No equipment will be permitted to enter natural features beyond the fencing.
- Materials requiring stockpiling (fill, topsoil, etc.) shall be stabilized and kept outside of the channel corridor.
- Erosion and sediment control materials (silt fence, strawbales, clear stone) are to be kept on site for emergencies and repairs.
- Erosion and sediment controls shall be monitored and maintained, as required. Controls are to be removed only after the soils of the construction area have been stabilized and adequately protected and until cover is re-established.
- A permit is required from GRCA under Ontario Regulation (O. Reg.) 150/06. Permit conditions shall be followed during all activities.

- Demolition and construction shall be phased to allow for the efficient management of water flow and site management with respect to sediment and erosion control.
- Construction fencing shall be installed to delineate the Project construction areas prior to the start of construction and shall be reviewed by an engineer.
- Equipment shall be re-fueled greater than 30 m away from natural features to avoid potential impacts in the event that an accidental spill occurs.
- A containment and spill management plan shall be implemented to reduce the risk of deleterious substances entering the watercourses.
- A fully stocked emergency spill kit shall be kept on site at all times.

6.1.2 Groundwater

Based on the proposed design concept, the Project is not expected to have deep enough excavation to interact with groundwater. Nevertheless, a Geotechnical and Soils Report will be developed during detailed design to guide the design of the pedestrian bridge crossings, a hydrogeology report will inform if groundwater impacts the Project. Mitigation measures will be proposed and followed during construction. If dewatering is required a dewatering permit would need to be obtained.

6.1.3 Terrestrial Environment

Potential negative effects on the terrestrial environment from the Project during construction include the disturbance, displacement, or mortality of wildlife resulting from vegetation removal. Most existing trees will be removed to facilitate construction. However, trees and other vegetation will be planted in the floodplain during revegetation. Long-term positive impacts are anticipated resulting from the revegetation and naturalization. Potential positive impacts to the terrestrial environment include increased area for native vegetation which may provide habitat to a diversity of terrestrial species. Native vegetation may provide nesting and foraging resources for terrestrial species. Invasive species have been identified in the Tree Management Plan as ‘Low Priority’.

Impacts to the terrestrial environment during construction shall be mitigated through design and construction management measures including:

- Provide contractor employees with sensitivity education for on-site wildlife encounters and instructions on procedures to follow if wildlife is encountered during demolition and/or construction.
- Schedule construction activities during daylight hours whenever practicable to reduce the need for staging lights. The use of site flood lighting during key bat migration periods (i.e., April to May and late August through October) shall be avoided or limited to the extent possible.

- Retain natural habitat features such as wildlife trees wherever possible and practical.
- Implement wildlife-friendly (safe for various wildlife species) exclusion fencing in areas undergoing active demolition/construction.
- Conduct daily wildlife sweeps prior to construction start-up for the day to determine if any wildlife avoidance or rescue efforts are required.
- In accordance with the *Migratory Birds Convention Act,* 1995 (MBCA), the loss of migratory bird nests, eggs and/or nestlings due to tree cutting or other vegetation clearing shall be avoided by limiting clearing of vegetation to outside of the general nesting period for migratory birds in this region (C2) as identified by Environment and Climate Change Canada (ECCC) (i.e., between April 1 and August 31). If work must be performed in this window, a survey for active nests or breeding activity shall be conducted by a qualified biologist before work commences and additional mitigation measures (e.g., implementation of avoidance distances during construction) employed, as required.
- If wildlife is encountered, measures will be implemented to avoid death, injury, or interference with the species, and its habitat. For example, construction activities will cease, or be reduced, and wildlife will be encouraged to move off-site and away from the construction area on its own. A qualified biologist will be contacted to advise on the appropriate actions for the situation.
- Construction machinery shall be cleaned prior to entering the site at construction start-up to reduce the potential for establishment of invasive species, such as *Phragmites*, that may have been encountered by the machinery on a previous site location.

6.1.4 Aquatic Environment

There is potential for the Project to negatively impact fish and fish habitat temporarily during construction due to the potential for runoff and sedimentation which can impact water quality and aquatic habitat. This can occur by changing aspects of the local environment such as the water velocity, water temperature, food supply, and nutrient concentration. There is also potential for a positive impact to aquatic habitat after construction resulting from the removal of barriers to passage, addition of naturalized substrate, inclusion of pools and riffles, and the diversification of fish habitat. These features may result in increased potential for fish spawning, rearing, and adult life cycle elements. The full naturalized channel can be included in a habitat bank.

Negative impacts to the aquatic environment shall be mitigated through design and construction management measures including:

- Construction activities will maintain the buffers established during the design phase to reduce potential negative impacts of the Project.

- As construction works are required within 30 m of the watercourse, a Fish and Fish Habitat Impact Assessment shall provide appropriate mitigation measures, in accordance with legislation and through consultation with the relevant authorities including Fisheries and Oceans Canada (DFO). All requirements of the *Fisheries Act* will be met.
- Avoid in-water work during the restricted activity period for spring spawning fish species in the MNRF's Southern Region (i.e., no in-water work from March 15 to July 15)
- The contractor shall monitor the five-day weather forecast on a daily basis to anticipate weather conditions and shall be prepared to leave the site in a stable and secure condition should water levels rise.
- In water work areas shall be isolated from flow as required to prevent the transport of suspended sediment; the method of work area isolation will be determined by the contractor.
- Prior to instream construction activity, fish shall be rescued from the isolated work areas by implementing a fish removal and relocation plan to be conducted by qualified aquatic biologists in accordance with the conditions of a License to Collect Fish for Scientific Purposes.
- During dewatering of in-water work areas the dewatering pump inlet shall be covered with filter fabric or clear stone. Water from dewatering and unwatering operations shall be directed to a sediment control measure such as a sediment bag, trap and/or a vegetated discharge as far as practical from the top of bank of any waterbody, prior to discharge to the natural environment. No dewatering shall be sent directly to a sewer. These control measures shall be monitored for effectiveness and maintained or revised to meet the objective of reducing the risk of the entry of sediment into the watercourse.
- All water intakes used to dewater area(s) that may contain fish shall be screened to reduce the risk of the impingement and entrainment of fish as per DFO's *Interim Code of Practice: End-of-Pipe Fish Protection Screens for Small Water Intakes in Freshwater.*

6.1.5 Species at Risk

Potential effects to SAR include disturbance, displacement, or mortality of SAR species. There is also potential for the loss of migratory bird nests, eggs and nestlings if tree cutting, or other vegetation impacts due to excavation and construction occur during the general nesting periods (i.e., between April 1 and August 31). Stantec identified 13 SAR that have been recorded in the vicinity of the Study Area. The bird and reptile SAR are not expected to inhabit the Study Area, however a tree inventory conducted in the Study Area identified 10 trees which could provide suitable SAR bat maternity roost habitat. An additional seven trees located adjacent to the Study Area have been identified as

having potential suitable bat maternity roost habitat. A long-term positive impact for SAR includes enhancement of local habitat once the naturalization is complete.

Impacts to SAR shall be mitigated through design and construction management measures including:

- A Notice of Activity registration under Ontario Regulation 242/08 of the provincial *Endangered Species Act* (ESA) shall be prepared for potential impacts to bats and submitted as the works are considered to be an enhancement or restoration of an ecosystem native to Ontario.
- To reduce the likelihood of harm to bats, it is recommended that trees > 10 cm DBH be removed outside the period that includes bat maternity roost season, rearing and movement out of the habitat. Tree removal is therefore recommended to occur outside of the period from May 1 to October 1. If tree removal is required in this window, maternity exit surveys may be conducted prior to the tree removals to determine if bats are using the trees.
- If wildlife is encountered, measures will be implemented to avoid death, injury, or interference with the species, and its habitat. For example, construction activities will cease, or be reduced, and wildlife will be allowed to move off-site and away from the construction area on its own. A qualified biologist will be contacted to advise on the appropriate actions for the situation.

6.1.6 Soil

Based on the findings of the APU, there is potential to encounter contaminated soils in the Study Area. There is the potential for movement of contaminated soil during construction which would be a short-term and temporary effect. A potential long-term effect would be improved soil quality due to the naturalization.

The following mitigation measures should be implemented:

- O.Reg. 406/19 (On-Site and Excess Soil Management) and the associated MECP document *Rules for Soil Management and Excess Soil Quality Standards* referenced by O.Reg. 406/19 should be followed for soil that is excavated and managed on-site or off-site during construction.
- O.Reg. 406/19 requires sampling of soil that will be disturbed during construction, according to a sampling and analysis plan and analyzing for the specific contaminants of potential concern as described in the APEC summary table. Sampling programs should be developed and undertaken under the supervision of a qualified person as defined in O.Reg. 406/19 and sample selection should take into consideration the presence of anthropogenic substances such as debris/waste, and unusual odours or staining.

- Stockpiling and transport of excavated soil during construction should be done in accordance with the requirements specified in O.Reg. 406/19.
- A Geotechnical and Soils Report will be developed during detailed design to guide the design of the pedestrian bridge crossings, and a hydrogeology report will inform if groundwater impacts the Project. Mitigation measures will be proposed and followed during construction.

6.1.7 Noise and Vibration

There are no long-term noise or vibration impacts. A noise and vibration report will be completed during detailed design and mitigation measures will be proposed and followed during construction which would include:

- Noise emissions of the construction equipment shall be reviewed during detailed design to confirm that they are in the NPC-115 and NPC-118 limits. If they are expected to exceed the limits, quieter equipment should be considered for the Project. Alternatively, noise control options, such as silencers/mufflers should be investigated and implemented for specific equipment.
- Construction-related noise emissions shall adhere to the City Noise By-Law (By-law 2010-191) which prohibits commercial construction-related noise from 7:00 PM to 7:00 AM, and all day on Sundays and holidays (City of Kitchener 2010).

6.1.8 Built Heritage Resources and Cultural Heritage Landscape

Based on the Cultural Heritage Report (CHR) which can be found in Appendix C, the following mitigation measures have been proposed:

Direct Impacts:

The following properties within the Project Location contain cultural heritage landscapes within the footprint of the recommended design concept and are therefore at risk of potential direct impacts:

- Iron Horse Trail (CHL-1)
- Schneider Creek (CHL-2)
- Shoemaker Creek (CHL-3)

Where a known or potential built heritage resource or cultural heritage landscape may be directly and adversely impacted, consideration must be given to the conservation of the resource. A CHER is required to identify CHVI according to Ontario Regulation 9/06. Where a built heritage resource or cultural heritage landscape is determined to contain CHVI and the potential for direct impact(s) has been identified, a HIA is required to assess impacts and develop appropriate mitigation measures. Given the condensed timeline associated with the Project, it is proposed that where a CHER is required, it be

completed under a single cover HIA. This will allow for review of both the evaluation, impact assessment, and mitigation measures in a single review period. Therefore, an HIA will be completed as a single report for CHL-1, CHL-2, and CHL-3.

Indirect Impacts:

Following an assessment of impacts, indirect impacts related to land disturbance were identified for 22 BHRs and CHLs. The preferred option is to avoid the BHRs and CHLs by establishing a buffer zone around the resources to avoid construction activity within 50 metres of the built heritage resources and cultural heritage landscapes. This should use appropriate preventive measures such as mapping on construction maps or plans and temporary fencing. Staging and laydown areas should also be selected to be noninvasive and avoid the built heritage resource. Where avoidance is not feasible, the alternative option should be applied. If the 50-metre buffer cannot be avoided, the alternative option to mitigate this risk is for a qualified building condition specialist or engineer to develop a strategy to carry out condition surveys and vibration monitoring, where required. The pre-condition survey may include screening activities to identify critical properties and determine appropriate vibration levels based on building type, age, and condition. Vibration monitoring may consist of random confirmatory vibration monitoring during construction at the most critical properties. A post-condition survey should be carried out on an as-needed basis to be determined by a qualified building condition specialist or engineer.

6.1.9 Archeological Resources

Based on the findings of Stage 1 and 2 Archeological Assessments (Section 3.1.9), the Study Area was determined to be composed of previously disturbed area and the Study Area was determined to have low potential to impact undisturbed lands. Therefore, no impacts to archaeological resources are expected during the Project.

However, in the event that unassessed or documented archaeological materials are encountered during construction, the following mitigation measures shall be implemented:

- Should previously undocumented archaeological resources be discovered or suspected of being discovered, they may be a new archaeological site and therefore subject to Section 48(1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out an archaeological assessment, in compliance with Section 48(1) of the *Ontario Heritage Act*.
- The Funeral, Burial and Cremation Services Act, 2002, S.O. 2002, c.33 requires that any person discovering human remains must cease all activities immediately and notify the police or coroner. If the coroner does not suspect foul play in the

disposition of the remains, in accordance with Ontario Regulation 30-11, the coroner shall notify the Registrar, Ontario Ministry of Public and Business Services Delivery, which administers provisions of that Act related to burial sites. In situations where human remains are associated with archaeological resources, the Ministry of Citizenship and Multiculturalism should also be notified (at archaeology@ontario.ca) to ensure that the archaeological site is not subject to unlicensed alterations which would be a contravention of the Ontario Heritage Act.

Furthermore, corresponding monitoring activities include:

- Performance of the work will occur in land previously subject to an Archaeological Assessment.
- Any site personnel responsible for carrying out or overseeing land-disturbing activities will be informed of their responsibilities in the event that an archaeological resource is encountered.

6.1.10 Social Environment & Land Use

Implementation of the Project will not change the overall land use in the Study Area, however construction activities may impact surrounding residents and business temporary during the duration of the construction phases. Temporary disruptions to community access to the IHT are anticipated during construction resulting from excavation and naturalization, which will be considered during detailed design. There is potential for temporary visual aesthetic impacts during construction. Long-term, the Project will change the existing views/landscapes of the area to more naturalized environment. Moreover, construction activities may have the potential to increase light, traffic and dust pollution in nearby areas. No long-term road closures are anticipated. The City must acquire property to allow for construction of the preferred alternative and some businesses will have to relocate. While the relocation of services supplied by these businesses cannot be avoided, the impact of not expanding the width of Schneider Creek lessens the positive impact of reducing flood risk. Aside from reduced flood risk, potential long-term positive effects to the social environment may include enjoyment of the naturalized area, increased usability of the area, and increased access to the water.

Potential effects to the social environment will be mitigated through design and construction management measures including:

- Reduce closure of associated trails used by the community during excavation and naturalization and provide detour signage where appropriate.
- During construction, a designated City representative should be available to monitor and respond to requests and concerns voiced by residents and business owners.

Stakeholders included on the distribution list including residents within a 1km radius will receive construction notificatiindigon and schedule information 30 days prior to the start of construction.

- Access to nearby recreational areas will be maintained for pedestrian and cyclist traffic, to the extent feasible. Potentially affected residents, tenants, and business owners will be notified of initial construction schedules, as well as modifications to these schedules as they occur.
- Potential effects to pedestrian and cyclist activities during construction will be mitigated through the installation of appropriate wayfinding, regulatory, and warning signs.
- Existing sidewalks and crossings will be maintained. Alterations to existing sidewalks and crossings will only be permitted upon review and approval by the City of Kitchener. If approved, temporary pedestrian facilities will comply with accessibility and applicable municipal standards.
- Should road closures be required, they are to be implemented in accordance with Ontario Traffic Manual Book 7.
- The constructor will perform the works in such a way that avoids or mitigates obtrusive light with respect to adjacent residents, communities and/or businesses.
- In the presence of persistent complaints and subject to the results of an investigation, identify reasonable alternative control measures, where possible.

Operation of the Project is not expected to impact air quality; however the Project has the potential to temporarily impact local air quality due to construction-related air pollution as a result of increased fugitive dust emissions, construction equipment tailpipe emissions, vehicle emissions and associated dust.

Potential effects to air quality shall be mitigated through design and construction management measures are included in Section 6.1.12.

Furthermore, corresponding monitoring activities include establishing a **Complaints Protocol** to respond to issues that develop during construction.

6.1.11 Economic Environment

The City must acquire property from local landowners with businesses located in the floodplain to allow for construction of the preferred alternative. Businesses that remain the in floodplain are at an elevated risk of non-insured financial loss should a significant weather event occur. Relocation, while disruptive to the business, will provide longer term economic benefit as it removes the risk of catastrophic business loss due to flooding.

6.1.12 Air Quality

There is the potential for negative short-term effects to air quality during construction from emissions from equipment and dust. Following construction, there is the potential for high positive impacts to air quality due to the vegetation in the naturalized area acting as a new carbon sink.

The following mitigation measures will be used:

- All construction equipment to be maintained and in good working order in accordance with operational manual.
- Employ dust control measures.

6.1.13 Infrastructure and Utilities

Excavation and construction for Schneider and Shoemaker Creeks Naturalization in the Study Area may have the potential to impact existing utilities. The preferred alternative calls for the removal of a portion of Nyberg Street between Borden Avenue South and Ottawa Street South, which will require the removal of existing road infrastructure and associated utilities. Potential effects to utilities shall be mitigated through design and construction management measures including:

- Obtain permits and consents from and with all utility companies with respect to the design, construction, installation, servicing, operation, repair, preservation, relocation, and/or commissioning of utility infrastructure.

Furthermore, corresponding monitoring activities include:

- Maintain regular communication with applicable utility companies.
- In the event of potential effects to critical utilities, instrumentation and monitoring shall be carried out to protect the critical utilities and structures and reduce risks of damage due to construction activities.

6.1.14 Health and Safety

There is low potential to impact the health and safety of City residents due to construction nuisance such as noise and vibration, reduced air quality and traffic safety. Mitigation and monitoring measures will be implemented to address such impacts. The Project is expected to improve the health and safety of residents by improving stormwater management and recreational opportunities with increase accessibility. There is a decreased potential for flooding with the naturalization of Schneider and Shoemaker Creeks.

- Obtain City of Kitchener approval regarding public safety due to removal of barriers and increasing access to the creek; may include signage, public awareness campaign, etc.

6.1.15 Climate Change Considerations

The Project provides opportunities to improve local resiliency to climate change through the implementation of increased ability to handle extreme weather effects which are expected to occur more frequently.

While naturalization will improve local resiliency to climate change, the short-term construction impacts will increase known climate change contributors (i.e., GHG emissions).

The long-term impacts of the Project on climate change include benefits such as

- Improved flood resilience (reducing impact to surrounding land uses)
- Reduction in the urban heat island effect by creating a green corridor in an urban space
- Improved water quality and habitat conditions
- Introduction of vegetation to absorb carbon dioxide and emit oxygen
- Improving active transportation opportunities by enhancing trail connections
- Saving future costs caused by climate change impacts

6.2 Summary of Potential Effects, Mitigating Measures and Monitoring Activities

A summary of the potential effects, mitigation measures and proposed monitoring for the various components of the environment described in the previous sections of the ESR has been outlined in Table 3. The City is responsible for confirming that the recommendations are met but may direct a third party to undertake future activities (i.e., contractor, technical consultant). The intent of this table is to provide a summary of those commitments and responsibility of third parties where the City determines applicability. These are recommendations that will be confirmed as Project planning advances into detailed design.

Table 3: Summary of Potential Effects, Mitigation Measures, and Monitoring Activities

Environment	Environmental Component	Project Activity	Potential Effects	Mitigation Measures	Monitoring Activities
Natural Environment	Aquatic Environment	Construction activities such as: vegetation removal, grading, excavation, backfill, watercourse isolation and diversion and vegetation planting	Potential to impact fish and fish habitat	• Construction activities will maintain the buffers established during the design phase to reduce potential negative effects of the Project. • As construction works are required within 30 m of the watercourse, a Fish and Fish Habitat Impact Assessment shall provide appropriate mitigation measures, in accordance with legislation and through consultation with the relevant authorities including Fisheries and Oceans Canada (DFO). All requirements of the *Fisheries Act* will be met. • Avoid in-water work during the restricted activity period for spring spawning fish species in the MNRF's Southern Region (i.e., no in-water work from March 15 to July 15) • The contractor shall monitor the five-day weather forecast on a daily basis to anticipate weather conditions and shall be prepared to leave the site in a stable and secure condition should water levels rise • In water work areas shall be isolated from flow as required to prevent the transport of suspended sediment; the method of work area isolation will be determined by the contractor. • Prior to instream construction activity, fish shall be rescued from the isolated work areas by implementing a fish removal and relocation plan to be conducted by qualified aquatic biologists in accordance with the conditions of a License to Collect Fish for Scientific Purposes • During dewatering of in-water work areas the dewatering pump inlet shall be covered with filter fabric or clear stone. Water from dewatering and unwatering operations shall be directed to a sediment control measure such as a sediment bag, trap and/or a vegetated discharge as far as practical from the top of bank of any waterbody, prior to discharge to the natural environment. No dewatering shall be sent directly to a sewer. These control measures shall be monitored for effectiveness and maintained or revised to meet the objective of reducing the risk of the entry of sediment into the watercourse • All water intakes used to dewater area(s) that may contain fish shall be screened to reduce the risk of the impingement and entrainment of fish as per DFO's *Interim Code of Practice: End-of-Pipe Fish Protection Screens for Small Water Intakes in Freshwater*	--
Natural Environment	Terrestrial Environment (Wildlife)	Excavation and construction for naturalization at the site	Impacts to healthy trees	Tree Protection Fencing • Install Tree Protection Fencing (TPF) to protect trees identified for preservation. • All TPF will conform with the detail(s) included on these plans. Where current governing Municipal/City standards differ, contact Project Arborist or Contract Administrator for direction. • No substitutions of materials, products or quantities will be accepted without the prior written permission of the Project Arborist. • Upon installation of the TPF, contact the Project Arborist to review and approve the fencing and location(s) in writing prior to commencement of any site work. • TPF shall remain in the approved locations throughout the duration of the site works and shall not be moved at any time to accommodate construction or site work. • Inspect TPF weekly and maintain as required through all stages of development/construction. The TPF shall be removed at the completion of all site works and disturbed areas shall be restored to original condition. Tree Preservation • The Tree Protection Zone (TPZ) is protected and delineated by the TPF. Do not proceed in uncertainty.	--

Environment	Environmental Component	Project Activity	Potential Effects	Mitigation Measures	Monitoring Activities
Natural Environment	Terrestrial Environment (Wildlife)	Excavation and construction for naturalization at the site	Impacts to healthy trees	• Any potential or incurred injury/damage to adjacent tree(s) identified to be preserved shall be immediately reported to the Project Arborist and reviewed on site. Injury/damage includes any required arboricultural treatment including but not limited to: limb pruning, trunk damage, root exposure or required cutting/removal or any other activity that has the potential to harm the tree. • The TPZ is not to be used for any type of storage including materials, equipment or stockpiles. • No trenching or tunneling for underground services shall occur within the TPZ. • Any equipment use within the TPZ will be restricted throughout all stages of development. This applies to TPZs within or outside of the project limit line. • Absolutely no alteration of grades or construction activity is permitted within the TPF and TPZ. Absolutely no flushing of contaminant shall be permitted towards or within the TPZ. • When working adjacent to trees to be preserved site preparation measures such as pruning for overhead clearance may be required. Preparatory pruning shall only be performed when completed by or under the direct supervision of an ISA Certified Arborist (or approved qualified person as approved by the Project Arborist). • All pruning work shall be performed by a qualified individual and shall be in accordance with current horticultural practices including but not limited to: - a. Pruning cuts shall be made just beyond the branch collar and should be limited to thinning cuts. Heading cuts will only be accepted in specific cases as directed by an arborist and should be avoided where possible. - b. Pruning of all stems greater than 50 mm in diameter should be made with a three-cut method to avoid tearing living bark tissue. - c. No wound dressings shall be applied. • Where soil excavation/grading work is required within the rooting zone of a tree to be preserved (the rooting zone often extends beyond the identified TPZ and can be 3 times the dripline radius or more): - a. Roots shall be cleanly severed before stripping and removing soil to avoid damage to the tree and the root system. Roots to be cut using appropriate equipment (i.e. trencher adapted to this specific use/chainsaw/root pruning machine). Roots may be severed using the clean edge of a straight excavator bucket under supervision of an ISA Certified Arborist. - b. No attempts to cut existing roots with the digging bucket of any heavy machinery will be permitted as it can cause the roots to tear and pull and be harmful to root regeneration and recovery. - c. Any exposed roots of a tree to be preserved with a diameter greater than 2.5cm (1 inch) shall be pruned back to the soil face. - d. An excavation area within the TPZ shall be backfilled immediately and/or roots shall be kept constantly moist with burlap covered with white plastic and checked a minimum of 2 times a day, for a maximum of 48 hours. If roots are to be exposed for a period greater than 48 hours, the exposed area shall be covered with a minimum of 150 mm (6 inches) of mulch and maintained in a moist condition during construction until the area can be properly backfilled. • Trees shall not have any rigging cables, fencing, signage or hardware of any sort attached or wrapped around them. • No contaminants or toxic materials shall be dumped or flushed where they may come into contact with the feeder roots of trees to be preserved.	--

Environment	Environmental Component	Project Activity	Potential Effects	Mitigation Measures	Monitoring Activities
Natural Environment	Terrestrial Environment (Wildlife)	Excavation and construction for naturalization at the site	Impacts to healthy trees	• Maintain responsibility for all avoidable damage to preserved trees during all stages of construction. • Watering or other maintenance of trees to be preserved may be required if construction activities are observed to be causing stress or impacting health as determined by the Project Arborist. Tree Removals • Prior to the commencement of tree removals, all trees designated for removal must be clearly identified in the field. • Trees shall always be felled away from adjacent preserved trees to prevent avoidable damage to the crowns and	-
Natural Environment	Terrestrial Environment (Wildlife)	Excavation and construction for naturalization at the site	Potential for temporary disturbance, displacement, or mortality of wildlife	• Provide contractor employees with sensitivity education for on-site wildlife encounters and instructions on procedures to follow if wildlife is encountered during demolition and/or construction. • Schedule construction activities during daylight hours whenever practicable to reduce the need for staging lights. The use of site flood lighting during key bat migration periods (i.e., April to May and late August through October) shall be avoided or limited to the extent possible • Retain natural habitat features such as wildlife trees wherever possible and practical. • Implement wildlife-friendly exclusion fencing in areas undergoing active demolition/construction. • Conduct daily wildlife sweeps prior to construction start-up for the day to determine if any wildlife avoidance or rescue efforts are required. • Construction machinery shall be cleaned prior to entering the site at construction start-up to reduce the potential for establishment of invasive species, such as *Phragmites*, that may have been encountered by the machinery on a previous site location.	• Culturally important plants to various Indigenous Nations will be incorporated into revegetation planting.
Natural Environment	Terrestrial Environment (Wildlife)	Excavation and construction for naturalization at the site	Potential to impact wildlife habitat, including bird nesting	• In accordance with the *Migratory Birds Convention Act,* 1995 (MBCA), the loss of migratory bird nests, eggs and/or nestlings due to tree cutting or other vegetation clearing shall be avoided by limiting clearing of vegetation to outside of the general nesting period for migratory birds in this region (C2) as identified by Environment and Climate Change Canada (ECCC) (i.e., between April 1 and August 31). If work must be performed in this window, a survey for active nests or breeding activity shall be conducted by a qualified biologist before work commences and additional mitigation measures (e.g., implementation of avoidance distances during construction) employed, as required. • If wildlife is encountered, measures will be implemented to avoid death, injury, or interference with the species, and its habitat. For example, construction activities will cease, or be reduced, and wildlife will be encouraged to move off-site and away from the construction area on its own. A qualified biologist will be contacted to advise on the appropriate actions for the situation.	--
Natural Environment	Species at Risk	Excavation and construction for naturalization at the site	Potential loss of bat maternity roosting habitat	• A Notice of Activity registration under Ontario Regulation 242/08 of the provincial *Endangered Species Act* (ESA) shall be prepared for potential impacts to bats and submitted as the works are considered to be an enhancement or restoration of an ecosystem native to Ontario. • To reduce the likelihood of harm to bats, it is recommended that trees > 10 cm DBH be removed outside the period that includes bat maternity roost season, rearing and movement out of the habitat. Tree removal is therefore recommended to occur outside of the period from May 1 to October 1. If tree removal is required in this window, maternity exit surveys may be conducted prior to the tree removals to determine if bats are using the trees.	--

Environment	Environmental Component	Project Activity	Potential Effects	Mitigation Measures	Monitoring Activities
Natural Environment	Species at Risk	Excavation and construction for naturalization at the site	Potential loss of bat maternity roosting habitat	• If wildlife is encountered, measures will be implemented to avoid death, injury, or interference with the species, and its habitat. For example, construction activities will cease, or be reduced, and wildlife will be allowed to move off-site and away from the construction area on its own. A qualified biologist will be contacted to advise on the appropriate actions for the situation.	--
Natural Environment	Surface water	Excavation and construction for naturalization at the site	Potential to impact water quality and quantity due to site's proximity to the Schneider Creek and potential runoff during construction.	• Appropriate erosion and sediment controls shall be employed during all phases of construction to reduce erosion and sediment transport to downstream areas the extent possible. • Silt fencing shall be used along all construction areas adjacent to natural features to prevent sediment migration. No equipment will be permitted to enter natural features beyond the fencing. • Materials requiring stockpiling (fill, topsoil, etc.) shall be stabilized and kept outside of the channel corridor. • Erosion and sediment control materials (silt fence, strawbales, clear stone) are to be kept on site for emergencies and repairs. • Erosion and sediment controls shall be monitored and maintained, as required. Controls are to be removed only after the soils of the construction area have been stabilized and adequately protected until cover is re-established. • A permit is required from GRCA under Ontario Regulation (O. Reg.) 150/06. Permit conditions shall be followed during all activities. • Demolition and construction shall be phased to allow for the efficient management of water flow and site management with respect to sediment and erosion control. • Construction fencing shall be installed to delineate the Project construction areas prior to the start of construction and shall be reviewed by an engineer. • Equipment shall be re-fueled greater than 30 m away from natural features to avoid potential impacts in the event that an accidental spill occurs. • A containment and spill management plan shall be implemented to reduce the risk of deleterious substances entering the watercourses. • A fully stocked emergency spill kit shall be kept on site at all times.	--
Natural Environment	Soil	Excavation and construction for naturalization at the site	Potential for movement of contaminated soil during construction.	• O.Reg. 406/19 (On-Site and Excess Soil Management) and the associated MECP document *Rules for Soil Management and Excess Soil Quality Standards* referenced by O.Reg. 406/19 should be followed for soil that is excavated and managed on-site or off-site during construction. • O.Reg. 406/19 requires sampling of soil that will be disturbed during construction, according to a sampling and analysis plan and analyzing for the specific contaminants of potential concern as described in the APEC summary table. Sampling programs should be developed and undertaken under the supervision of a qualified person as defined in O.Reg. 406/19 and sample selection should take into consideration the presence of anthropogenic substances such as debris/waste, and unusual odours or staining. • Stockpiling and transport of excavated soil during construction should be done in accordance with the requirements specified in O.Reg. 406/19. • A Geotechnical and Soils Report will be developed during detailed design to guide the design of the pedestrian bridge crossings, and a hydrogeology report will inform if groundwater impacts the Project. Further mitigation measures will be proposed and followed during construction.	--

Environment	Environmental Component	Project Activity	Potential Effects	Mitigation Measures	Monitoring Activities
Socio-Economic Environment	Social Environment	Excavation and construction for naturalization at the site	Potential to impact social environment including land access, aesthetics, noise, and vibration.	• Reduce closure of associated trails used by the community during excavation and naturalization and provide detour signage where appropriate. • During construction, a designated City representative should be available to monitor and respond to requests and concerns voiced by residents and business owners. • Stakeholders included on the distribution list including residents within a 1km radius will receive construction notification and schedule information 30 days prior to the start of construction. • Access to nearby land uses will be maintained for pedestrian and cyclist traffic, to the extent feasible. Potentially affected residents, tenants, and business owners will be notified of initial construction schedules, as well as modifications to these schedules as they occur. • Potential effects to pedestrian and cyclist activities during construction will be mitigated through the installation of appropriate wayfinding, regulatory, and warning signs. • Existing sidewalks and crossings will be maintained. Alternations to existing sidewalks and crossings will only be permitted upon review and approval by the City of Kitchener. If approved, temporary pedestrian facilities will comply with accessibility and applicable municipal standards. • The constructor will perform the works in such a way that avoids or mitigates obtrusive light with respect to adjacent residents, communities and/or businesses. • Noise emissions of the construction equipment shall be reviewed during detailed design to confirm that they are in the NPC-115 and NPC-118 limits. If they are expected to exceed the limits, quieter equipment should be considered for the Project. Alternatively, noise control options, such as silencers/mufflers should be investigated and implemented for specific equipment. • Construction related noise emissions shall adhere to the City Noise By-Law (By-law 2010-191) which prohibits commercial construction-related noise from 7:00 PM to 7:00 AM, and all day on Sundays and holidays (City of Kitchener 2010). • In the presence of persistent complaints and subject to the results of an investigation, identify reasonable alternative vibration control measures, where possible. • Any road closures would follow typical construction zone processes as guided by OTM Book 7.	• Corresponding monitoring activities include establishing a **Complaints Protocol** to respond to issues that develop during construction. • Incorporation of culturally important information for various Indigenous Nations to be included in signage or public art.
Socio-Economic Environment	Health and Safety	Construction activities	Potential impact to health / safety of residents	• Obtain City of Kitchener approval regarding public safety due to removal of barriers and increasing access to the creek; may include signage, public awareness campaign, etc.	--
Socio-Economic Environment	Air Quality	Use of construction equipment and vehicles Excavation and construction for naturalization at the site	Potential for temporary impacts to local air quality due to construction-related air pollution (such as dust emissions, vehicle exhaust)	• All construction equipment to be maintained and in good working order in accordance with operational manual. • Employ dust control measures.	• All construction equipment to be maintained and in good working order in accordance with operational manual.

Environment	Environmental Component	Project Activity	Potential Effects	Mitigation Measures	Monitoring Activities
Socio-Economic Environment	Utilities	Excavation and construction for naturalization at the site	Potential impact to existing utilities	• Obtain permits and consents from and with all utility companies with respect to the design, construction, installation, servicing, operation, repair, preservation, relocation, and or commissioning of utility infrastructure.	• Maintain regular communication and coordination with applicable utility companies. • In the event of potential effects to critical utilities, instrumentation and monitoring shall be carried out to protect the critical utilities and structures and reduce risks of damage due to construction activities.
Cultural Environment	Built Heritage Resources/ Cultural Landscape	Works on the IHT alignment	Heritage designation on alignment	• Undertake a Heritage Impact Assessment to provide mitigation measures • Obtain permits / approvals to undertake work on the IHT alignment and additional features	--
Cultural Environment	Archeological Resources	Excavation and construction for naturalization at the site	Potential for the disturbance of unassessed or documented archaeological resources.	• Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48(1) of the Ontario Heritage Act. The proponent or person discovering the archaeological resources shall cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48(1) of the Ontario Heritage Act. • The Funeral, Burial and Cremation Services Act, 2002, S.O. 2002, c.33 requires that any person discovering human remains must cease all activities immediately and notify the police or coroner. If the coroner does not suspect foul play in the disposition of the remains, in accordance with Ontario Regulation 30-11, the coroner shall notify the Registrar, Ontario Ministry of Public and Business Services Delivery, which administers provisions of that Act related to burial sites. In situations where human remains are associated with archaeological resources, the Ministry of Citizenship and Multiculturalism should also be notified (at archaeology@ontario.ca) to ensure that the archaeological site is not subject to unlicensed alterations which would be a contravention of the Ontario Heritage Act.	• Performance of the work will occur in land previously subject to an Archaeological Assessment. • Any site personnel responsible for carrying out or overseeing land-disturbing activities will be informed of their responsibilities in the event that an archaeological resource is encountered.

7 Consultation

The Class EA process provides a minimum of three points of contact for a Schedule C undertaking where stakeholders have the opportunity to review the Project findings and submit comments for consideration in development of the Project. The following sections summarize the approach that has been taken with respect to consultation during this Project.

7.1 Public Consultation

7.1.1 Study Website

Background information, notifications, updates, and links to consultation content were provided on the Project webpage, as they became available. The consultation materials for Phases 3 and 4 are provided in Appendix I. Through the Project webpage, users were invited to contact study team members through their email account. The website for the Project is: https://www.engagewr.ca/schneidercreekea.

7.1.2 Contact List

A comprehensive contact list consisting of government agencies, City staff, utilities, emergency service providers, Indigenous Nations, Indigenous Organizations, local organizations and interest groups and members of the public who expressed interest in the Project was developed at the onset of the MCEA. This list was updated as the study progressed. The latest version of this contact list is provided in Appendix I.1.

7.1.3 Notice of Commencement and Online Public Information Centre (PIC)

The purpose of the Notice of Study Commencement and Public Information Centre (PIC) was to inform the public that the City had initiated Phases 3 and 4 of the Class EA process to complete the planning and preliminary design of this Project. The notice briefly outlined the objective of the study, the Study Area location map, and contact information for the Project team representatives. Additionally, the City held three (3) PIC's. The PICs inform the public about the purpose, format, and how to access the PIC materials, and provide the study team's contact information.

The Notice of Study Commencement and PIC was communicated via the local newspaper, Kitchener Record, and was also posted on the Project website. Additionally, a copy of the notice was mailed and emailed to the contact mailing list. A copy of this notice is provided in Appendix I.2 of this document.

7.1.3.1 PIC

Three PICs were held to share information and solicit feedback from the public, agencies, Indigenous Nations and other stakeholders on the study background, evaluation criteria, alternative and recommended design concepts, and next steps in the MCEA process. The Notice of Commencement and PIC #1 (Notice) for the EA was issued on March 31, 2023. The PIC content is saved on the study website. PIC #1 was an in-person event held at the Rockway Golf Course in Kitchener, Ontario on April 13, 2023, from 6:00pm to 8:00pm. A total of 73 attendees signed in with 42 attendees requesting to be added to the email distribution list.

PIC #2 Notice of Study Commencement was posted on the Project website on June 16, 2023. The PIC #2 materials were added to the Project website on June 28, 2023, including the display boards and comments on the idea boards which were available in-person at the PIC. PIC #2 was an in-person event held at the Rockway Mennonite Collegiate in Kitchener, Ontario on June 28, 2023, from 5:00pm to 8:00pm. A total of 41 attendees signed in with 33 attendees requesting to be added to the email distribution list.

The Notice for PIC #3 was issued on December 1, 2023, and the in-person event was held on December 12, 2023, from 5:00pm to 8:00pm at Rockway Golf Course in Kitchener, Ontario. A total of 67 attendees signed in with 32 attendees requesting to be added to the email distribution list. All participants were encouraged to provide their feedback directly to the Project Team. Alternatively, there was an option to participate online by reviewing the presentation materials from the PIC and completing the Alternative Design Options Survey on the Project website. The survey was open from December 18, 2023, until January 2, 2024. The comments and responses received throughout Phases 1-3 are summarized in Table 5 below.

Table 4: Summary of Comments and Responses

Topic	Question/Comment	Response
Design	Questions and concerns around designs of the creeks (e.g., will all the concrete be removed, what will the concrete be replaced with, presence of invasive species, excluding certain invasive species during naturalization, planting only native species, and retaining as many existing trees as possible). Maximize use of naturalized areas. Potential future re-naturalization north of existing trail. Naturalize area to right of IHT south of Kent St.	There will be alternative design concepts presented. A team of environmental engineers and biologists will be involved with the designs and will consider appropriate naturalization species.
	Inquiries about if current road crossing and infrastructure will be maintained.	Current road crossings will not be changed.
	Request to leave area as is (stating there is no flooding in the areas around the creek where the resident lives/visits).	Modifications will include mitigation to existing flood risk. One of the main Project goals is mitigation of existing flood risk and mitigation against future flood risks that could be associated with climate change. The City is being proactive to mitigate risks before they occur. The proposed approach will also create additional benefits, including enhancing aquatic and terrestrial environments, improving recreational amenities (IHT), and providing additional greenspace in the neighborhood. There have been numerous residents who have confirmed recent storm events that have completely filled up the channel in the Project area.
	Inquiries if existing vegetation could be maintained. Request to participate in planting activities.	Existing vegetation has been mapped as part of the background investigations and will be considered at detailed design. Design plans will incorporate revegetation plans. Further information regarding planting activities will be discussed following construction.
	Requests to have access to the creek. Removing narrow bike lanes on the trial and adding water bottle refill station along the IHT. Adding in space for fire pits. How climate change will impact the Project. Improve area between Kent and Palmer by removing gravel and adding shade in order to host events in the area. Concerns around the use of salt in the area. Safety concerns (single file cycling, heavily marked signage, speed limits). Add children's play areas, seating areas, washrooms. Replace concrete along Nyberg St with armour stone.	This will be considered during detailed design.
	Concerns around stability of natural channel to be implemented.	Engineering design will incorporate structures to maintain stability of natural channel. This will be determined during detailed design, but it is expected that the structures will consist of natural materials (rocks, wood/logs).
	Concerns around Iron Horse Trail including adding water bottle refill station, signaled crossing, remove narrow bike lane from Nyberg Street, improve shade along IHT, smooth out street intersections, add more greenery.	This will be considered during detailed design.
	How the Project will reduce flood risks to various nearby properties. Request to obtain floodplain modeling files.	The highest-risk areas for flooding are called floodways. Reducing the extent of the floodway around Schneider Creek requires more room for the creek to flow unimpeded during storms. We do this by increasing the channel width and removing the buildings in the floodway. Flood risk will be reduced throughout the study area as we begin to do this. There is a total of seven (7) buildings being removed in Phase 1 and four (4) buildings in Phase 2. Floodplain assessment will be determined using hydraulic modeling. Model will be refined during detailed design process.
Timing	Why naturalize the creeks now?	Concerns for safety is top priority and the main reason for naturalizing the creeks.

Topic	Question/Comment	Response
Alternatives Assessment	Who will choose the alternative design? What input from residents will be considered? Why did residents outside the floodplain limit receive a Notice?	Input from residents throughout the EA process will be considered and a team of engineers and biologists will decide on alternatives based on feasibility and those will be evaluated to determine the preferred option. The evaluation methodology (Appendix H) and results will be presented at the next PIC and the team will be looking for comments and input before the final selection of a preferred option. Input from those who use the trail for various purposes is also important.
Waste	Concerns around waste including existing waste/garbage in the area, how will the City protect the naturalization from further littering.	There is a known issue with waste in the area and the City will look at options to manage that in the future.
Next Steps	How residents will be notified of alternative design concepts, what studies are still pending, timeline of Project.	The next step is to develop the alternative design concepts, which will be available on the Project website and presented at PIC 2. Environmental investigations will be conducted in spring and summer 2023.
Next Steps	Inquiries around timeline of the Project (when will it start, construction phases, and completion).	Field work continuing throughout summer 2023; Phase 3: Alternative Design and PIC #3 (Fall 2023), Phase 4: Environmental Study Report (Winter 2024), detailed design and permitting (2024-2025), construction (2025-2026).
Cost	Concerns around cost of the Project.	The City is receiving federal funding support, with 40% of funding coming from the federal government.
Project Scope	Suggestions to expand Project area and scope (e.g., to consider additional recreational areas, cycling trails, to considered upstream and downstream areas, removed culvert under an adjacent private property).	These changes are outside of the current Project scope, however the City will consider the suggestions made.
Impacts	Questions about land impacts.	This question was asked during PIC #1 and #2. Land impacts were discussed at PIC #3.
	Temporary impacts as a result of construction (including vibration impacts).	The EA process will identify impacts and will confirm avoidance and mitigation measures; the public will have an opportunity to review and comment.
	Which properties will be impacted? How will property impacts be addressed?	At the time of the question during PIC#1, the final alignment has not been decided. It was explained that Phase 1 and 2 of the Class EA process will inform next steps regarding property impacts, specifically to the IHT. Those were then presented in Phase 3 (PIC #3). Site specific property impact discussions will continue with the City as the Project progresses.
	Overall impacts to the Iron Horse Trail or Light Rail Transit.	IHT and Light Rail Transit routes will be maintained. Temporary detours to the IHT may be required during construction.
	Inquiries around property loss impacts for residential properties, including those on Nyberg St.	There will not be any property loss impacts for residential properties, including those on Nyberg St.

7.1.4 Notice of Publication of Environmental Study Report

The Notice was available on the Project website and distributed via mail and email to agencies, key stakeholders, Indigenous Nations, and the public on the study mailing list on April 10th, 2024. The Notice of Completion for the Environmental Study Report was placed in the newspaper on April 17th 2024 and April 24th, 2024. The notice briefly outlined the Preferred Design Concept and noted that the ESR will be posted on the Project website for a 30-day public review period. A copy of the notice is appended (Appendix I.2) to this report.

7.2 Agency Consultation

The Class EA provides for the involvement of MECP's various branches as well as other provincial and federal ministries and outside agencies. The list of Review Agencies varies depending upon the scope of the Project, its location, and the potential environmental impacts.

All applicable agencies that were provided with the Notices are listed in the Contact list which can be found in Appendix I.1. Agency comments are available in Appendix I.4 and summarized below.

Notices of EA and PIC were sent to MECP and MCM. MECP provided a Letter of Acknowledgement regarding the Notice of Commencement for Schneider and Shoemaker Creeks Naturalization Class EA. The Letter of Acknowledgement from MECP outlined the provincial policy framework for the proposed naturalization Project and also highlighted requirements for consultation. MECP also provided a Guide to Preliminary Screening for Species at Risk.

MCM acknowledged receipt of the Notice of EA and PIC. MCM provided a letter outlining requirements for determining the proposed naturalization Project's potential impact on potential cultural heritage resources. Mainly this related to the conservation of Ontario's cultural heritage including: archaeological resources, including land and marine; built heritage resources, including bridges and monuments; and cultural heritage landscapes.

7.2.1 Consultation Meetings

Following the publication of the Notice of Study Commencement, a site walk meeting was held with DFO and Grand River Conservation Authority (GRCA) on My 29th 2023. GRCA provided input on recommendations of the EA based on GRCA requirements for the floodway. Comments can be found in Appendix I.4.

7.3 Indigenous Consultation

7.3.1 Pre-consultation

The following Indigenous Nations and organizations were invited by email and phone to pre-consultation meetings:

- Haudenosaunee Confederacy Chiefs Council
- Huron-Wendat Nation
- Mississaugas of the Credit First Nation
- Six Nations of the Grand River

The following pre-consultation meetings were held:

- Mississaugas of the Credit First Nation
  - 2020-08-26
  - 2022-09-12
  - 2023-03-28
- Six Nations of the Grand River
  - 2020-08-19
  - 2022-09-20
  - 2022-12-08
  - 2023-02-28

7.3.2 Notice of Request to Consult

The following Indigenous Nations and organizations were provided with a Notice of Request to Consult at the time of study commencement:

- Haudenosaunee Confederacy Chiefs Council
- Huron-Wendat Nation
- Métis Nation of Ontario
- Mississaugas of the Credit First Nation
- Six Nations of the Grand River

The Indigenous Consultation Log can be found in Appendix I.5. Throughout Phases 1-4, Notices and Letters of Request to Consult were sent by email.

Information on integration of considerations from Indigenous-led priorities is discussed in Section 3. The Log includes comments and responses.

8 Timing of Implementation

8.1 Project Schedule

As the Project proceeds into detailed design and Construction, Table 5 presents the anticipated timeline associated with the list of additional studies and proposed construction. For more details refer to the consultation reports in Appendix I.

Table 5: Schneider and Shoemaker Creeks Naturalization Project timeline.

Project Component	Timeline: Phase 1 – Winter 2024/2025 Phase 2 - TBD
Field work • Topographic survey • Subsurface utility exploration • Geotechnical/hydrogeological/soil assessments	Throughout 2024
Detailed design and Permitting • Servicing and Stormwater Management Report • Geotechnical and Soils Report • Hydrogeological Report • Noise and Vibration Report • Preliminary Design Report • Cultural Heritage Report • Engineering Drawings • Submit permit application	Throughout 2024
Construction • Prepare tender documentation • Review tender submissions and select contractor • Initiate Construction • Expected construction completion	 Winter 2024 / 2025 Spring 2025 Summer 2025 End of 2026

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