

Town of Oakville

Project File Report

Schedule 'B' Municipal Class Environmental Assessment for McCraney Creek Bridge Replacement on Lakeshore Road West

NOVEMBER 04, 2022





Project File Report

Schedule 'B' Municipal Class Environmental Assessment for McCraney Creek Bridge Replacement on Lakeshore Road West

Town of Oakville

PROJECT NO.: TPB166147
DATE: NOVEMBER 04, 2022

WSP E&I LIMITED
3450 HARVESTER ROAD, SUITE 100
BURLINGTON, ONTARIO

WSP.COM

November 04, 2022

Town of Oakville

Attention: Syed Rizvi, M.Sc., P. Eng., Transportation Engineer

Dear Mr. Rizvi,

Subject: Project File Report for McCraney Creek Bridge Replacement – Schedule ‘B’ Municipal Class Environmental Assessment (Phases 1 and 2)

Please accept this Project File Report for the McCraney Creek Bridge Replacement project. This report has been developed in accordance with the Municipal Class Environmental Assessment process for Schedule ‘B’ projects (Phases 1 and 2), and documents the following: project background, existing conditions in the vicinity of the subject bridge, the planning and consultation process to select the preferred solution for bridge replacement, anticipated environmental effects of the project, proposed mitigation measures and future works and monitoring requirements.

If you have any questions, please contact the undersigned.

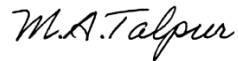
Yours sincerely,



David Sinke, B.Eng. Mgt., P.Eng.
Principal, Transportation Engineering
WSP E&I Limited
David.sinke@wsp.com

SIGNATURES

PREPARED BY

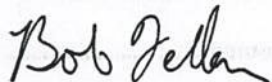


Mir Ahsan Talpur, M.Env.Sc., EP
Environmental Planner
Mir.Talpur@WSP.com

APPROVED¹ BY



David Sinke, B.Eng. Mgt., P.Eng.
Principal, Transportation Engineering
David.sinke@wsp.com



Bob Felker, B.E.S., M.C.I.P., R.P.P
Associate Environmental Planner
Bob.felker@wsp.com

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Appendix E: Study Contact List

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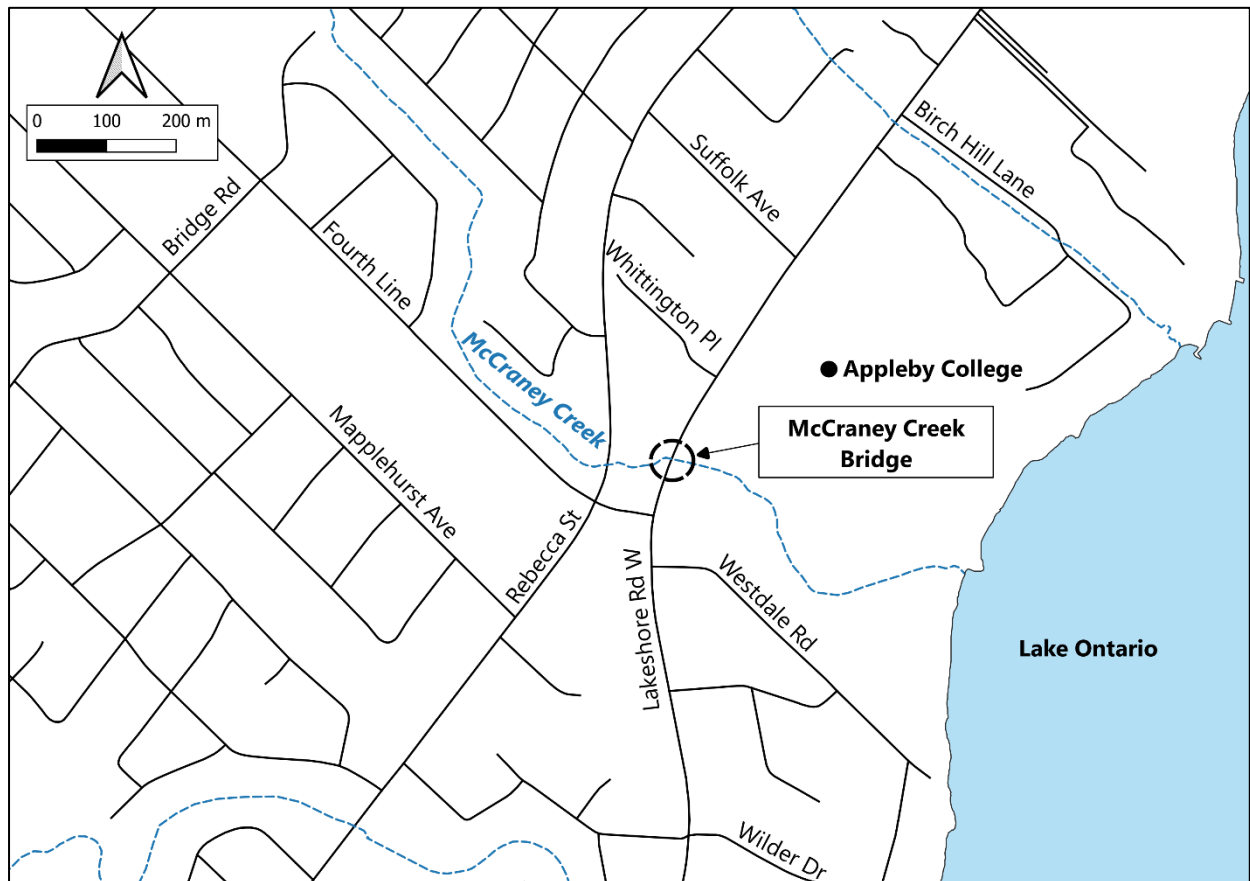
Appendix I: Agency Consultation

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Executive Summary

Introduction

The Town of Oakville has completed a Municipal Class Environmental Assessment (Class EA) for the replacement of McCraney Creek Bridge located on Lakeshore Road West immediately east of Fourth Line over McCraney Creek. The location of McCraney Creek Bridge is shown in the figure below.



The McCraney Creek Bridge crossing is an arch culvert built in 1940 and was subsequently extended with a box culvert section. In 2017, the north-west wingwall of the bridge collapsed. Emergency repair works were undertaken to temporarily stabilize the road embankment slope, however, those works only temporarily addressed the problem. A long-term solution is required.

Further erosion issues have been identified since these temporary repair works.

In addition, the structure conveys the 100-year event but is overtopped by the Regional storm by 1.40 m +/- (Wood, 2021).

Due to the condition and flooding potential of this crossing, the McCraney Creek Bridge requires replacement.

This Class EA Study has built on and utilized information from previously completed reports that were developed as part of the Lakeshore Road West Improvements project, which was initiated in November 2016, as a Schedule 'C' Municipal Class EA

Study. On July 6, 2021, Town of Oakville Council directed staff to terminate the Class EA for Lakeshore Road West improvements and proceed with a separate Class EA for the McCraney Creek Bridge Replacement using information, analysis and design from the Lakeshore Road West Improvements study.

Policy Context

The following policy documents were reviewed to determine their applicability to this project:

- Provincial Policy Statement (2020)
 - Growth Plan (2019, amended in 2020)
 - Halton Region Official Plan (2018)
 - Town of Oakville Official Plan (2021)
 - Conservation Halton Policies and Guidelines for the Administration of Ontario Regulation 162/06 and Land Use Planning Policy Document (2006, amended 2020)
-

Existing Conditions

The Municipal Class EA document requires preparation of a physical description of the area where the project is to occur, and a general inventory of the natural, social and economic environments which are to be considered when reviewing the effects of a project in that area. Accordingly, a detailed description of existing conditions related to the following is provided in this report:

- Transportation
 - Technical and Engineering
 - Social Environment
 - Cultural Environment
 - Natural Environment
-

Class EA Phase 1: Problem or Opportunity

The first phase in the Municipal Class EA process is the identification of problem and opportunity statement. The following problem areas were identified for this Class EA Study:

Problem Area 1 – Structural Deficiency: The northwest wingwall of McCraney Creek Bridge collapsed in 2017. Emergency repair works were completed to reinforce the bridge slope; however, those works only temporarily fixed the slope failure and a long-term solution is required.

Problem Area 2 – Erosion Hazard: The flows from McCraney Creek continue to direct the erosion potential, putting them at continued risk of failure. The Town of Oakville's Creek Inventory and Assessment Studies from [2010](#), 2015 and [2021](#) identified the need for channel realignment for this reach of McCraney Creek.

Problem Area 3 – Flooding Hazard: Modelling indicates that the existing McCraney Creek Bridge will be overtopped by the Regional Storm (Hurricane Hazel) by approximately 1.40 metres. This will impact the ability of emergency vehicles to safely use Lakeshore Road. [Flood Mitigation Opportunities Study for Fourteen Mile and McCraney Creek Systems](#) identified the need for McCraney Creek Bridge structure replacement to increase its conveyance capacity and to address the risk of flooding.

The Town of Oakville completed this environmental assessment to identify a solution to address structural deficiency, ongoing erosion and flooding risk at McCraney Creek Bridge.

Class EA Phase 2: Alternative Solutions

Phase 2 of the Class EA process requires that various reasonable solutions should be identified to address the problem and opportunity identified in Phase 1. The potential solutions should then be evaluated against criteria related to various factors (including natural environment, social environment, economic environment, cultural environment, and technical factors). Based on the evaluation, the preliminary preferred solution should be identified and presented to the public, Indigenous Nations, Government Agencies and key stakeholders/interest group for review and input.

In accordance with the requirements of Phase 2 of the Class EA process, the following alternative solutions were identified:

- **Alternative 1:** Do nothing (maintain existing structure)
- **Alternative 2:** Replacement of existing bridge with a new structure without re-alignment of McCraney Creek
- **Alternative 3:** Replacement of existing bridge with a new structure with re-alignment of McCraney Creek
- **Alternative 4:** Replacement of existing bridge with a new structure (with slightly adjusted ends) with re-alignment of McCraney Creek

To identify the impacts and advantages of each alternative solution, evaluation criteria were developed within each of the categories related to natural, social, cultural, and economic environments, and transportation and structural engineering considerations. These criteria were chosen based on their ability to identify potential positive and negative effects of each alternative and distinguish the advantages and disadvantages between them.

Preferred Solution: Based on the review of existing conditions, the assessment of alternative solutions, the Alternative 4: Replacement of Existing Bridge with a New Structure (with Slightly Adjusted Ends) with re-alignment of McCraney Creek was identified as the preferred solution.

Description of Preferred Solution

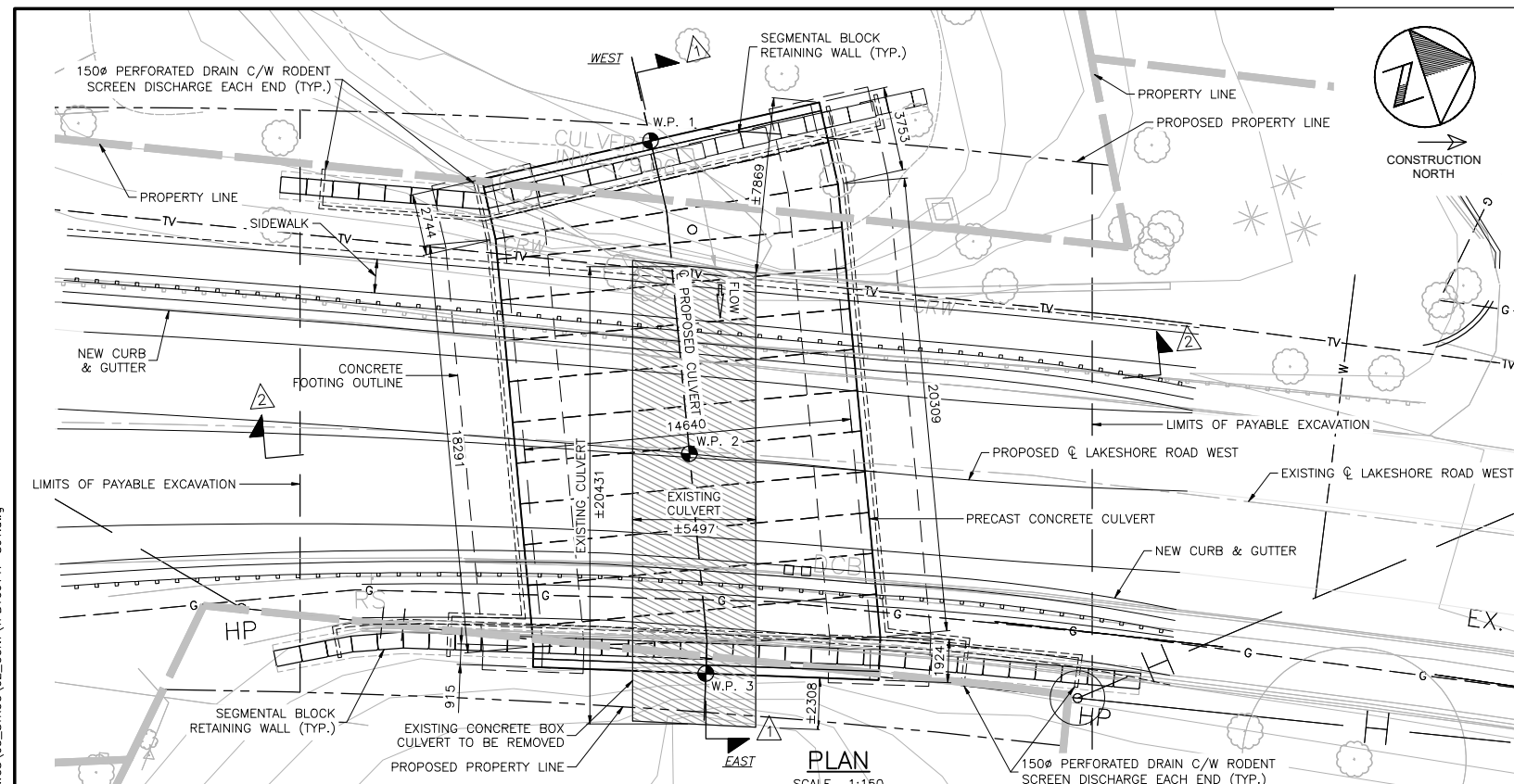
Proposed Bridge Design: Consistent with the existing structure, the proposed bridge will be a single span culvert. The new bridge structure will have a span of

14.65 metres. It will convey flows associated with the Regional Storm (Hurricane Hazel) and the proposed bridge orientation will eliminate contact of creek flows with the slope and bridge embankments and help address continued erosion. Cross-sections of the proposed structure are provided in the general arrangement drawing provided on the following page.

Proposed Bridge Deck: The proposed bridge deck will maintain existing vehicular traffic lanes. The proposed bridge deck will provide space for a new 1.5 m wide sidewalk along the north side, and the existing sidewalk on the south side will be maintained. A pedestrian handrail is being proposed on the south side of the bridge. The design of bridge deck is shown in the general arrangement drawing provided on the following page.

Proposed Channel Design: The channel realignment has been designed based on geomorphic principles. Key features and benefits of proposed channel design include:

- Optimal channel orientation to align with proposed bridge structure to eliminate contact with slope and to address continued erosion.
- Pool to riffle pattern to provide consistent bedform sequence in the creek.
- Vegetated stone revetments along outside pool banks to protect vegetation roots from the potential impact of high creek flows.
- Removal of the bedrock barrier in the crossing to improve fish passage. Stone treatments to promote small wildlife movement.

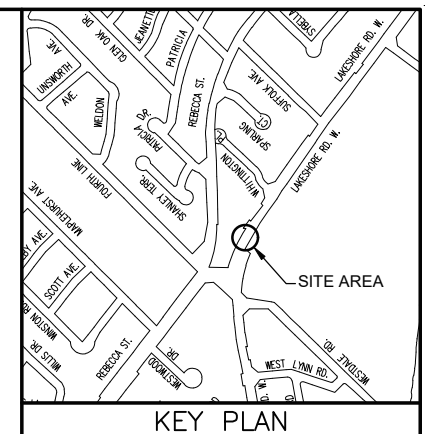


COORDINATE TABLE

CONTROL	NORTHING	EASTING	ELEVATION*	CL ROAD OFFSET	STATION
W.P. 1	4808919.523	606085.073	82.825	12.302 (WEST)	4+788.885
W.P. 2	4808917.182	606096.999	82.825	0.00	4+791.263
W.P. 3	4808914.463	606108.075	82.825	11.280 (EAST)	4+792.942

NOTES:

- DESIGN SHALL CONFORM TO THE CANADIAN HIGHWAY BRIDGE DESIGN CODE, CAN/CSA-S6-14, DESIGN LIVE LOADING IS CL-625-ONT.
- THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS OF THE EXISTING AND PROPOSED WORK AND ALL DETAILS ON SITE AND REPORT DISCREPANCIES TO THE CONTRACT ADMINISTRATOR BEFORE PROCEEDING WITH THE WORK.
- ALL SERVICES ARE TO BE ACCURATELY LOCATED PRIOR TO CONSTRUCTION AND ADEQUATE PROTECTION PROVIDED AT ALL TIMES. ANY INTERFERENCE OF EXISTING SERVICES OR UTILITIES WITH PROPOSED STRUCTURE OR CONSTRUCTION OPERATIONS IS TO BE REPORTED TO THE ENGINEER PRIOR TO THE COMMENCING OF CONSTRUCTION.
- THE SPECIFIED COMPRESSIVE CONCRETE STRENGTH (AT 28 DAYS) SHALL BE:
FOR PRECAST UNITS: 40MPa CLASS C-1
FOR CAST-IN-PLACE: 30MPa CLASS F-1
- CLEAR COVER TO REINFORCING STEEL IN CONCRETE SHALL BE:
PRECAST CONCRETE
- BOTTOM OF CULVERT TOP SLAB 40mm ±10mm
- REMAINDER 50mm ±10mm
CAST-IN-PLACE CONCRETE
- 100mm ±25mm - CONCRETE AGAINST OR PERMANENTLY EXPOSED TO EARTH
- 70mm ±20mm - REMAINDER, UNLESS OTHERWISE NOTED.
- DETAIL, BEND, PLACE AND SUPPORT REINFORCING STEEL TO CONFORM TO THE REINFORCING STEEL MANUAL OF STANDARD PRACTICE AND CSA A23.1-09, UNLESS NOTED OTHERWISE.
- EXPOSED EDGES TO BE CHAMFERED 20x20 EXCEPT AS NOTED.
- REINFORCING SHALL BE DEFORMED WELDED WIRE FABRIC TO ASTM A497M (Fy=500 MPa) AND DEFORMED BARS CONFORMING TO CSA STANDARD G30.18-09m, GRADE 400W.
- CONTRACTOR TO DESIGN, SUPPLY AND INSTALL PRECAST REINFORCED CONCRETE UNITS FOR THE SIZE, DEPTH AND LOADS INDICATED ON THE DRAWINGS, DETAILS FOR HEADER WALLS TO BE AS SHOWN.
- PROVIDE WATER TIGHT JOINTS BETWEEN ALL PRECAST CONCRETE SEGMENTS AS PER MANUFACTURER SPECIFICATIONS.
- DIMENSIONS AND ELEVATION SHOWN TO EXISTING CONDITIONS ARE TO BE FIELD VERIFIED.
- THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER STRUCTURAL DETAIL DRAWINGS.
- SOIL BEARING CAPACITY:
SERVICEABILITY LIMIT STATE: 150 KPa (UNFACTORED)
ULTIMATE LIMIT STATE: 200 KPa (FACTORED)
THE GEOTECHNICAL ENGINEER TO VERIFY THIS REQUIREMENT PRIOR TO PLACING BOX CULVERT AND CONCRETE.
- DO NOT SCALE THESE DRAWINGS.

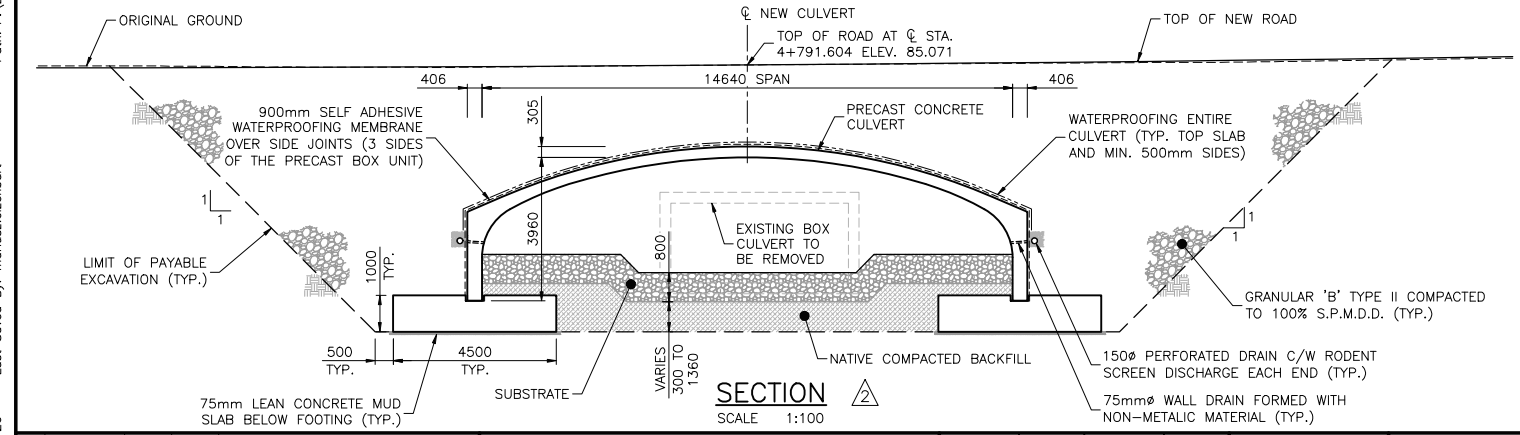
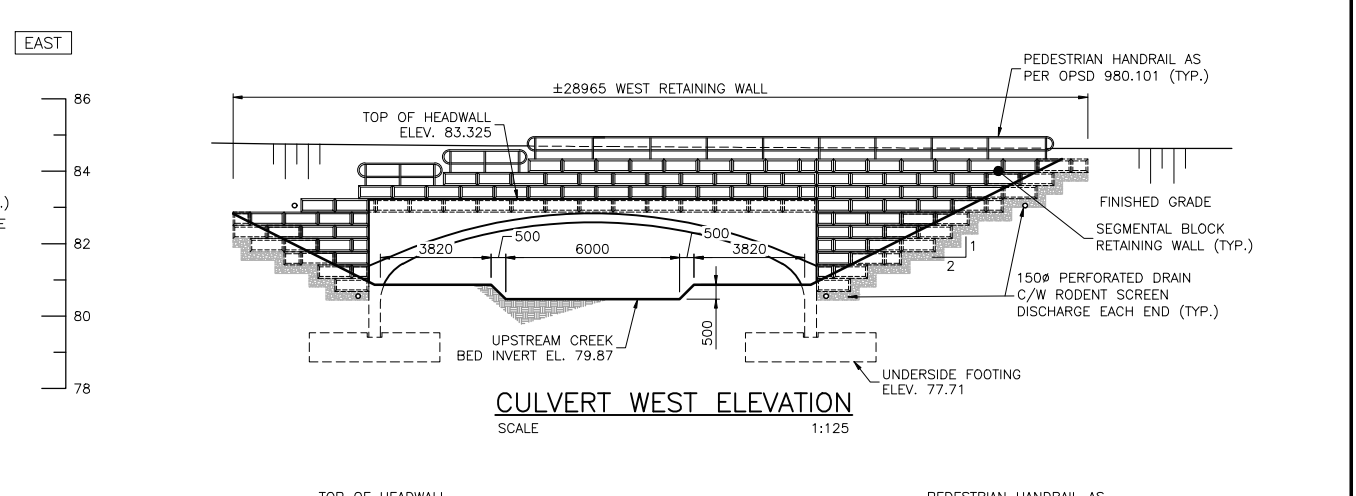
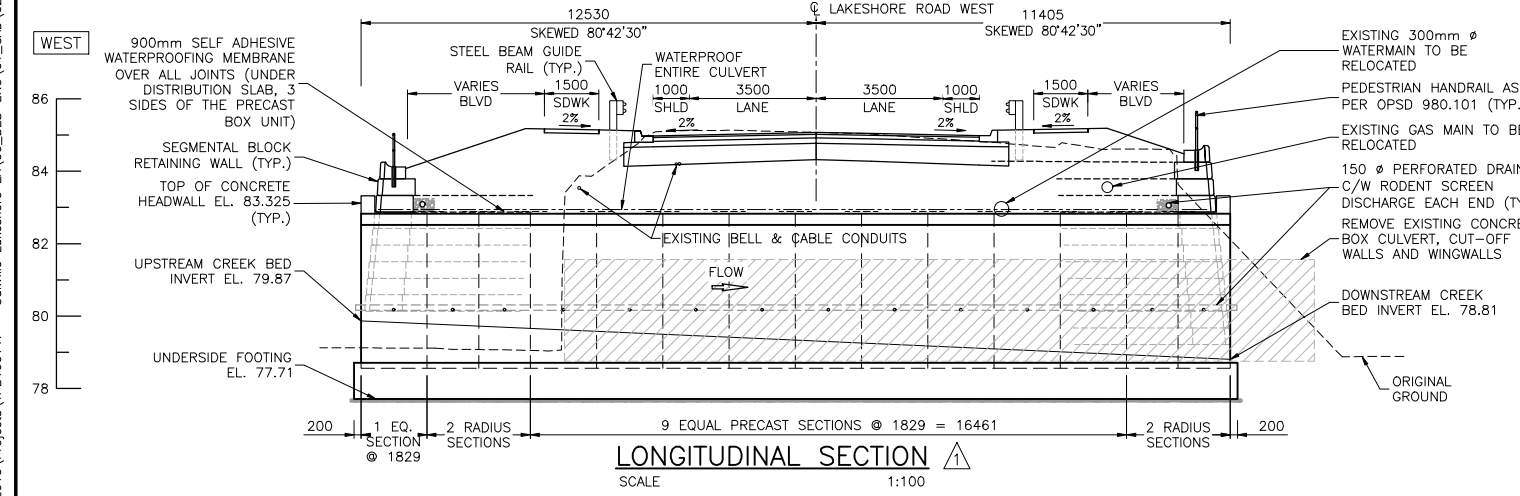


CONSTRUCTION NOTES:

- BACKFILL SHALL BE PLACED SIMULTANEOUSLY BEHIND BOTH SIDES OF CULVERT KEEPING THE HEIGHT OF THE BACKFILL APPROXIMATELY THE SAME. AT NO TIME SHALL THE DIFFERENCE IN ELEVATION BE GREATER THAN 500mm.
- THE SUB-BASE SHALL BE FREE FROM FROZEN MATERIAL AND SHALL BE COMPACTED TO SPECIFICATIONS. FROZEN AND SOFTENED MATERIALS SHALL BE REMOVED AND REPLACED WITH SUITABLE COMPACTED MATERIALS. OBTAIN ACCEPTANCE REGARDING SUB-BASE MATERIAL AND COMPACTON FROM THE OWNER'S REPRESENTATIVE PRIOR TO PLACING CONCRETE.

APPLICABLE STANDARDS:

OPSD 3190.100WALLS RETAINING AND ABUTMENT WALL DRAIN



No	Date	Drawn	Appr'd	Revisions

APPROVALS	
Design	Checked
Drawn	Checked
Scale	AS SHOWN
Date	MARCH 2022

**PRELIMINARY
NOT TO BE USED
FOR CONSTRUCTION**

**LAKESHORE ROAD WEST
IMPROVEMENTS - McCRANEY
CREEK CULVERT REPLACEMENT
TOWN OF OAKVILLE**

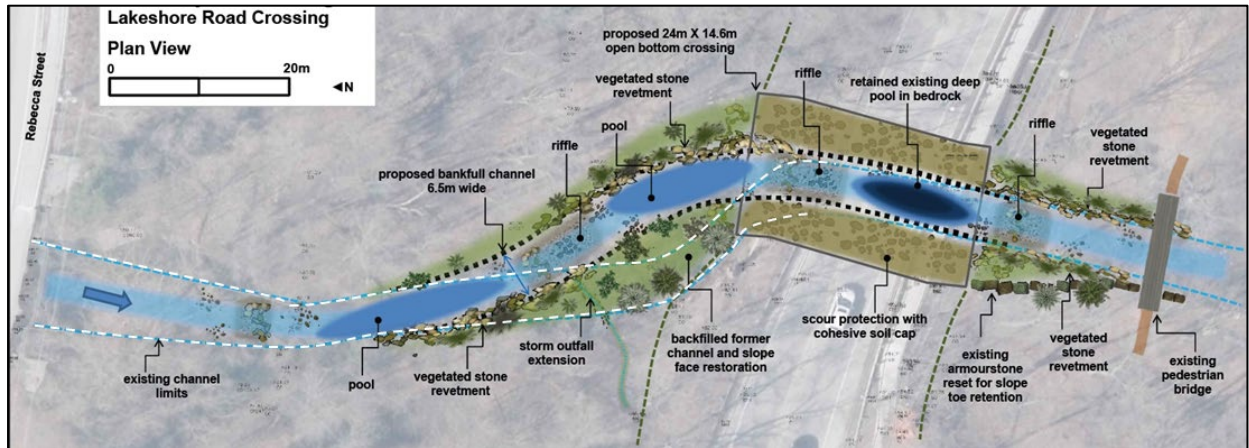
**Figure 6-1
GENERAL ARRANGEMENT**

wood.

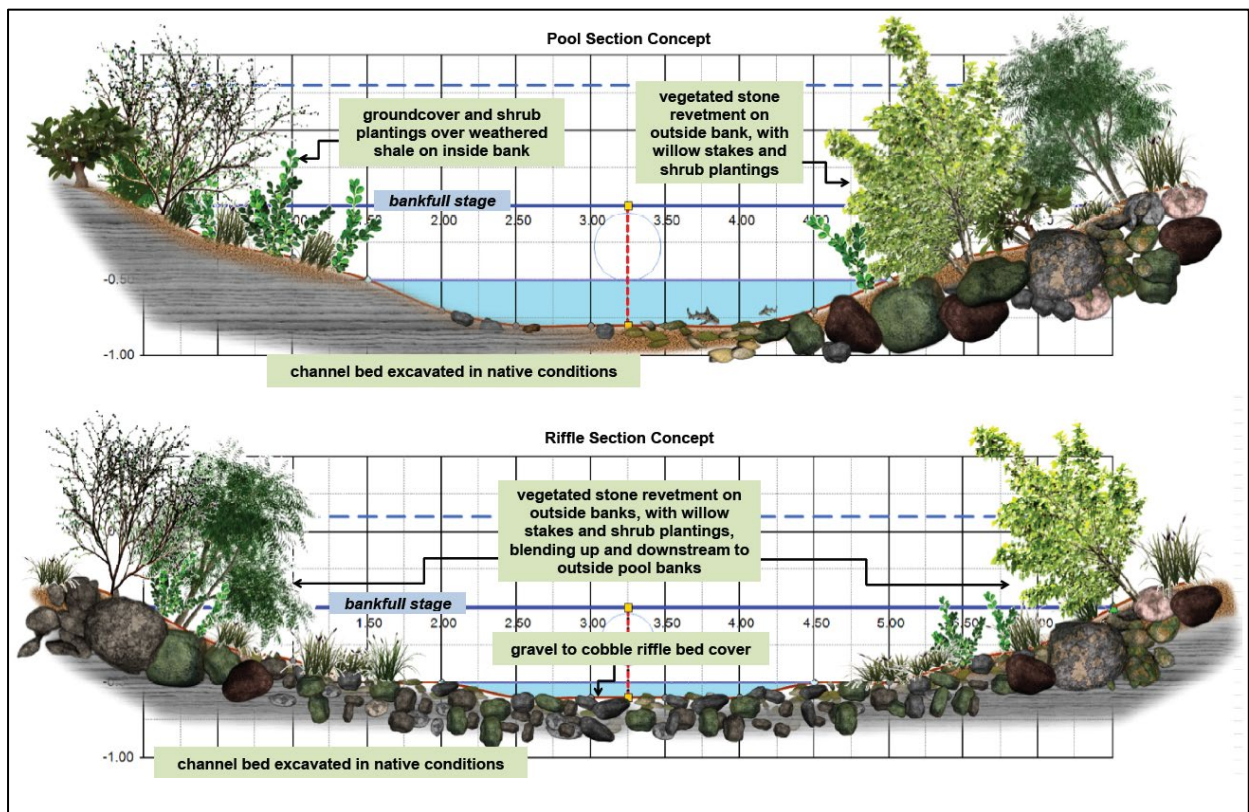
Contract No. _____
Consultant File No. **TPB166147**

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 Plotted By: morius.eizenbart
 Last Saved By: morius.eizenbart
 Plotted: 2022-06-26
 Last Saved: 2022-06-26

McCraney Creek Preliminary Design for Channel Realignment



Cross-Sections for the Proposed McCraney Creek Channel



Preliminary Cost Estimate of Proposed Works:

A breakdown of preliminary cost estimate for bridge replacement and creek realignment works is provided below. It is important to note that this is a preliminary cost estimate and is subject to review and refinement during detailed design phase. The cost estimate is exclusive of the HST.

Bridge Replacement: **\$3,500,000**

Creek Realignment: **\$500,000***

***Note:**

The cost estimate for creek realignment is taken from the Creek Inventory and Assessment Study (2016), converted to 2022 Canadian dollars and rounded up. The cost for creek realignment works should be reviewed and confirmed during the detailed design phase.

Potential Environmental Effects, Mitigation Measures, Future Commitments and Monitoring

Based on the existing conditions inventory within the Study Area and the proposed project works, potential effects were identified, and mitigation measures were proposed to avoid or minimize impacts. In addition, commitments for additional work and permits were identified as well as monitoring during construction. These details are discussed within the main report.

Consultation

Consultation is a key component of the Municipal Class EA process. As part of the consultation process for this Class EA Study, a number of consultation tools were used to identify, notify, inform and provide a platform to the public, government agencies, stakeholders and Indigenous Nations to provide feedback during study. These included:

- **Project Webpage:** A project webpage was developed for this project on the Town of Oakville’s website. Information related to the Class EA study was posted on this webpage, including study notices, Public Information Centre materials, study reports and links to other relevant studies. The project webpage can be accessed by clicking on this link: <https://www.oakville.ca/residents/mccraney-creek-bridge-replacement-ea.html>.
- **Study Contact List:** A Study Contact List was developed at the commencement of this Class EA study. This list included contacts from the federal and provincial government agencies, Conservation Halton, Halton Region, Town of Oakville, Indigenous Nations, utility companies, and key stakeholders (e.g., Coronation Residents Parks Association, OakvilleGreen Conservation Association, etc.). The

Contact List was updated during the study to add and/or remove comments based on the requests received. In addition to these groups, a Consultation Area was identified. Notices were hand delivered to all the properties within the Consultation Area.

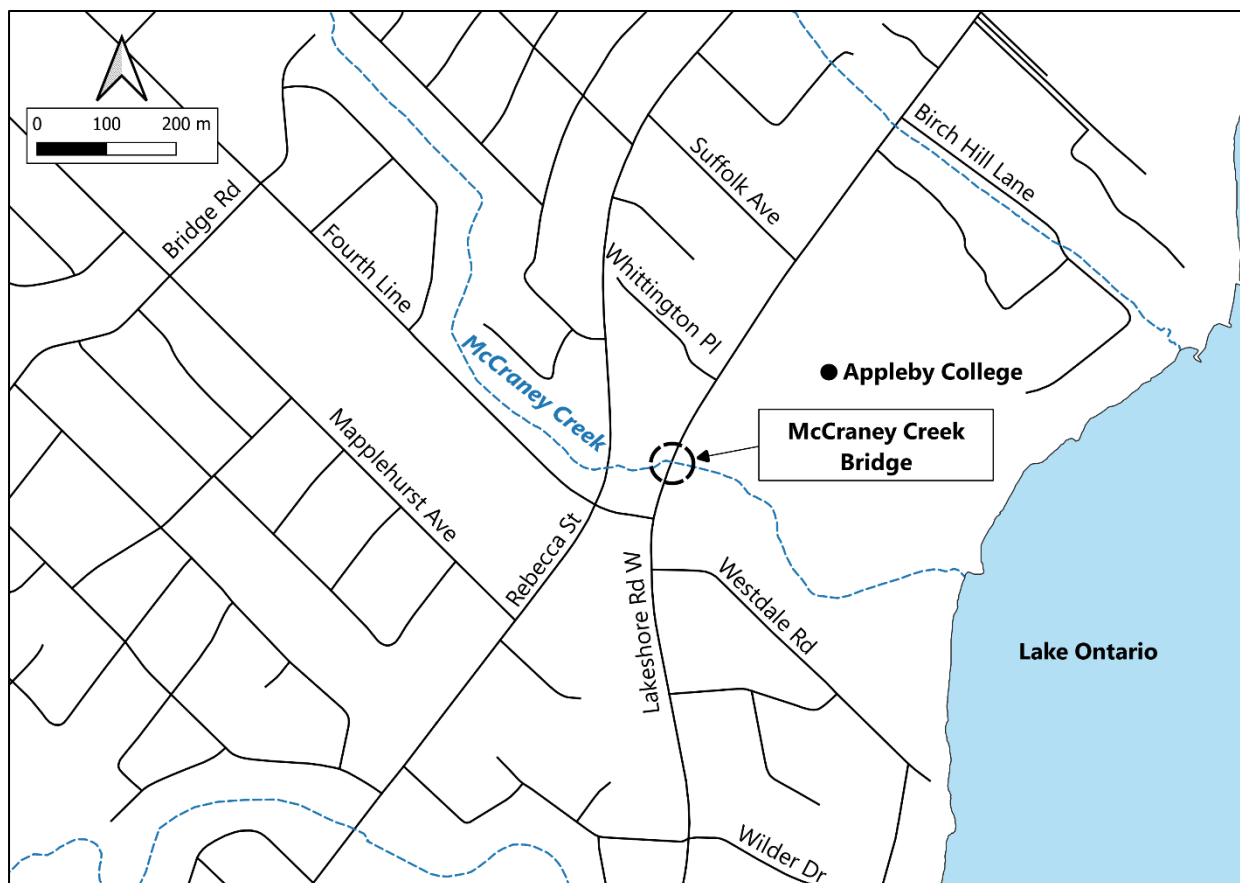
- **Study Notices:** Study notices were posted in the local newspaper (Oakville Beaver), and Town of Oakville’s website, and distributed to the contacts on the Study Contact List.
- **Indigenous Consultation:** The following Indigenous Nations were contacted during this Class EA Study: Mississaugas of the Credit First Nation, Six Nations of the Grand River, and Haudenosaunee Development Institute. Outreach included email circulation of Study Notices, Project Summary and study reports to the Indigenous Nations. Meeting were also held with Six Nations of the Grand River and Haudenosaunee Development Institute.
- **Agency Consultation:** Meeting with Conservation Halton, sharing of draft reports with government agencies, and responses to comments received.
- **Public Consultation:** One online Public Information Centre. Responses to comments received from the public and stakeholder groups.

1 Introduction

1.1 Study Introduction

The Town of Oakville has completed a Municipal Class Environmental Assessment (Class EA) for the replacement of McCraney Creek Bridge (the Project) located on Lakeshore Road West immediately east of Fourth Line over McCraney Creek. Figure 1-1 shows the location of McCraney Creek Bridge within the Town of Oakville.

Figure 1-1: Location of McCraney Creek Bridge



1.2 Study Background

The McCraney Creek Bridge crossing is an arch culvert built in 1940 and was subsequently extended with a box culvert section (Figure 1-2 and Figure 1-3).

In 2017, the north-west wingwall of the bridge collapsed. Emergency repair works were undertaken to temporarily stabilize the road embankment slope, however, those works only temporarily addressed the problem. A long-term solution is required.

Figure 1-2: Photograph showing arch structure of McCraney Creek Bridge



Figure 1-3: Photograph showing box culvert extension of McCraney Creek Bridge



Further erosion issues have been identified since these temporary repair works.

In addition, the structure conveys the 100-year event but is overtopped by the Regional storm by 1.40 m +/- (Wood, 2021).

Due to the condition and flooding potential of this crossing, the McCraney Creek Bridge requires replacement.

This Class EA Study has built on and utilized information from previously completed reports that were developed as part of the Lakeshore Road West Improvements project, which was initiated in November 2016, as a Schedule 'C' Municipal Class EA Study. On July 6, 2021, Town of Oakville Council directed staff to terminate the Class EA for Lakeshore Road West improvements and proceed with a separate Class EA for the McCraney Creek Bridge Replacement using information, analysis and design from the Lakeshore Road West Improvements study.

The plan for McCraney Creek Bridge Replacement, including alternatives considered and evaluated, were previously shared with the public, government agencies, Indigenous Nations, and key stakeholders as part of the consultation process completed for Lakeshore Road West Improvements project. The intent of this current Class EA Study is to utilize the previously completed work to fulfil the requirements of the Municipal Class EA process for the McCraney Creek Bridge Replacement.

1.3 Study Process

This environmental assessment is being carried out in accordance with the requirements of a Schedule 'B' project as outlined in the Municipal Class Environmental Assessment (Class EA) process document (Municipal Engineers Association, October 2000, as amended in 2007, 2011 & 2015). The Municipal Class EA process is an approved process under the Ontario Environmental Assessment Act (Government of Ontario, 1990).

The Ontario Environmental Assessment Act (R.S.O. 1990, c. E.18; EA Act) (Ontario, 1990)) was put into place to provide for the protection, conservation and wise management of the environment within the province. The EA Act applies to all projects being undertaken by provincial, municipal or other public bodies within the province (unless explicitly exempted). It defines the environmental assessment works that must be completed prior to commencement of any undertaking, as well as the proponent's obligations to consult with all affected and/or interested parties. Under the EA Act, projects are classified as exempted, subject to an approved Class EA process, or subject to a full Individual Environmental Assessment.

The Class EA process is a mechanism by which planning, and approval of municipal infrastructure is provided in an efficient, timely, economical and environmentally responsible manner. It represents a consistent, streamlined and easily understood process for planning and implementing municipal infrastructure projects.

The Municipal Class EA process is an approved process under the EA Act. All municipalities in Ontario are required to follow this approved process for the infrastructure planning projects. This project is classified as being subject to the Class EA process. It was carried out according to the requirements outlined in the Municipal Engineers Association document titled Municipal Class Environmental

Assessment (Municipal Engineers Association, October 2000, as amended in 2007, 2011 & 2015).

The Class EA process classifies projects according to their level of complexity and potential environmental impacts. These are termed “Schedules” and are summarized below.

Schedules A and A+ includes projects that involve minor modifications to existing facilities. Environmental effects of these projects are generally small. These projects are exempted from the requirements of the Environmental Assessment Act (Ontario, 1990).

Schedule B includes projects that involve improvements and minor expansion to existing facilities. There is a potential for some adverse environmental impacts and, therefore, the proponent is required to proceed through a screening process, including consultation with those affected. Schedule B projects are required to proceed through Phases 1 and 2 of the Class EA process. Following completion of Phases 1 and 2, the projects undergo Phase 5, where detailed design, construction and monitoring takes place.

Schedule C includes projects that involve construction of new facilities and major expansion of existing facilities. These projects proceed through the environmental assessment planning process outlined in the Class EA document. These projects are required to fulfil the requirements of all five phases of the Class EA process.

This study addressed the requirements of the following two phases of the Municipal Class EA process for this project:

Class EA Phase 1: Problem or Opportunity

- Develop Problem and Opportunity Statement
- Discretionary Public Consultation

Class EA Phase 2: Alternative Solutions

- Inventory natural, social, economic and cultural environments
- Identify Alternative Solutions
- Identify impact of alternative solutions on the environment and mitigating measures
- Evaluate alternative solutions to identify preferred solution
- Consult with the public, Indigenous Nations, government agencies and key stakeholders regarding problem or opportunity and preferred solution
- Select preferred solution
- Prepare Project File Report
- Issue Notice of Completion and Project File Report for a minimum of 30-day review

Phase 5 of the Schedule B Class EA Process is focused on implementation, and therefore is not addressed within this report. However, a summary of the phase is included below which will guide next steps. A further discussion on next steps is outlined in section 10 of this report.

Class EA Phase 5: Implementation

- Complete contract drawings and documents
 - Proceed to construction and operation
 - Monitor construction for adherence to environmental provisions and commitments
 - Monitor the operation of the completed facilities
-

1.4 Report Structure

This report is divided into following sections:

Section 1.0 provides introduction to the study and discusses the study process.

Section 2.0 discusses the various government policies that are applicable to this project.

Section 3.0 provides a description of the environment/existing conditions within the Study Area.

Section 4.0 outlines the problem and opportunity statement (Class EA Phase 1).

Section 5.0 discusses the alternative solutions that were identified and evaluated to identify a preferred solution to address the problem and opportunity (Class EA Phase 2).

Section 6.0 provides a description of the preferred solution, including construction traffic management, and a preliminary cost estimate of the proposed works.

Section 7.0 identifies the project's potential effects and proposed mitigation measures.

Section 8.0 outlines the commitments for future work, including required additional investigations and permits/approvals and the monitoring to be conducted prior, during and after the construction.

Section 9.0 provides details of the consultation program that was executed for this study, which involved consultation with the Indigenous Nations, public, government agencies, and key stakeholders.

Section 10.0 outlines next steps and Section 16 Order Request process.

Section 11.0 lists all the documents cited throughout the report.

1.5 Contributing Reports and Information Sources

As noted previously, this Class EA Study was built on and utilized information from previously completed reports that were developed as part of the Lakeshore Road West Improvements project. In addition, various other information sources were reviewed to develop this report, to supplement information previously gathered. The following various information sources and relevant sections of the following reports were reviewed and incorporated in this report:

- Natural heritage data received from Conservation Halton in 2022 (this included vegetation, fish occurrence, wildlife records)

- Aquatic resource area line segment data – Ministry of Natural Resources and Forestry – Geohub (2022)
- Source Protection Information Atlas – Ministry of the Environment, Conservation and Parks (2022)
- Flood Mitigation Opportunities Study for Fourteen Mile and McCraney Creek Systems (Ongoing)
- Lakeshore Road West Improvements - Stormwater Management Report (2021)
- Cultural Heritage Report for Lakeshore Road West Improvements (2020)
- Aquatic and Bat Habitat Surveys for Proposed Channel Realignment of McCraney Creek North of Lakeshore Road to Rebecca Street (2018)
- Class Environmental Assessment Study and Preliminary Design - Lakeshore West Improvements - Aquatic Habitat Existing Conditions Report (2017)
- Class Environmental Assessment Study and Preliminary Design - Lakeshore West Improvements - Terrestrial Habitat Existing Conditions Report (2017)
- Stage 1 Archaeological Assessment for Lakeshore Road West Improvements (2017)
- Town of Oakville's Creek Inventory and Assessment Studies from [2010](#), 2015 and [2021](#)
- Conservation Halton's 2008 Urban Creeks and Supplemental Monitoring

2 Policy and Planning Context

2.1 Government of Ontario Policies

2.1.1 Provincial Policy Statement (2020)

The Provincial Policy Statement (PPS) (2020) provides policy direction for appropriate development while protecting resources of provincial interest, public health and safety, and the quality of the natural and built environment. The PPS supports improved land use planning and management, which contributes to a more effective and efficient land use planning system (Ministry of Municipal Affairs and Housing, 2020). Section 3 of the PPS requires that decisions affecting planning matters “shall be consistent with” policy statements under the Planning Act, 1990. The following infrastructure related policies of the PPS are relevant to this project:

1.6 Infrastructure and Public Service Facilities

1.6.1 Infrastructure and public service facilities shall be provided in an efficient manner that prepares for the impacts of a changing climate while accommodating projected needs

1.6.7.1 Transportation systems should be provided which are safe, energy efficient, facilitate the movement of people and goods, and are appropriate to address projected needs

2.1 Natural Heritage

2.1.1 Natural features and areas shall be protected for the long term

2.1.2 The diversity and connectivity of natural features in an area, and the long-term ecological function and biodiversity of natural heritage systems, should be maintained, restored or, where possible, improved, recognizing linkages between and among natural heritage features and areas, surface water features and ground water features

3.1 Natural Hazards

3.1.3 Planning authorities shall prepare for the impacts of a changing climate that may increase the risk associated with natural hazards.

2.6 Cultural Heritage and Archaeology

2.6.1: Significant built heritage resources and significant cultural heritage landscapes shall be conserved

Applicability: This project is consistent with the objectives of the PPS, 2020, as it proposes transportation infrastructure to promote safe movement of vehicles, pedestrians and cyclists. The Class EA considered flooding/stormwater, hydraulic capacity of the proposed structure and identified natural and cultural heritage and archaeological resources and addressed impacts on those resources and proposed mitigation measures, as appropriate.

2.1.2 Growth Plan (2019, amended 2020)

The *Growth Plan for Greater Golden Horseshoe (2020)* was prepared and approved under the *Places to Grow Act (2005)* and amended in 2020 to include more details regarding growth targets and population projections to the year 2041 for municipalities within the Greater Toronto and Hamilton Area. This plan supplements and builds upon the PPS in providing more specific land use planning policies relating to specific geographic areas in Ontario (Ministry of Municipal Affairs and Housing, 2020a).

The Growth Plan, 2019 (amended in 2020) contains specific policies and directions regarding transportation infrastructure, land use planning, urban form, housing, natural heritage and resource protection to be considered by municipalities in their planning activities. The Growth Plan provides direction on where growth can occur, the form of future development and future population and employment forecasts.

Section 3.2 - Policies for Infrastructure to Support Growth:

- Subsection 3.2.2.2 - The transportation system within the GGH [Greater Golden Horseshoe] will be planned and managed to:
 - b) offer a balance of transportation choices that reduces reliance upon the automobile and promotes transit and active transportation;
 - d) offer multimodal access to jobs, housing, schools, cultural, and recreational opportunities, and goods and services
- Subsection 3.2.2.3 - In the design, refurbishment, or reconstruction of the existing and planned street network, a complete streets approach will be adopted that ensures the needs and safety of all road users are considered and appropriately accommodated.”

In addition to above, Section 4.2 of the Growth Plan, 2019 (amended in 2020), provides policies for the protection of matters of provincial interest. Of these, policies related to the protection of Natural Heritage System, Cultural Heritage Resources and Climate Change are of relevance to this project.

Applicability: This project conforms with the objectives of the Growth Plan, 2019 (amended in 2020), as it proposes improvements to existing infrastructure to promote safe movement of vehicles, and pedestrians. The Class EA considered flooding/stormwater, hydraulic capacity of the proposed structure and identified natural and cultural heritage and archaeological resources and addressed impacts on those resources and proposed mitigation measures, as appropriate.

2.2 Municipal Policies

2.2.1 Halton Regional Official Plan (2018 Office Consolidation)

The Halton Regional Official Plan (The Regional Plan) is in place to solidify past decisions and to give clear direction as to how physical development should take

place in Halton Region to meet the current and future needs of its people and landscape. *The Regional Plan* clarifies and assists in the delivery of Regional services and responsibilities as set out in the Planning Act, the Municipal Act, and other pertinent Provincial legislation (Regional Municipality of Halton, 2021).

The Regional Plan notes the goal for transportation "...is to provide a safe, convenient, accessible, affordable and efficient transportation system in Halton, while minimizing the impact on the environment and promoting energy efficiency" (Regional Municipality of Halton, 2021). Furthermore, one of the transportation objectives for the Region is "to develop a balanced transportation system that promotes active transportation".

During consultation for this Class EA Study, Halton Region staff provided the following input related to applicable Regional Official Plan policies:

The subject lands are designated "Urban Area" in the Region's Official Plan (ROP). The 'Urban Area' designation under Section 76 permits uses in accordance with the Local Official Plan and Zoning By-law and all development shall be subject to the policies of this Plan. The Urban Area policies also requires development in the Greenfield Area to contribute to the achieving of development density targets established by the Plan, contribute to healthy communities, and provide a range and mix of uses to support vibrant neighbourhoods.

The subject lands are also located within lands that are designated Regional Natural Heritage System (RNHS) on Map 1 of the ROP. Additionally, the subject lands contain or are adjacent to:

- Features identified as Key Features, as illustrated on Map 1G of the ROP, including:
 - Potential Significant woodlands;
 - Potential Significant Valleylands;
 - Potential fish habitat;
 - Potential habitat of endangered or threatened species; and
 - Potential significant wildlife habitat.
- Areas identified as an enhancement area, linkage and buffer.
- Watercourse, floodplain and slope hazards Regulated by Conservation Halton (CH).

As per s.117.1 of the ROP, "essential transportation facilities" are permitted within the RNHS, subject to other policies of the ROP, and applicable Local Official Plan policies and Zoning By-laws. "Essential transportation facilities" are those that are deemed necessary to the public interest after all alternatives have been considered and, where applicable, as determined through the Environmental Assessment (EA) process.

In addition to the above natural heritage system policies, the following transportation related policies apply:

Section 173 (Part IV-Healthy Communities: Transportation) includes the following policies:

16. Implement, in conjunction with the Local Municipalities, a network of cycling facilities in Halton by requiring, in any re-construction or

widening of Arterial Roads, that consideration be given to the inclusion of such facilities within the Arterial right-of-way.

17. Require, in the environmental assessment of any Arterial Road project, to address whether there are other transportation alternatives and how the project would implement the transportation goals, objectives and policies of this Plan and to consider, where appropriate, alternative design standards to mitigate environmental and social impact.

Lakeshore Road is shown as an Arterial Road on Map 3 (Functional Plan of Major Transportation Facilities) of the ROP. As such it falls within the definition of “Arterial Road” under the Plan.

As such the EA should address 173(17) and further to 173(16) the Town is encouraged to design the new bridge to accommodate any planned active transportation facilities for Lakeshore Road.

Applicability: This project conforms with the statements within *The Regional Plan* as it proposes an improvement to existing infrastructure and promotion of safe usage for active transportation within the community. Section 4 of this report includes a description of the need for the proposed works and why they are necessary to the public interest (i.e., Problem and Opportunity Statement), and Section 5 includes a discussion of alternatives that were identified and evaluated to identify a preferred solution. Additionally, Section 3 of this report describes natural heritage components surrounding McCraney Bridge Creek and Section 7 provides a description of potential effects and proposed mitigation measures, as appropriate to preserve and enhance McCraney Creek for future generations. From a transportation policy perspective, the intent of current study is to address the McCraney Creek Bridge Replacement. The Town will undertake a separate undertaking to identify active transportation facilities for Lakeshore Road West in a larger corridor context.

2.2.2 Town of Oakville Official Plan (2021 Office Consolidation)

The *Livable Oakville Plan (2009 Town of Oakville Official Plan)* sets out Council's policies about how lands and growth should be managed until the year 2031 (Town of Oakville, 2018). At the time of writing this report, an Official Plan Review was ongoing to update documents in the *Livable Oakville Plan* and *North Oakville Secondary Plans* to manage growth until 2051 and be consistent or in conformity with the PPS, other provincial legislature, and the *Halton Regional Official Plan*. The following policies of this Official Plan are relevant to this project:

Section 8 – Transportation

- Subsection 8.1.1 – The general objectives for transportation are:
 - to provide a safe, efficient, and accessible transportation system with choices in mobility
 - foster the use and development of a sustainable transportation network

- to provide a network of on-and off-road pedestrian and cycling facilities that allow the use of active transportation modes as an alternative to the automobile

Section 10 – Sustainability

– Subsection 10.1.1 – The general objectives for sustainability are:

- *c) to preserve, enhance, and protect the Town’s environmental features, natural heritage systems, and waterfronts*

Applicability: This project is consistent with the policies in the Town of Oakville Official Plan as improvement of McCraney Creek Bridge would create a safe and accessible roadway for multi-modal transportation methods. The Class EA identified natural heritage features surrounding McCraney Creek Bridge and addressed impacts to those resources and proposed mitigation measures, as appropriate to ensure preservation and protection.

2.3 Conservation Halton Policies and Plans

2.3.1 Conservation Halton Policies and Guidelines for the Administration of Ontario Regulation 162/06 and Land Use Planning Policy Document (2006, amended 2020)

The Conservation Halton Policies and Guidelines for the Administration of Ontario Regulation 162/06 and Land Use Planning Policy Document (2020) provides principles, objectives, and policies for the administration of the Conservation Halton’s mandate under Ontario Regulation 162/06, as well as its delegated roles and responsibilities within the planning and approvals process (Conservation Halton, 2020). The primary mandates of Conservation Halton are “the prevention of loss of life and property due to flooding, the prevention of pollution, and the conservation and enhancement of natural resources”.

Section 2 of the Policy document outlines policies for alternation to watercourses; addressing stream erosion; placement or removal of large fill; public infrastructure; and flooding (Conservation Halton, 2020).

Applicability: This project is consistent with the policies set out by Conservation Halton as it is intended to provide a new bridge structure while addressing erosion issues and reducing flood risk upstream of the subject bridge.

3 Description of the Environment

The Municipal Class EA document requires preparation of a physical description of the area where the project is to occur, and a general inventory of the natural, social and economic environments which are to be considered when reviewing the effects of a project in that area. Accordingly, a detailed description of existing conditions related to these environments is provided in the sub-sections below:

3.1 Transportation

3.1.1 Road Network

McCraney Creek Bridge is located on Lakeshore Road West immediately east of Fourth Line (Figure 3-1). It crosses over McCraney Creek, which flows into Lake Ontario, south of Lakeshore Road West. The bridge accommodates two vehicular lanes (one eastbound and one westbound) (Figure 3-2). The Town of Oakville Official Plan classifies Lakeshore Road West as a minor arterial road (Figure 3-3) (Town of Oakville, 2018).

The nearest intersecting roads include Whittington Place and Suffolk Avenue to the east and Fourth Line to the west. Rebecca Street is located immediately to the north of Lakeshore Road in the vicinity of McCraney Creek Bridge.

Figure 3-1: Location of McCraney Creek Bridge

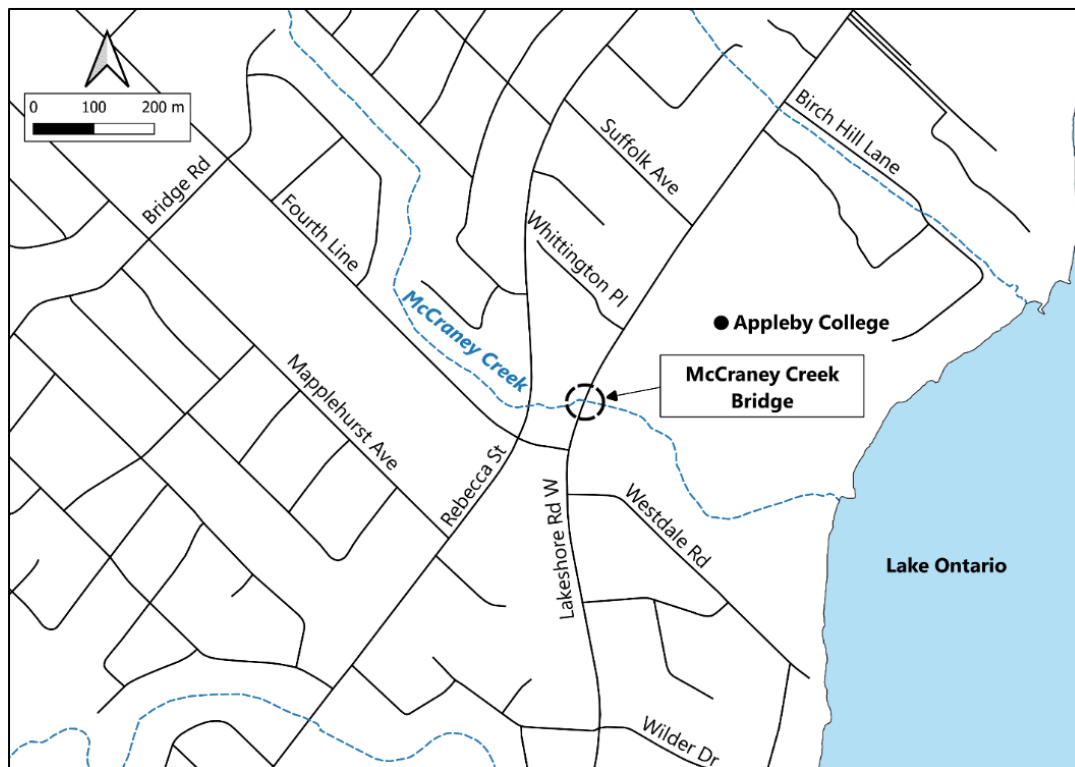


Figure 3-2: Existing Traffic Lanes and Sidewalk on Lakeshore Road at McCraney Creek Crossing (Looking Northbound)

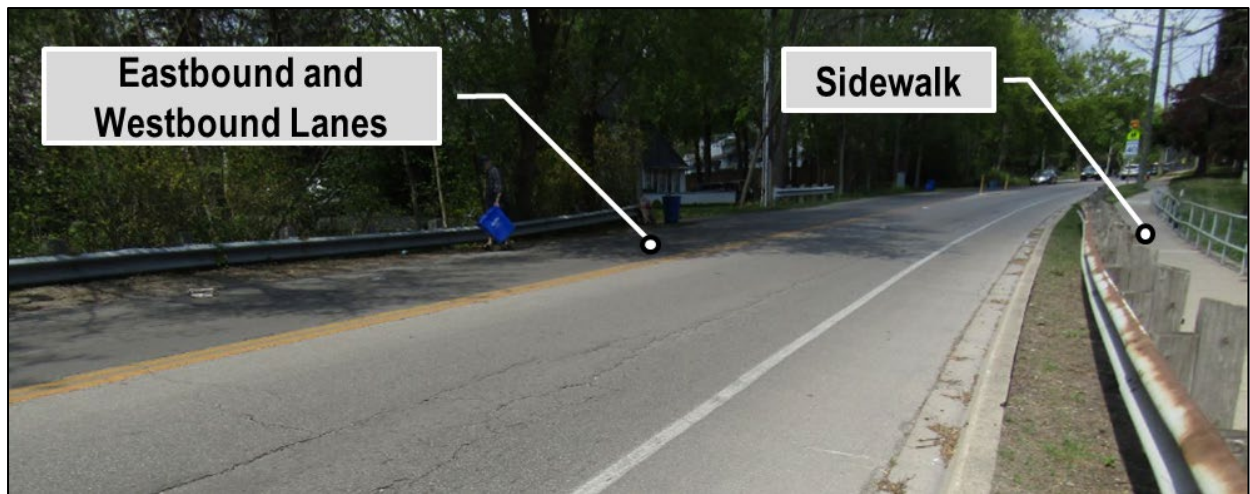
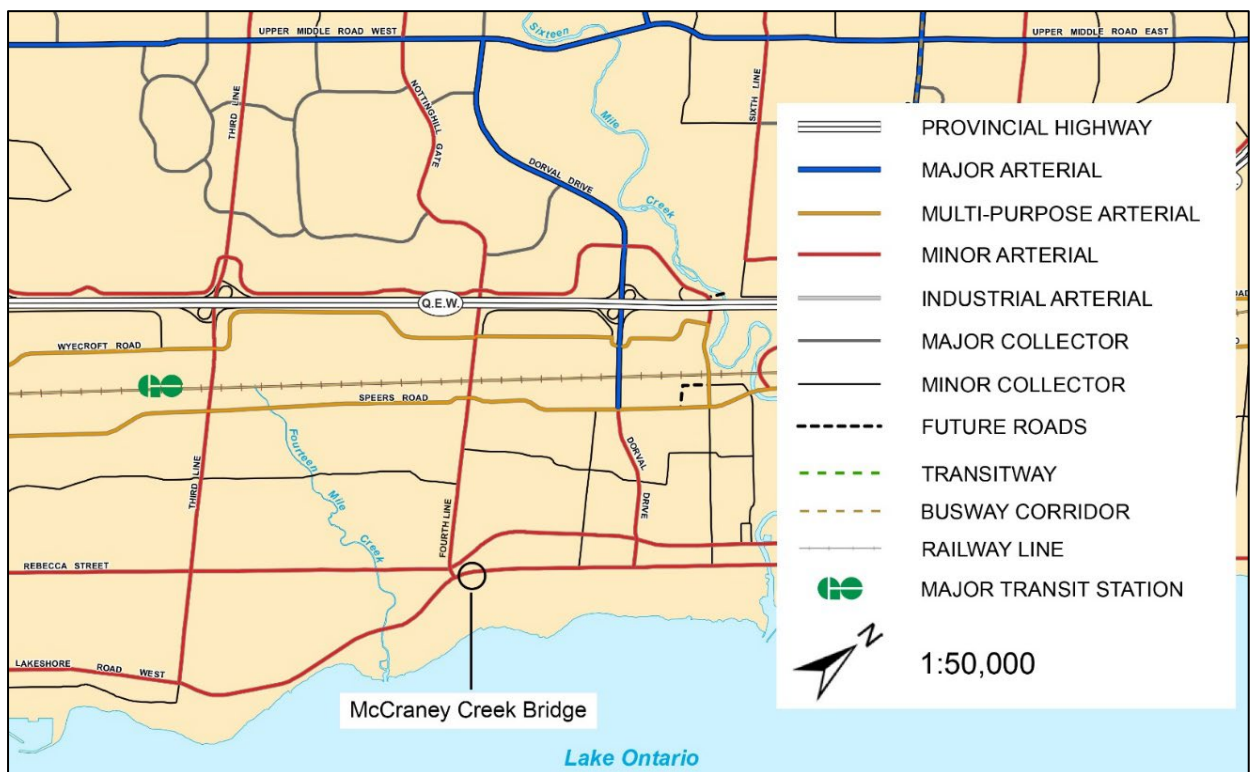


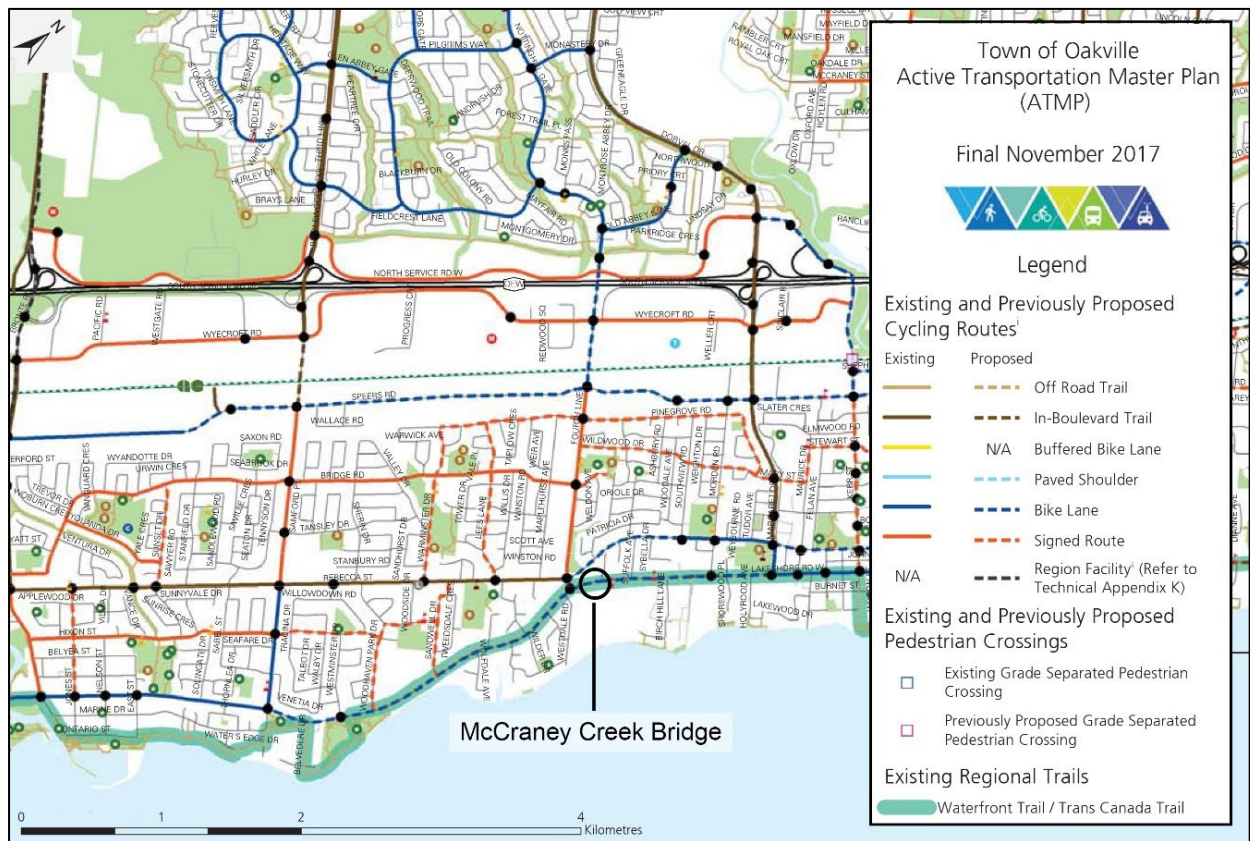
Figure 3-3: Excerpt from Schedule C - Transportation Plan in Livable Oakville (Road Classification)



3.1.2 Pedestrian and Cycling Network

McCraney Creek Bridge carries a sidewalk on the south side and a partial sidewalk on the north side that only extends to the west of the bridge (Figure 3-2). The Town of Oakville Active Transportation Master Plan (2017) identifies Lakeshore Road West as a Waterfront Trail part of the Trans Canada Trail (Figure 3-4) (Town of Oakville, 2017).

Figure 3-4: Excerpt from Town of Oakville Active Transportation Master Plan



3.2 Technical and Engineering

3.2.1 Bridge Structure

McCraney Creek Bridge is a concrete arch culvert structure built over 80 years ago (in 1940). It was subsequently extended with a box culvert section (Figure 1-2 and Figure 1-3). The width of the structure is 5.4 metres.

In 2017, the north-west supporting wall of the bridge collapsed as a result of severe erosion. Emergency repair works were completed to temporarily stabilize the slope. The collapsed wingwall along with armour stone (large pieces) were used as temporary support for the slope. These works temporarily addressed the problem, and a long-term solution is required. Since the repair works were completed, the Town has been monitoring the bridge slope on a regular basis. A few photographs are provided on the following page showing the collapse of the wingwall and subsequent emergency works.

Collapse of North-west Wingwall of McCraney Creek Bridge in 2017 and Subsequent Emergency Repair Works



3.2.2 Infrastructure

3.2.2.1 Water and Wastewater

There is currently a 300 mm PVC watermain located on Lakeshore Road West at the McCraney Creek Bridge site. In addition, there is a 1200 mm precast concrete sanitary trunk sewer located immediately to the north of Lakeshore Road West. Both are owned and managed by Halton Region. The location of this infrastructure is shown in Figure 3-5 and Figure 3-6.

During consultation, Halton Region advised that there are no water or wastewater development projects planned in the immediate area to the 2031-time horizon. The Region also advised that there are no state-of-good-repair projects planned in the immediate area to the 2031-time horizon.

3.2.2.2 Stormwater

There are two storm sewers that convey stormwater runoff to McCraney Creek at the subject bridge site. These are:

- A 600 mm storm sewer on the east side.
- A 375 mm to 525 mm storm sewer on the west side.

These storm sewers are owned and managed by the Town of Oakville. The location of these storm sewers is shown in Figure 3-7. A photograph of one of the storm outfalls is provided in Figure 3-8.

3.2.2.3 Utilities

Oakville Hydro has an overhead pole line on the south side of Lakeshore Road West in the project area (Figure 3-9). There are two overhead high voltage circuits as well as a neutral conductor and low voltage wires crossing the bridge area between poles. As part of the consultation process, Oakville Hydro identified that the two circuits, neutral and low voltage lines will need to remain in service during the bridge replacement works.

In addition, the OneCall request identified the following utilities in the project area:

- Enbridge gas pipeline
- Bell telecom line.

Figure 3-5: Existing Water Infrastructure



Figure 3-6: Existing Wastewater Infrastructure

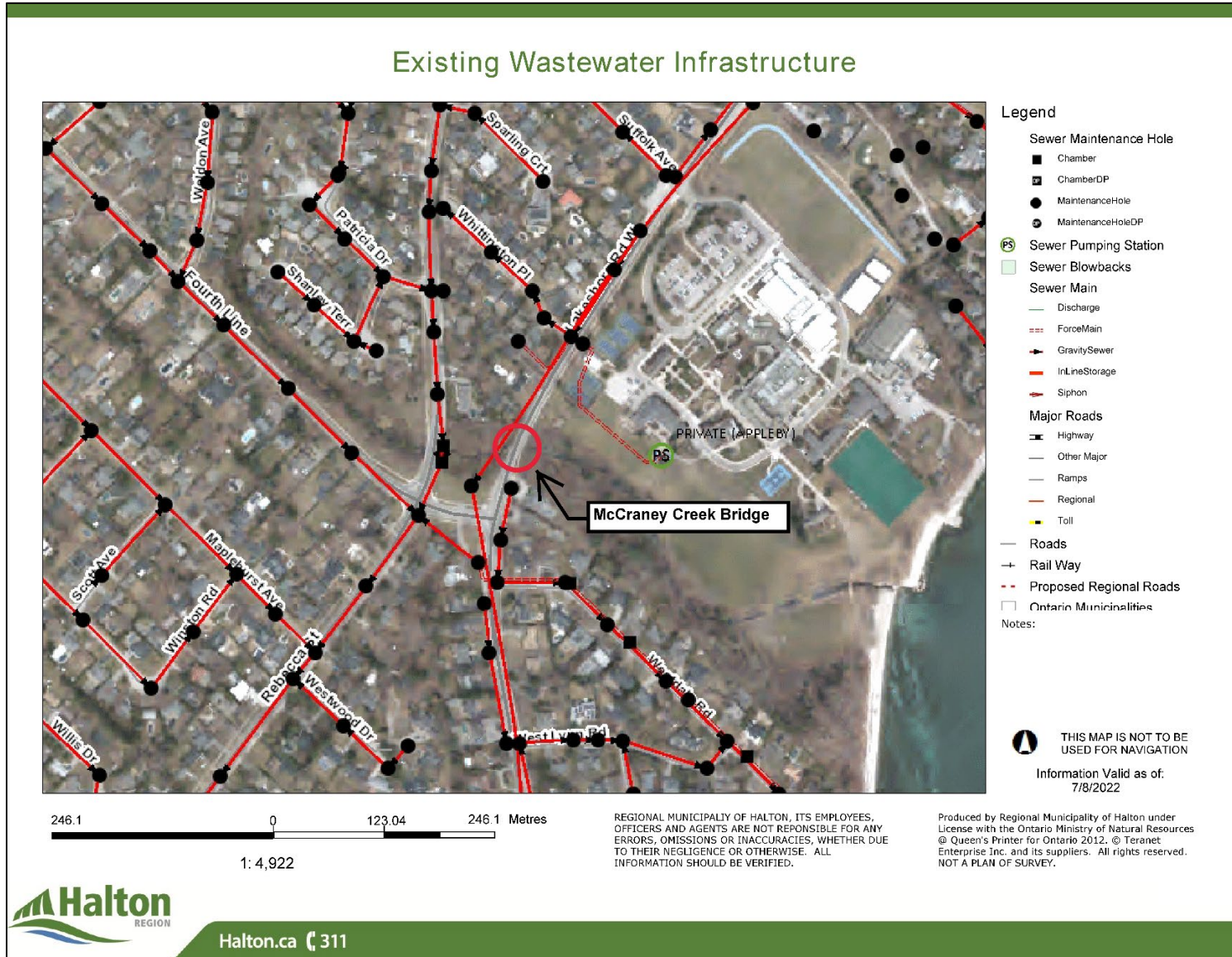


Figure 3-7: Map Excerpt showing Storm Sewers

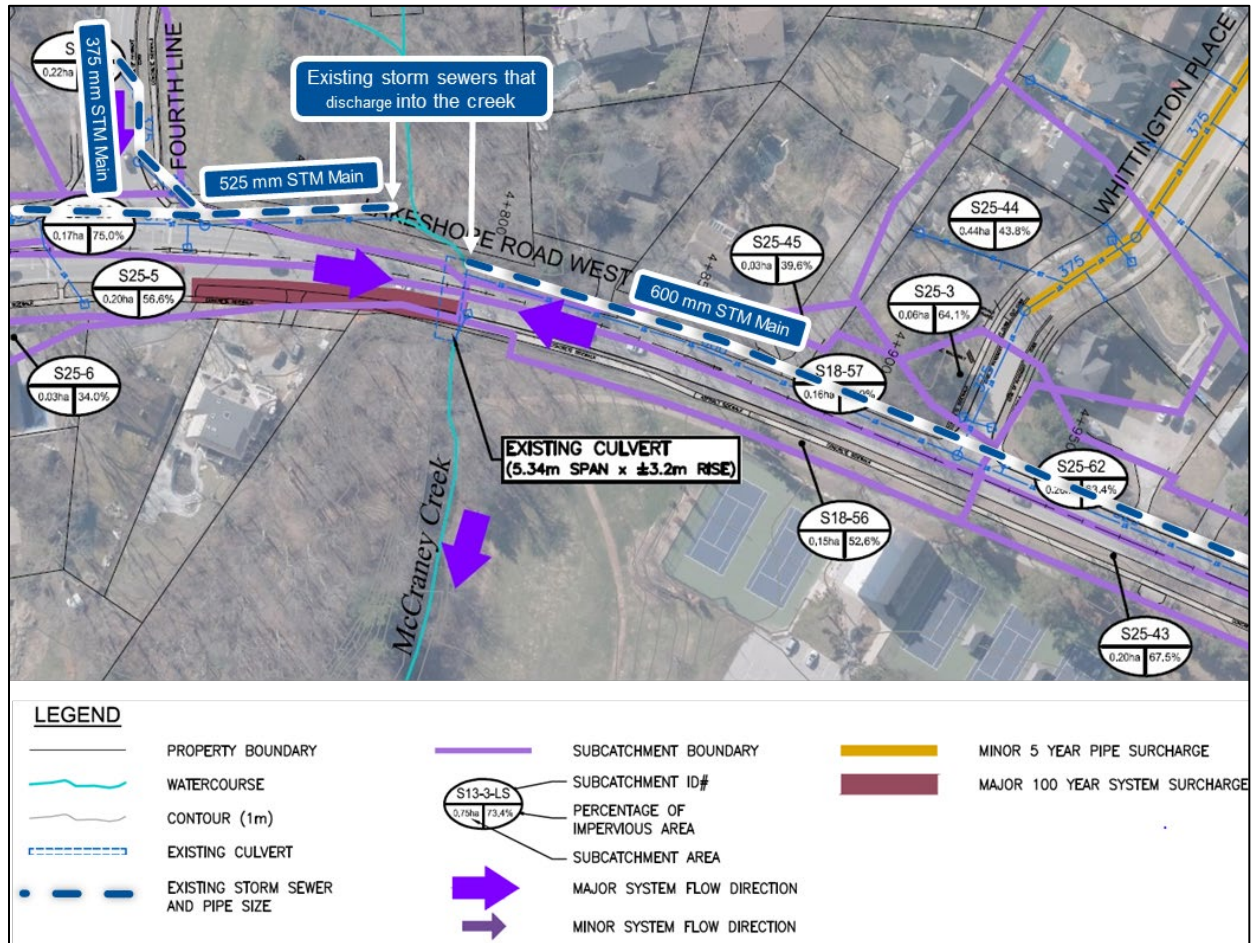


Figure 3-8: Photograph of Storm Outfall



Figure 3-9: Google Streetview Showing Hydro Poles on the South Side of Lakeshore Road West



3.3 Social Environment

3.3.1 Existing Land-use

A review of Town of Oakville's Official Plan was completed in July 2022 to identify land uses adjacent to McCraney Creek Bridge. The McCraney Creek corridor is identified as "Natural Area" in the Livable Oakville Official Plan and the land uses adjacent to the bridge include the following, as shown in Figure 3-10 (Town of Oakville, 2018):

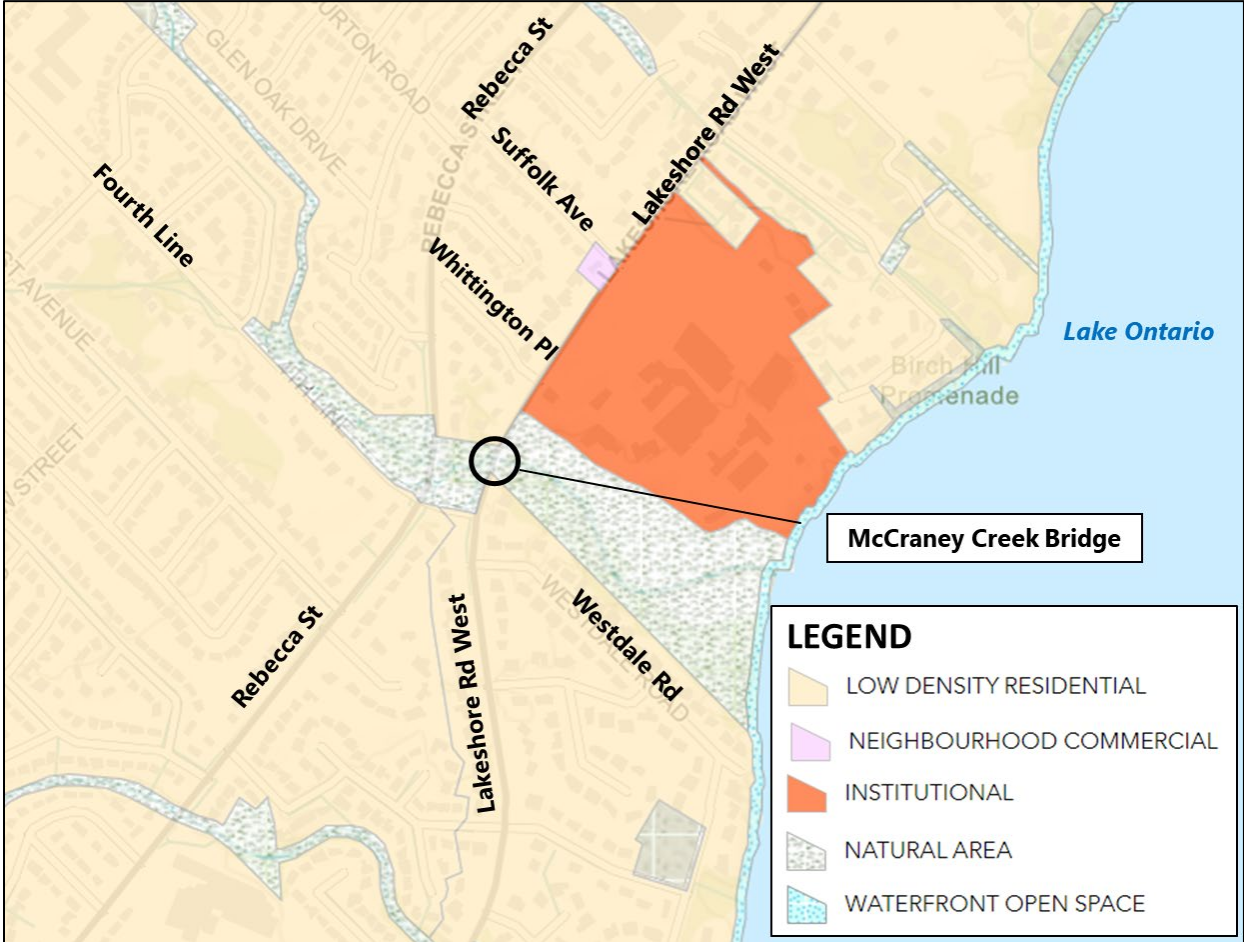
- Low density residential to the northeast, northwest and southwest
- Institutional use (Appleby College) to the southeast.
- Commercial use (Okhee's Corner Store) to the east (at the intersection of Suffolk Avenue and Lakeshore Road West, approximately 300 m east of the bridge).

In addition, during consultation, Halton District School Board informed that the Board has three school within 1km of Fourth Line and Lakeshore:

- Pine Grove Public School - 529 Fourth Line

- W.H. Morden Public School - 180 Morden Road
- T.A. Blakelock High School - 1160 Rebecca Street

Figure 3-10: Excerpt from Livable Oakville Map Showing Land Uses Adjacent to McCraney Creek Bridge²



3.4 Cultural Environment

3.4.1 Built Heritage Resources and Cultural Heritage Landscapes

The McCraney Creek Bridge structure falls within the category of a “Culvert”, as per clarification provided in the Municipal Class Environmental Assessment - Companion Guide (2018). The document provides clarification on the difference between a bridge

²² Source: Livable Oakville map (<https://www.oakville.ca/maps.html>)

and a culvert and provides the following definition for a culvert: “A structure that forms an opening through an embankment” (Municipal Engineers Association, 2018).

The Study Team consulted with the Town’s Heritage Planner to obtain input on McCraney Creek Bridge’s potential for cultural heritage value. On July 7, 2022, the Town’s Heritage Planner provided a letter, confirming that McCraney Creek Bridge has no heritage status under the Ontario Heritage Act. Further, it is not listed on the Oakville Register of Properties of Cultural Heritage Value or Interest (known as the Heritage Register) as a property of potential cultural value and/or interest and it is not designated under any part of the Ontario Heritage Act.

Further, in response to comments from the Ministry of Citizenship and Multiculturalism (MCM) on the Draft Project File Report, Town’s Heritage Planner provided another letter on November 4, 2022. Town’s Heritage Planner noted that the Heritage Planning staff visited the site and confirmed that a Cultural Heritage Evaluation Report (CHER) was not required due to the substantial changes and modern materials that have modified the structure since its original construction. Heritage Planner added that the property has not been identified as having potential cultural heritage value despite its age and the Town Heritage Planning staff have not requested any further study as the priority was for the conservation of listed and designated properties in the Town.

Town’s Heritage Planner suggested that in order to divert materials from landfills, any historic stone removed during the construction process be made available for salvage for reuse on it identified historic properties.

The letters from Town’s Heritage Planner are provided in Appendix A.

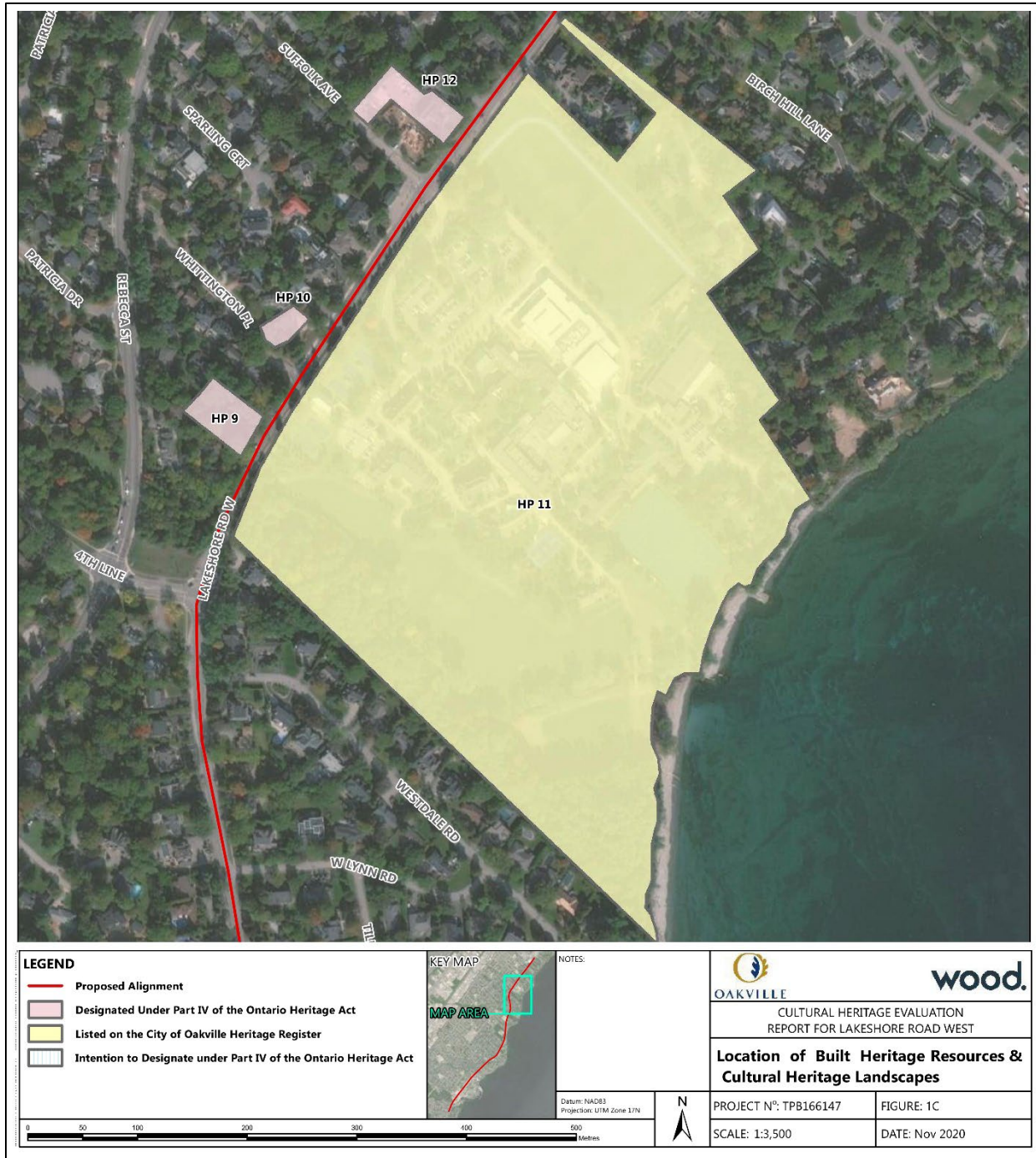
Properties with heritage status in the vicinity of McCraney Creek Bridge previously identified are listed in Table 3-1 and shown in Figure 3-11 below (Wood, 2021). The Cultural Heritage Assessment Report developed as part of Lakeshore Road West Class EA Study is provided in Appendix A.

Table 3-1: Heritage Properties in Proximity to McCraney Creek Bridge

HP NO.	ADDRESS/RESOURCE TYPE	2020 HERITAGE STATUS
HP 9	573 Lakeshore Road West - The Acacias (private residence)	Designated under Part IV of the <i>Ontario Heritage Act</i> (By-law 2015-044)
HP 10	549 Lakeshore Road West - Old McCraney House (private residence)	Designated under Part IV of the <i>Ontario Heritage Trust</i> (By-law 1984-83)
HP 11	540 Lakeshore Road West Appleby College	Listed in the Oakville Heritage Register

HP NO.	ADDRESS/RESOURCE TYPE	2020 HERITAGE STATUS
HP 12	489 Lakeshore Road - West (formerly 491 Lakeshore Road West) Captain G. E. Morden House (private residence)	Designated under Part IV of the <i>Ontario Heritage Act</i> (By-law 2019-092)

Figure 3-11: Built Heritage Resources and Cultural Heritage Landscapes in the Vicinity of McCraney Creek Bridge



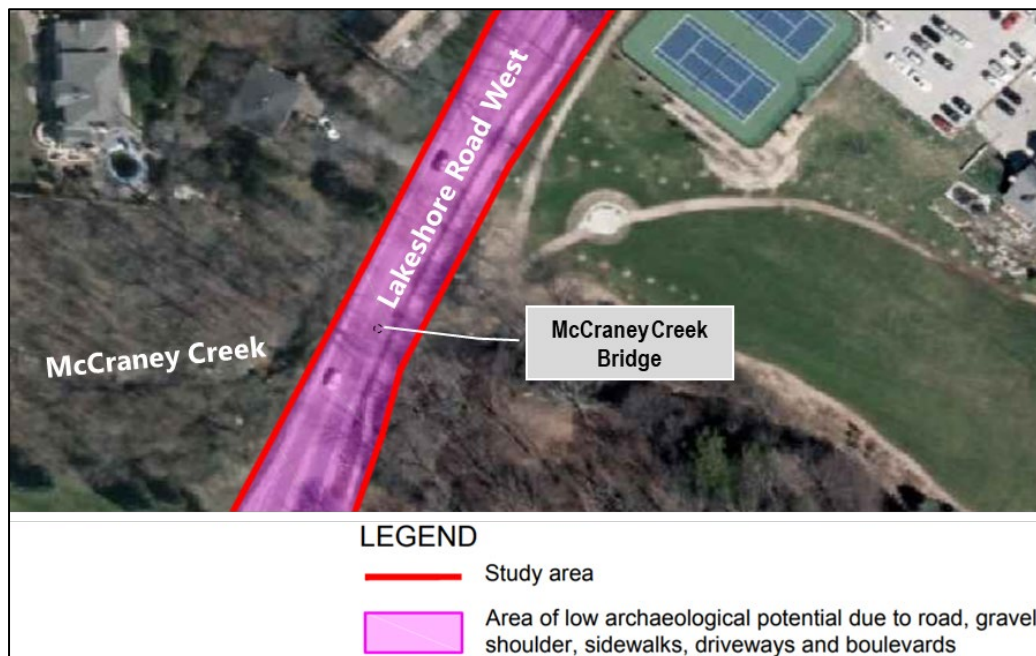
3.4.2 Archaeological Resources

The Stage 1 Archaeological Assessment for Lakeshore Road West Class EA (2017) assessed the area limited to the McCraney Creek Bridge Replacement. This assessment identified the location of McCraney Creek Bridge as an area of low archaeological potential. An excerpt from areas of archaeological potential map from the 2017 report is provided in Figure 3-12, and the complete report is provided in Appendix B.

The Study Area for this current Class EA includes lands that extend beyond the area assessed as part of the previous Stage 1 Archaeological Assessment of 2017. It is important to note that the Halton Region completed a Stage 1 Archaeological Assessment in December 2010, in support of the Wastewater Pumping Station Master Plan for the Region. This report assessed all areas that encompass the entire Study Area for this current Class EA Study and identified areas of archaeological potential that will be subject to Stage 2 Archaeological Assessment. This report can be accessed from this link ([2012 Wastewater Pumping Station Master Plan - Appendix D](#)). Page 85 of the pdf shows areas of archaeological potential map.

The Town will complete a combined Stage 1 and 2 Archaeological Assessment as part of detailed design phase for the extended areas that were not previously assessed as part of the Lakeshore Road West Stage 1 Archaeological Assessment (2017). Additional stages of archaeological assessment may be required, based on the findings and recommendations of the Stage 2 Archaeological Assessment.

Figure 3-12: Excerpt from Areas of Archaeological Potential Map



3.5 Natural Environment

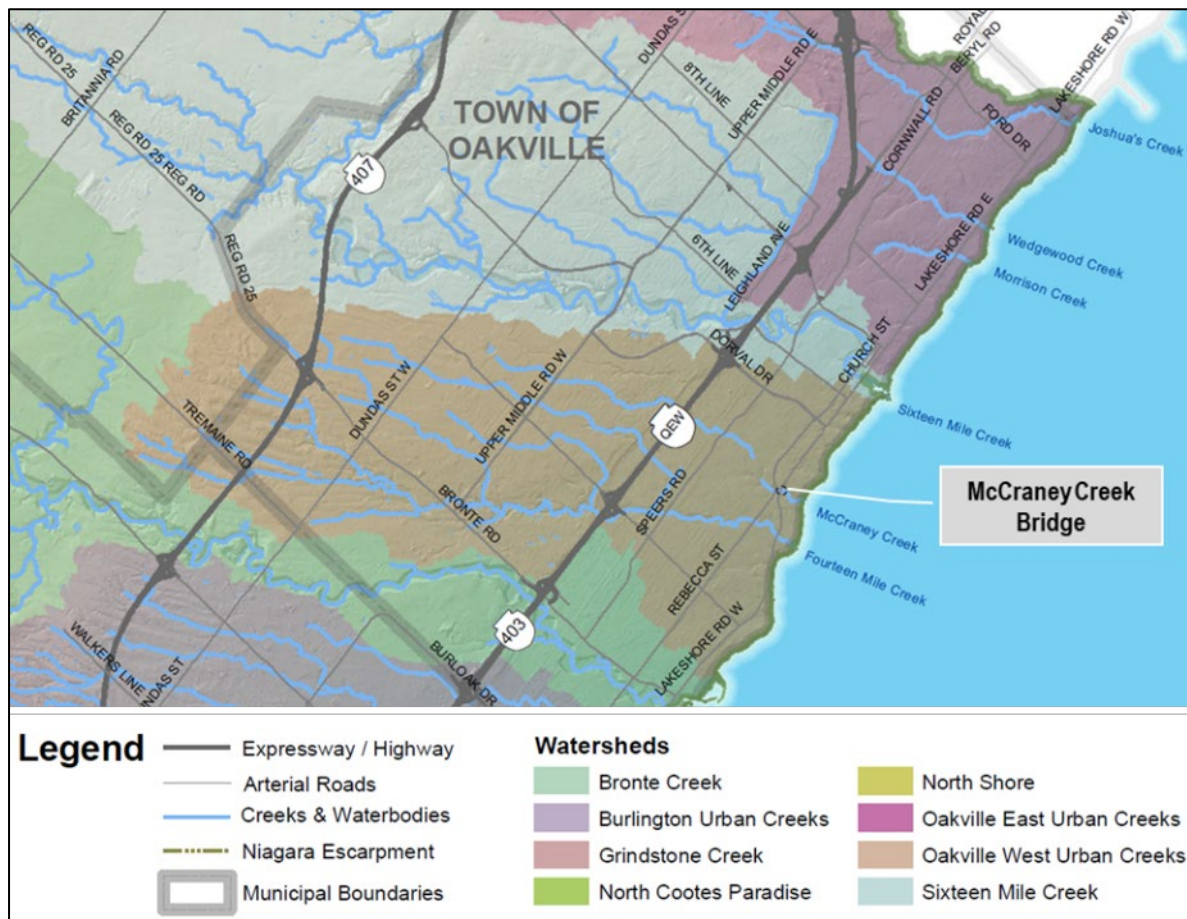
3.5.1 McCraney Creek

McCraney Creek is one of the fourteen Urban Creek watersheds within the jurisdiction of Conservation Halton. The subject tributary of the creek originates in the northern part of the town (southeast of 407 ETR and Bronte Road) and discharges into Lake Ontario (Figure 3-13).

The upstream branches of the creek flow through natural channels and swales. As the creek flows downstream, it becomes frequently enclosed and altered in urban areas. The storm sewers in urban areas discharge storm water into this creek.

Conservation Halton's Urban Creeks and Supplemental Monitoring (2009) identified this creek to be one of the least healthy watercourses within Conservation Halton's jurisdiction. The majority of benthic invertebrates observed in the creek were aquatic worms, which are typically found in areas that contain organic pollution.

Figure 3-13: Excerpt from Conservation Halton Watersheds map



The McCraney Creek flows through a woodlot downstream of Rebecca Street. Upon approaching the bridge crossing at Lakeshore Road West, the channel takes a sharp 90 degree turn into the structure (Figure 3-14 and Figure 3-15). This directs the

erosion potential of creek flows directly against the creek bank and bridge abutments/wing walls, putting them at continued risk. The Town of Oakville's Creek Inventory and Assessment Studies from [2010](#), 2015 and [2021](#) identified the need for channel realignment for this reach of McCraney Creek. A channel realignment upstream of the bridge would help to orient flows such that they pass through the crossing at an optimal angle, thus reducing stress on the creek bank and structure. Please refer to Appendix C for more details on the existing geomorphologic conditions of the creek.

Figure 3-14: McCraney Creek between Rebecca Street and Lakeshore Road West

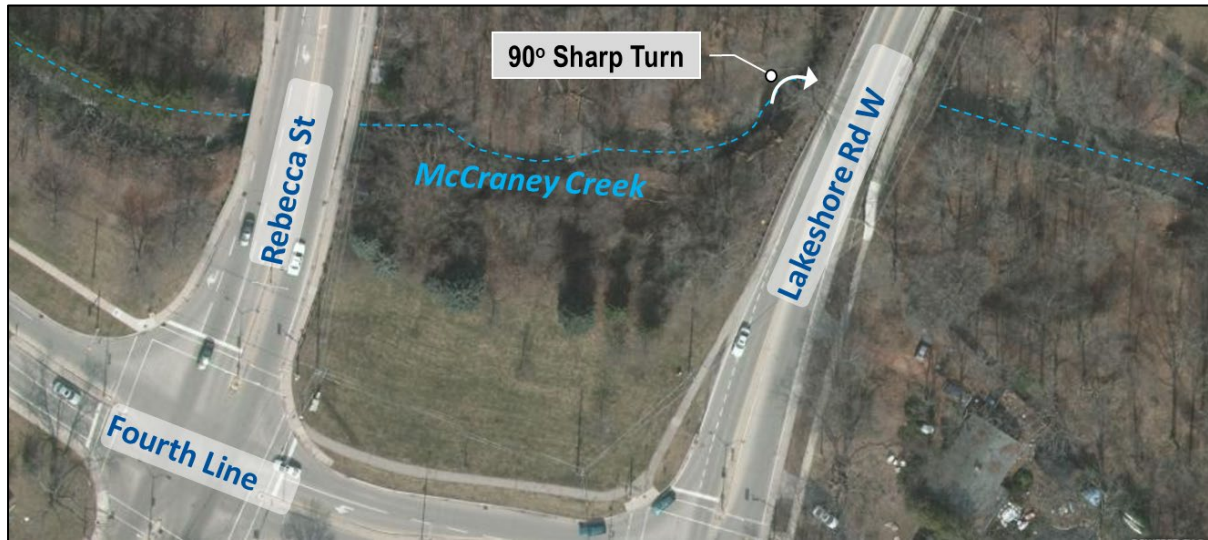


Figure 3-15: McCraney Creek's Sharp Turn at Lakeshore Road West Crossing



3.5.2 Aquatic Ecosystem

3.5.2.1 Fish Community

Fish community information for McCraney Creek was previously documented in the Aquatic Habitat Existing Conditions Report for Lakeshore Road West Lakeshore West Improvements (October 2017). The fish community information documented in that report was based on fish sampling information from Conservation Halton's Urban Creeks and Supplemental Monitoring (2008) and information obtained from the Ministry of Natural Resources and Forestry.

As part of this Class Environmental Assessment, the Study Team submitted a natural heritage information request to the Ministry of Natural Resources and Forestry in June 2022. The purpose of this information request was to request the current natural heritage information from the Ministry, including any current fish community information for McCraney Creek. The Ministry staff shared the Natural Heritage Information Request Guide (April 2019) and advised that the natural heritage information could be accessed through online sources identified in the Guide.

In addition to above, Conservation Halton staff advised the Study Team in June 2022 that the Authority has fish records up until 2018 and the staff will be completing fish surveys of McCraney Creek at Lakeshore Road crossing in summer 2022. The Study Team submitted an information request to Conservation Halton in July 2022 to request natural heritage information, specifically fish records for McCraney Creek.

Based on the fish community information recorded in the past reports and a review of Ministry of Natural Resources and Forestry's Land Information Ontario portal (Ministry of Natural Resources and Forestry, 2022) and Conservation Halton data obtained in July 2022, the following fish species have been identified to occur in McCraney Creek:

- | | |
|-------------------------|---------------------------|
| — Common Shiner* | — White Sucker* |
| — Creek Chub* | — Blacknose Dace** |
| — Fathead Minnow* | — Bluntnose Minnow** |
| — Longnose Dace* | — Lake Chub** |
| — Pumpkinseed* | — Mottled Sculpin** |
| — Rainbow Darter* | — Notropis sp.,** |
| — Rainbow Trout* | — River Chub** |

Notes:

(*) Denotes fish species recorded by Conservation Halton in Urban Creeks and Supplemental Monitoring (2008)

(**) Denotes fish species recorded by the Ministry of Natural Resources and Forestry in Aquatic Resource Area dataset (Ministry of Natural Resources and Forestry, 2022)

(Bold text) Denotes fish species recorded by Conservation Halton in 2022

Excerpts from the Conservation Halton in Urban Creeks and Supplemental Monitoring (2008) and field data sheets for 2022 fish sampling work are provided in Appendix D.

The Study Team also completed a review of Fisheries and Oceans Canada's Aquatic Species at Risk map in July 2022. No aquatic Species at Risk were identified in McCraney Creek (Fisheries and Oceans Canada, 2022).

The above noted species are indicative that this reach of McCraney Creek can be considered to have a warm/cool thermal regime; with the exception of Rainbow Trout, which prefer cold water watercourses. While Rainbow Trout have been captured in the vicinity of this site, this area likely only represents a migratory route to upstream spawning grounds.

3.5.2.2 Aquatic Habitat

Aquatic habitat assessment for McCraney Creek was completed in 2017. The creek was assessed for opportunities for fish habitat enhancement (i.e., fish passage barriers, areas exhibiting bank instability). The watercourse was assessed from approximately 50 metres upstream of Rebecca Street to Lakeshore Road West. The results of aquatic habitat assessment are summarized below and illustrated in Figure 3-16 (Amec Foster Wheeler Environment & Infrastructure, 2018):

- A vertical drop is located immediately downstream of Rebecca Street. This location presents barrier to fish passage (Figure 3-17).
- Immediately downstream of the Rebecca Street crossing, erosion is evident along the east bank of the watercourse, spanning a length of approximately 10 metres. Unstable soil and exposed roots are evident (Figure 3-18).
- Downstream of this area, erosion became evident on the west bank of the watercourse, with exposed soils and bare roots evident spanning along approximately 31.5 metres of channel (Figure 3-19).
- At the inlet of the Lakeshore Road crossing, an area of exposed limestone is evident. At the downstream end of the limestone, a poured concrete pad is evident. A step/face of concrete is present at the edge of the concrete pad, where the pad stops and meets with the natural channel bed downstream. This area may pose a barrier to fish movement. Removal of this feature represents a potential enhancement opportunity (Figure 3-20).

Key enhancement opportunities to improve aquatic habitat include the following:

- Naturalize the substrate within the crossing to improve fish passage.
- Incorporate natural channel design for the channel realignment to improve bank stability, and create flow morphology diversity
- Vegetate channel edges under the structure where light penetration is sufficient for growth.
- Enhance riparian vegetation to increase shading to the watercourse; maintain cooler water temperatures and increase bank stability / provide scour protection.

For more detailed information on previously documented fish and fish habitat information for McCraney Creek as well as the recent (July 2022) fish species data provided by Conservation Halton, please refer to the following documents appended to this report:

- Appendix D – Fish Collection Record for McCraney Creek (MCR-13) collected by Conservation Halton in July 2022
- Appendix D - Aquatic and Bat Habitat Surveys for Proposed Channel Realignment of McCraney Creek North of Lakeshore Road to Rebecca Street (January 24, 2018)
- Appendix D - Class Environmental Assessment Study and Preliminary Design - Lakeshore West Improvements - Aquatic Habitat Existing Conditions Report (October 2017)
- Appendix C – Excerpted Fish Species Sampling Information from “Conservation Halton’s Urban Creeks and Supplemental Monitoring (2008)”

Considering the previous aquatic assessments were completed in 2017/2018 and supplemented with a review of fish community information in 2022, a targeted aquatic assessment is recommended as part of Natural Environment Assessment during the detailed design phase of this project. This assessment will evaluate aquatic habitat conditions along McCraney Creek between Rebecca Street and Lakeshore Road West.

Figure 3-16: Barriers to Fish Passage and Area of Erosion along McCraney Creek Study Area

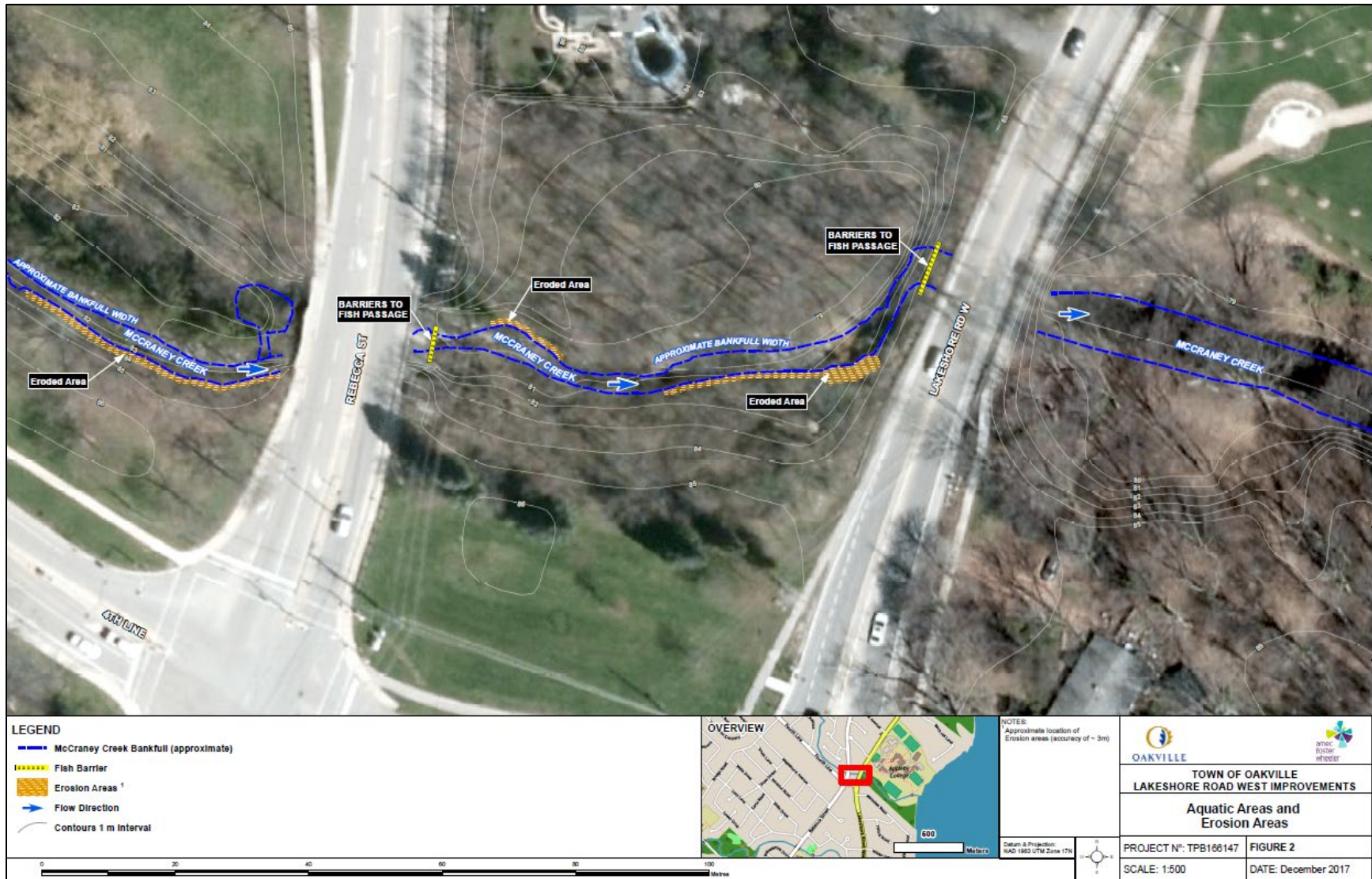


Figure 3-17: Fish Barrier at Rebecca Street Crossing



Figure 3-18: Erosion along East Bank of McCraney Creek



Figure 3-19: Erosion along West Bank of McCraney Creek



Figure 3-20: Fish Barrier at Lakeshore Road Crossing



3.5.3 Terrestrial Ecosystem

McCraney Creek flows through a woodlot downstream of Rebecca Street. This forest is dominated by Norway Maple (an invasive plant species) with some Black Walnut and willow (Amec Foster Wheeler Environment & Infrastructure, 2017b). There are very few native species in this community, and it is highly disturbed with signs of flooding and erosion. The forest contains some trees potentially suitable as maternity roost sites for Species at Risk bats (Little Brown, Northern Myotis and Tri-coloured Bat) (Amec Foster Wheeler Environment & Infrastructure, 2018) (Figure 3-21). Detailed lists of potentially suitable roost trees are provided in Appendix D.

Key enhancement opportunities to improve terrestrial habitat include the following:

- Plant native species for vegetation restoration including selection of native trees, which are able to outcompete invasive trees and shrubs present.

For more detailed information on terrestrial habitat in the vicinity of McCraney Creek Bridge, please refer to the following reports appended to this report:

- Appendix D – Aquatic and Bat Habitat Surveys for Proposed Channel Realignment of McCraney Creek North of Lakeshore Road to Rebecca Street (January 24, 2018)
- Appendix D – Class Environmental Assessment Study and Preliminary Design – Lakeshore West Improvements – Terrestrial Habitat Existing Conditions Report (September 2017)

Considering the previous terrestrial assessments were completed in 2017/2018, a targeted terrestrial assessment is recommended as part of Natural Environment Assessment during the detailed design phase of this project. This assessment will evaluate terrestrial habitat conditions in the woodlot (including vegetation, plants, wildlife and species at risk) along McCraney Creek between Rebecca Street and Lakeshore Road West.

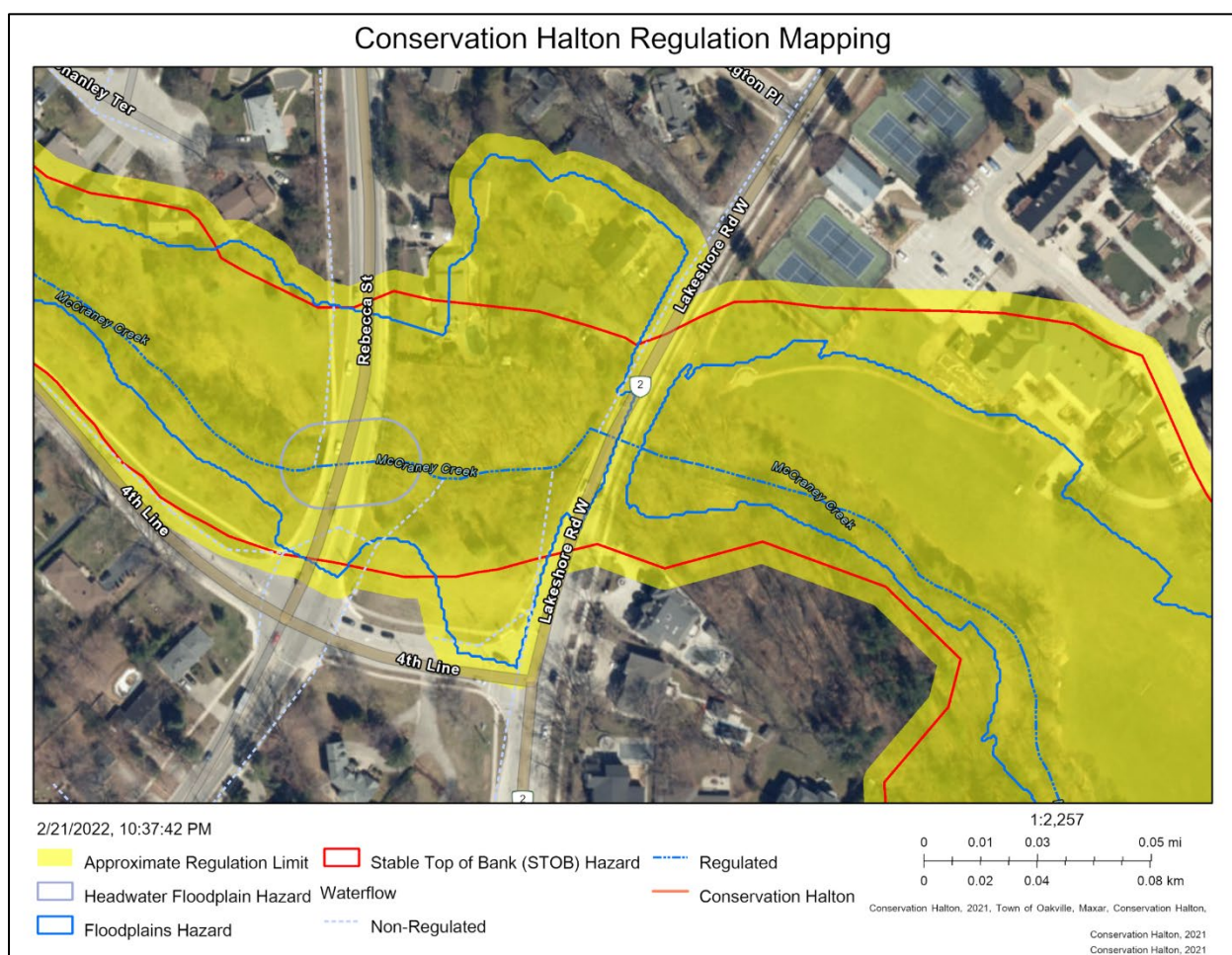
Figure 3-21: Bat Habitat Features



3.5.4 Flooding Hazard

The McCraney Creek Bridge is located within the Floodplain Hazard and Approximate Regulatory Limit regulated by Conservation Halton (Conservation Halton, 2022) (Figure 3-22). The structure has capacity to convey flood flows associated with a 100-year storm event, however, the modelling indicates that the current structure will be overtopped by the Regional Storm (Hurricane Hazel) by approximately 1.40 metres. This will impact the ability of emergency vehicles to safely use Lakeshore Road. Another ongoing study by the Town (Flood Mitigation Opportunities Study for Fourteen Mile and McCraney Creek Systems) recommends replacement of McCraney Creek Bridge structure with a larger structure to address flooding risk to protect public safety, municipal infrastructure, and private property (Town of Oakville, Ongoing).

Figure 3-22: Conservation Halton Regulation Mapping



3.5.5 Erosion Hazard

McCraney Creek is a confined channel with physical and long-term stable top of slope hazards. One of the characteristics of a confined watercourse is that it is located within a valley corridor, either with or without a floodplain, and is confined by valley walls (Ministry of Natural Resources, 2001). The Stable Top of Bank Hazard for McCraney Creek in the vicinity of the project area is shown in red line in

Figure 3-22. A discussion of erosion hazard for McCraney Creek within the vicinity of project area is provided below. Photographs showing erosion along subject sections of the creek are provided in Figure 3-18, Figure 3-19, and Figure 3-20. Further details are documented in the report: *Fluvial Geomorphology Review and Preliminary Channel Design Fourteen Mile Creek & McCraney Creek (March 2018)* (Appendix C).

McCraney Creek upstream of Lakeshore Road turns sharply west and is fully confined against the roadside embankment before turning northerly up the valley corridor. The corridor is a relatively mature forest feature that results in high levels of shading and reduced groundcover density. Rooting density is thus lower than optimum for channel protection. The roadside embankment confinement is a distinct vertical eroding slope at a maximum height of 4.5m which tapers down to approximately 1m high over 40m of meander arc (see Appendix C for report cover picture of pre-emergency works installation conditions). Emergency treatment stone works completed in 2018 only partially address the pre-existing erosion scar. The former vertical erosion scar transitioned to be an undercut channel edge scar which can still be seen moving upstream past the limits of 2018 emergency works. A local storm sewer outlet set back from the eroding bank also results in an entrenched gully that cuts through the channel bank. This erosion reach is identified as the top ranking *Priority Localized Area of Concern* in the Town of Oakville's "Creek Inventory and Assessment Study" (Aquafor Beech 2016).

The channel enters the crossing in a sharp turn that is characterized by a distinct outcrop mound of sedimentary limestone bedrock at the crossing face that splits the low flow and that appears to extend under the crossing footings. The bedrock transitions to a cast concrete channel bed apron that is in a failed condition with dislodged elements downstream. The lip of the failed concrete results in a drop to a scour pool and widened flow from wall to wall that is approximately 0.9m deep. A distinct clay till layer also emerges at the face of the drop under which are further layers of shale and limestone. The pool extends several metres to approximately two thirds of the length of the crossing. The crossing structure itself is actually two structures of different age and geometry, butted together. The north half is a cast concrete open bottom arch with vertical lower walls and the south half is an open bottom precast box. The opening width is approximately 5.4m.

Through the downstream face of the crossing and southerly towards Lake Ontario the channel is relatively straight, over widened, and lined with dual armourstone rows on the west from the crossing. The channel passes under an approximate 10m span of a pedestrian bridge on the Appleby College property, 20m downstream. Similar forested conditions as upstream exist downstream and similar lack of rooting density is evident. Bankfull channel width varies from approximately 5-8m where natural indicators can be identified. Bankfull depth varies from approximately 0.5-1m. Bedform development is influenced by the presence of sedimentary shale and limestone layers in various states of weathering and breakdown. Deposits of gravel to boulder sized bedrock fragments are distinct upstream and downstream of the crossing and weathered layers are seen in toe erosion above low flow. The embankment slope erosion site upstream of the crossing has a deep sand face layer above bedrock up to the height of topsoil cover.

3.5.6 Soil

The project is located within the Iroquois Plain physiographic region which extends across the southern portions of the Greater Toronto and Hamilton Area. The soils within and adjacent to the study area are comprised of permeable sandy soils, which were deposited 12,500 years ago along the shores of glacial Lake Iroquois

A geotechnical investigation was not completed as part of the Class EA Study. A geotechnical investigation will be completed during detailed design phase of the project to determine subsurface soil conditions and make recommendations for the bridge embankments.

3.5.7 Groundwater

A hydrogeological assessment was not completed as part of this Class EA Study. A hydrogeological assessment should be completed during detailed design phase of this project to identify any impacts from construction dewatering on groundwater and propose mitigation measures. This assessment should also determine the requirement for an Environmental Activity and Sector Registry or a Permit to Take Water to support the bridge replacement. If the hydrogeological investigation confirms the need for an Environmental Activity and Sector Registry or a Permit to Take Water, the appropriate permit should be obtained from the Ministry of the Environment, Conservation and Parks.

3.5.8 Source Water Protection

In 2006, the Government of Ontario introduced the *Clean Water Act*. This Act is intended to protect existing and future sources of drinking water. Under this legislation, various vulnerable areas have been delineated around surface water intakes and wellheads for every municipal residential drinking water system that is located in a Source Protection Area (Government of Ontario, 2006). Source Protection Plans have been developed to contain policies to address the significant drinking water threats.

McCraney Creek Bridge is located in Halton Region Protection Area. This area comprises lands within the municipalities of Halton and Peel Regions; the cities of Hamilton, Burlington, and Mississauga; the towns of Milton, Oakville and Halton Hills; and the Township of Puslinch/County of Wellington. The Town of Oakville is serviced by the two municipal drinking water systems: Burloak, and Oakville Water Treatment Plants. These water treatment plants take water from Lake Ontario and distribute it across the Town (Halton-Hamilton Source Protection Committee, 2017).

Vulnerable areas have been delineated around these municipal water treatment plant intakes where there is a risk of significant drinking water threat. These vulnerable areas are known as Intake Protection Zones (IPZs). Three IPZs have been established based on the amount of time that it could take any material or contaminant spilled in or near a lake, river or stream to flow downstream and get to the intake (Halton-Hamilton Source Protection Committee, 2017). These IPZs are assigned vulnerability scores to reflect the susceptibility of the intakes to contaminants. The vulnerability score for each IPZ is assigned based on the following criteria:

- Low vulnerability: (≤ 5);
- Medium vulnerability: (5-6); and
- High vulnerability: (> 6).

A review of Ministry of the Environment, Conservation and Parks' Source Protection Information Atlas was completed in July 2022 to identify whether the subject bridge is located in a drinking water source protection area. This review identified that the McCraney Creek Bridge is located within Intake Protection Zone 2 associated with the Oakville Water Treatment Plant (Ministry of the Environment, Conservation and Parks, 2022). The vulnerability score of this IPZ-2 is 4.8, which indicates a low vulnerability.

4 Class EA Phase 1: Problem and Opportunity Statement

The first phase in the Municipal Class EA process is the identification of problem and opportunity statement. The Municipal Class EA document notes that the municipalities generally undertake projects in response to certain identified problems or deficiencies. In other cases, there may be opportunities which need to be addressed. Previous studies/reports undertaken by a proponent may be available to assist in defining the problem. Therefore, as part of the Class EA Phase 1, a clear problem and opportunity statement should be identified for the proposed project.

Based on the existing conditions discussed in the following section, the following problem areas were identified for this Class EA Study:

Problem Area 1 – Structural Deficiency: The northwest wingwall of McCraney Creek Bridge collapsed in 2017. Emergency repair works were completed to reinforce the bridge slope; however, those works only temporarily fixed the slope failure and a long-term solution is required.

Problem Area 2 – Erosion Hazard: The flows from McCraney Creek continue to direct the erosion potential, putting them at continued risk of failure. The Town of Oakville's Creek Inventory and Assessment Studies from [2010](#), 2015 and [2021](#) identified the need for channel realignment for this reach of McCraney Creek.

Problem Area 3 – Flooding Hazard: Modelling indicates that the existing McCraney Creek Bridge will be overtopped by the Regional Storm (Hurricane Hazel) by approximately 1.40 metres. This will impact the ability of emergency vehicles to safely use Lakeshore Road. [Flood Mitigation Opportunities Study for Fourteen Mile and McCraney Creek Systems](#) identified the need for McCraney Creek Bridge structure replacement to increase its conveyance capacity and to address the risk of flooding.

The Town of Oakville completed this environmental assessment to identify a solution to address structural deficiency, ongoing erosion and flooding risk at McCraney Creek Bridge.

5 Class EA Phase 2: Identification of Alternative Solutions

Phase 2 of the Class EA process requires that various reasonable solutions should be identified to address the problem and opportunity identified in Phase 1. The potential solutions should then be evaluated against criteria related to various factors (including natural environment, social environment, economic environment, cultural environment, and technical factors). Based on the evaluation, the preliminary preferred solution should be identified and presented to the public, Indigenous Nations, Government Agencies and key stakeholders/interest group for review and input.

This section describes the identification and evaluation of alternatives process for this Class EA Study.

5.1 Identification and Evaluation of Alternative Solutions

The following alternatives were identified and evaluated to identify a preferred solution for addressing the problems and opportunities discussed in the section above:

ALTERNATIVE DESCRIPTION

Alternative 1	Do nothing (maintain existing structure)
Alternative 2	Replacement of existing bridge with a new structure without re-alignment of McCraney Creek
Alternative 3	Replacement of existing bridge with a new structure with re-alignment of McCraney Creek
Alternative 4	Replacement of existing bridge with a new structure (with slightly adjusted ends) with re-alignment of McCraney Creek

Evaluation of alternatives is provided in the following table.

Table 5-1: Evaluation of Alternatives for McCraney Creek Bridge

EVALUATION CRITERIA (MAINTAIN EXISTING STRUCTURE)	ALTERNATIVE 1: DO NOTHING	ALTERNATIVE 2: REPLACEMENT OF EXISTING BRIDGE WITH A NEW STRUCTURE WITHOUT RE-ALIGNMENT OF MCCRANEY CREEK	ALTERNATIVE 3: REPLACEMENT OF EXISTING BRIDGE WITH A NEW STRUCTURE WITH RE-ALIGNMENT OF MCCRANEY CREEK	ALTERNATIVE 4: REPLACEMENT OF EXISTING BRIDGE WITH A NEW STRUCTURE (WITH SLIGHTLY ADJUSTED ENDS) WITH RE-ALIGNMENT OF MCCRANEY CREEK
Natural Environment				
Effects on Vegetation	No loss of vegetation. No improvements / enhancements to natural areas/vegetation.	Least amount of disturbance would occur to channel banks. Vegetation removal would be required on the west and east sides to accommodate structure replacement. Opportunity to improve riparian vegetation will be limited within the road right-of-way limits.	Disturbance would occur to channel banks. Vegetation removal would be required on the west and east sides to accommodate structure replacement. However, creek realignment will provide opportunity for vegetation restoration where native species can be planted, including selection of native trees that are able to outcompete invasive trees and shrubs present along the creek such as Norway Maple. In the long term, channel realignment will provide channel integrity and symmetrical terrestrial function on both sides.	Disturbance would occur to channel banks. Vegetation removal would be required on the west and east sides to accommodate structure replacement. However, creek realignment will provide opportunity for vegetation restoration where native species can be planted, including selection of native trees and shrubs present along the creek such as Norway Maple. In the long term, channel realignment will provide channel integrity and symmetrical terrestrial function on both sides.
	Moderately Preferred	Moderately Preferred	Most Preferred	Most Preferred
Effects on Wildlife and Wildlife Habitat	No impacts to wildlife or wildlife habitat.	Vegetation removal would be limited to areas immediately adjacent to the structure. Timing restrictions during vegetation removal would provide mitigation measures sufficient to protect both birds and bats.	Vegetation removal would be limited to areas immediately adjacent to the structure. Timing restrictions during vegetation removal would provide mitigation measures sufficient to protect both birds and bats. Revegetation as a result of channel realignment will improve terrestrial function in the creek corridor.	Vegetation removal would be limited to areas immediately adjacent to the structure. Timing restrictions during vegetation removal would provide mitigation measures sufficient to protect both birds and bats. Revegetation as a result of channel realignment will improve terrestrial function in the creek corridor.
	Most Preferred	Moderately Preferred	Most Preferred	Most Preferred

EVALUATION CRITERIA (MAINTAIN EXISTING STRUCTURE)	ALTERNATIVE 1: DO NOTHING	ALTERNATIVE 2: REPLACEMENT OF EXISTING BRIDGE WITH A NEW STRUCTURE WITHOUT RE-ALIGNMENT OF MCCRANEY CREEK	ALTERNATIVE 3: REPLACEMENT OF EXISTING BRIDGE WITH A NEW STRUCTURE WITH RE-ALIGNMENT OF MCCRANEY CREEK	ALTERNATIVE 4: REPLACEMENT OF EXISTING BRIDGE WITH A NEW STRUCTURE (WITH SLIGHTLY ADJUSTED ENDS) WITH RE-ALIGNMENT OF MCCRANEY CREEK
Effects on and Risks from Flooding Hazards	The existing structure conveys the water flows associated with 100-year storm event; however, modelling indicates that the bridge is overtopped by the Regional storm by approximately 1.40 m. Not Preferred	Water surface elevations would decrease upstream of the crossing for all storm events. Flooding risk for residential properties would be reduced. The new structure would not result in an increase to the floodplain limits downstream of the bridge to Lake Ontario. Most Preferred	Water surface elevations would decrease upstream of the crossing for all storm events. Flooding risk for residential properties would be reduced. The new structure would not result in an increase to the floodplain limits downstream of the bridge to Lake Ontario. Most Preferred	Water surface elevations would decrease upstream of the crossing for all storm events. Flooding risk for residential properties would be reduced. The new structure would not result in an increase to the floodplain limits downstream of the bridge to Lake Ontario. Most Preferred
Effects on and Risks from Erosion Hazards	Do nothing will not address the existing erosion problem. Not Preferred	Without channel realignment, the erosion will continue to occur and the risk of failure of the McCraney Creek Bridge abutments will continue to exist, as the channel is forced to take an almost 90 degree turn into the structure. This directs the erosive potential of flows directly against the bridge abutments/wing walls, putting them at risk Not Preferred	Channel realignment will reduce the erosion problem and risk of failure of McCraney Creek Bridge abutments to a greater extent. However, due to the orientation of the bridge structure relative to McCraney Creek, there will still be continued erosion and risk of failure of infrastructure Moderately Preferred	Channel realignment along with adjustment to the orientation of the bridge structure by skewing/deflecting the north end of the structure to better align with the creek alignment will help address the erosion problem and risk of failure of McCraney Creek Bridge abutments. Channel realignment will eliminate the slope contact hazard and replace it specifically with a new slope at better angle with reinforcing vegetation. The skew/deflection at the north end will better align with the realigned creek, reducing potential for failure of abutments/wing walls. Most Preferred
Stormwater Management	No changes to stormwater management requirements Most Preferred	Marginal increased runoff due to marginal road widening and additional sidewalk. Therefore, quality and erosion impacts would require mitigation through stormwater management measures Moderately Preferred	Marginal increased runoff due to marginal road widening and additional sidewalk. Therefore, quality and erosion impacts would require mitigation through stormwater management measures Moderately Preferred	Marginal increased runoff due to marginal road widening and additional sidewalk. Therefore, quality and erosion impacts would require mitigation through stormwater management measures Moderately Preferred

EVALUATION CRITERIA (MAINTAIN EXISTING STRUCTURE)	ALTERNATIVE 1: DO NOTHING	ALTERNATIVE 2: REPLACEMENT OF EXISTING BRIDGE WITH A NEW STRUCTURE WITHOUT RE-ALIGNMENT OF MCCRANEY CREEK	ALTERNATIVE 3: REPLACEMENT OF EXISTING BRIDGE WITH A NEW STRUCTURE WITH RE-ALIGNMENT OF MCCRANEY CREEK	ALTERNATIVE 4: REPLACEMENT OF EXISTING BRIDGE WITH A NEW STRUCTURE (WITH SLIGHTLY ADJUSTED ENDS) WITH RE-ALIGNMENT OF MCCRANEY CREEK
Fluvial Geomorphology	<p>The current bridge consists of 2 structures of different age. Current span is 5.3m. Creek is confined by embankment. No opportunity for improvement / enhancement to the watercourse to address the deficiencies observed.</p> <p>Least Preferred</p>	<p>The longer structure would be able to span the low flow channel and provide adequate erosion setbacks with channel modifications.</p> <p>Limited opportunities for improvements to the watercourse at the replaced structure. Risk of further erosion of Lakeshore Road West embankment will not be addressed.</p> <p>Localized bank erosion protection would be used to address existing northwest bank erosion condition.</p> <p>Least Preferred</p>	<p>The longer structure would be able to span the low flow channel and provide adequate erosion setbacks with channel modifications.</p> <p>Limited opportunities for improvements to the watercourse at the replaced structure. Risk of further erosion of Lakeshore Road West embankment will not be addressed.</p> <p>Moderately Preferred</p>	<p>The longer structure would be able to span the low flow channel and provide adequate erosion setbacks with channel modifications.</p> <p>Opportunity for improvements to the watercourse. Risk of further erosion of Lakeshore Road West embankment could be minimized.</p> <p>Most Preferred</p>
Effects on Fisheries and Aquatic Habitat	<p>No impacts on fish or aquatic habitat. No opportunities for enhancements to remove barrier to fish passage.</p>	<p>Channel banks and vegetation will be disturbed to facilitate the structure replacement. Significant disturbance to the riparian vegetation and channel will be required for channel works related to the structure replacement.</p> <p>Fish and fish habitat and vegetation would be temporarily disturbed. In-water timing window would provide protection for both spring and summer spawners and extend from March 15 to July 15.</p> <p>No opportunities for enhancement to remove barrier to fish passage.</p>	<p>Channel banks and vegetation will be disturbed to facilitate the structure replacement. Significant disturbance to the riparian vegetation and channel will be required for channel realignment. Channel realignment will provide improved bank stability.</p> <p>Accommodation of bankfull channel width with overbank setbacks will help achieve stable geomorphic form with fish passage and habitat improvement.</p> <p>Fish and fish habitat and vegetation would be temporarily disturbed. In-water timing window would provide protection for both spring and summer spawners and extend from March 15 to July 15.</p>	<p>Channel banks and vegetation will be disturbed to facilitate the structure replacement. Significant disturbance to the riparian vegetation and channel will be required for channel realignment. Channel realignment will provide improved bank stability.</p> <p>Accommodation of bankfull channel width with overbank setbacks will help achieve stable geomorphic form with fish passage and habitat improvement.</p> <p>Fish and fish habitat and vegetation would be temporarily disturbed. In-water timing window would provide protection for both spring and summer spawners and extend from March 15 to July 15.</p>

	ALTERNATIVE 1: DO NOTHING EVALUATION CRITERIA (MAINTAIN EXISTING STRUCTURE)	ALTERNATIVE 2: REPLACEMENT OF EXISTING BRIDGE WITH A NEW STRUCTURE WITHOUT RE-ALIGNMENT OF MCCRANEY CREEK	ALTERNATIVE 3: REPLACEMENT OF EXISTING BRIDGE WITH A NEW STRUCTURE WITH RE-ALIGNMENT OF MCCRANEY CREEK	ALTERNATIVE 4: REPLACEMENT OF EXISTING BRIDGE WITH A NEW STRUCTURE (WITH SLIGHTLY ADJUSTED ENDS) WITH RE-ALIGNMENT OF MCCRANEY CREEK
	Least Preferred	Moderately Preferred	Most Preferred	Most Preferred
Social Environment				
Effects on Land Use	No impact to private property. No reduction in flood risk to private property.	Encroachment into town-owned property. No impact to private property. Reduction in flood risk to private property	Encroachment into town-owned property. No impact to private property. Reduction in flood risk to private property	Encroachment into town-owned property. No impact to private property. Reduction in flood risk to private property
	Least Preferred	Most Preferred	Most Preferred	Most Preferred
Construction Disruption	No impact to community.	Disruptions to traffic patterns would occur. Traffic control required for staged structural replacement.	Disruptions to traffic patterns would occur. Traffic control required for staged structural replacement.	Disruptions to traffic patterns would occur. Traffic control required for staged structural replacement.
	Most Preferred	Moderately Preferred	Moderately Preferred	Moderately Preferred
Public Safety	No improvements to cyclist safety. No sidewalk on north side of structure. Emergency repair has created a pinch point on the westbound roadway.	Improvement to cyclist safety with provision of paved shoulders. Sidewalks on both the north and south sides of the structure.	Improvement to cyclist safety with provision of paved shoulders. Sidewalks on both the north and south sides of the structure.	Improvement to cyclist safety with provision of paved shoulders. Sidewalks on both the north and south sides of the structure.
	Least Preferred	Most Preferred	Most Preferred	Most Preferred
Utilities	No impact to existing utilities.	Relocation of utilities as required for new structure.	Relocation of utilities as required for new structure.	Relocation of utilities as required for new structure.
	Most Preferred	Moderately Preferred	Moderately Preferred	Moderately Preferred
Cultural Environment				
Archaeology and Cultural Heritage Resources	No impact to archaeology and cultural heritage resources.	Potential for impact to archaeological resources which can be mitigated through further archaeological investigations.	Potential for impact to archaeological resources which can be mitigated through further archaeological investigations.	Potential for impact to archaeological resources which can be mitigated through further archaeological investigations.

	ALTERNATIVE 1: DO NOTHING EVALUATION CRITERIA (MAINTAIN EXISTING STRUCTURE)	ALTERNATIVE 2: REPLACEMENT OF EXISTING BRIDGE WITH A NEW STRUCTURE WITHOUT RE-ALIGNMENT OF MCCRANEY CREEK	ALTERNATIVE 3: REPLACEMENT OF EXISTING BRIDGE WITH A NEW STRUCTURE WITH RE-ALIGNMENT OF MCCRANEY CREEK	ALTERNATIVE 4: REPLACEMENT OF EXISTING BRIDGE WITH A NEW STRUCTURE (WITH SLIGHTLY ADJUSTED ENDS) WITH RE-ALIGNMENT OF MCCRANEY CREEK
	Most Preferred	Moderately Preferred	Moderately Preferred	Moderately Preferred
Transportation				
Active Modes of Transportation	No new cycling or pedestrian infrastructure across structure. Sidewalk only on south side of existing structure.	The new bridge will provide space to potentially accommodate a future sidewalk on the north side.	The new bridge will provide space to potentially accommodate a future sidewalk on the north side.	The new bridge will provide space to potentially accommodate a future sidewalk on the north side.
	Not Preferred	Most Preferred	Most Preferred	Most Preferred
Economic Environment				
Capital and Maintenance Costs	No incremental cost for this option. However, there may higher costs in long term due to need for emergency repair or replacement	Capital cost for structural replacement would be lower than the cost of Alternative 3 or Alternative 4. However, erosion issue will continue to exist and may result in additional cost related to repairs due to impacts on the bridge	Capital cost for structural replacement including creek realignment would be higher than the cost of Alternative 1 but lower than Alternative 4. However, erosion issue will continue to exist and may result in additional maintenance costs.	Cost for this alternative would be highest, however, it will address the structural deficiency issues and will minimize long term maintenance costs.
	Least Preferred	Least Preferred	Moderately Preferred	Most Preferred
Structural Engineering				
Structure Condition	Structural condition not to be improved.	New structure will address structural deficiency issues.	New structure will address structural deficiency issues.	New structure will address structural deficiency issues.
	Not Preferred	Most Preferred	Most Preferred	Most Preferred
Overall Recommendation	Not Recommended	Not Recommended	Not Recommended	Recommended Solution

5.2 Preferred Solution

Based on the review of existing conditions, the assessment of alternative solutions, the **Alternative 4: Replacement of Existing Bridge with a New Structure (with Slightly Adjusted Ends) with re-alignment of McCraney Creek** was identified as the preferred solution. Description of the preferred solution is provided the following section.

6 Description of Preferred Solution

6.1 Proposed Bridge Design

Consistent with the existing structure, the proposed bridge will be a single span culvert. The new bridge structure will have a span of 14.64 metres. It will convey flows associated with the Regional Storm (Hurricane Hazel) and the proposed bridge orientation will eliminate contact of creek flows with the slope and bridge embankments and help address continued erosion. From a fluvial geomorphological perspective, the proposed 14.64 metres span will accommodate the minimum recommended crossing opening width of 13.5m for McCraney Creek, which encompass bankfull width of 6.5m with 3.5m overbanks on both sides. More information on the bankfull width is provided in the *Fluvial Geomorphology Review and Preliminary Channel Design Fourteen Mile Creek & McCraney Creek (March 2018)* (Appendix C). Cross-sections of the proposed structure are provided in the general arrangement drawing provided in Figure 6-1.

6.2 Proposed Bridge Deck

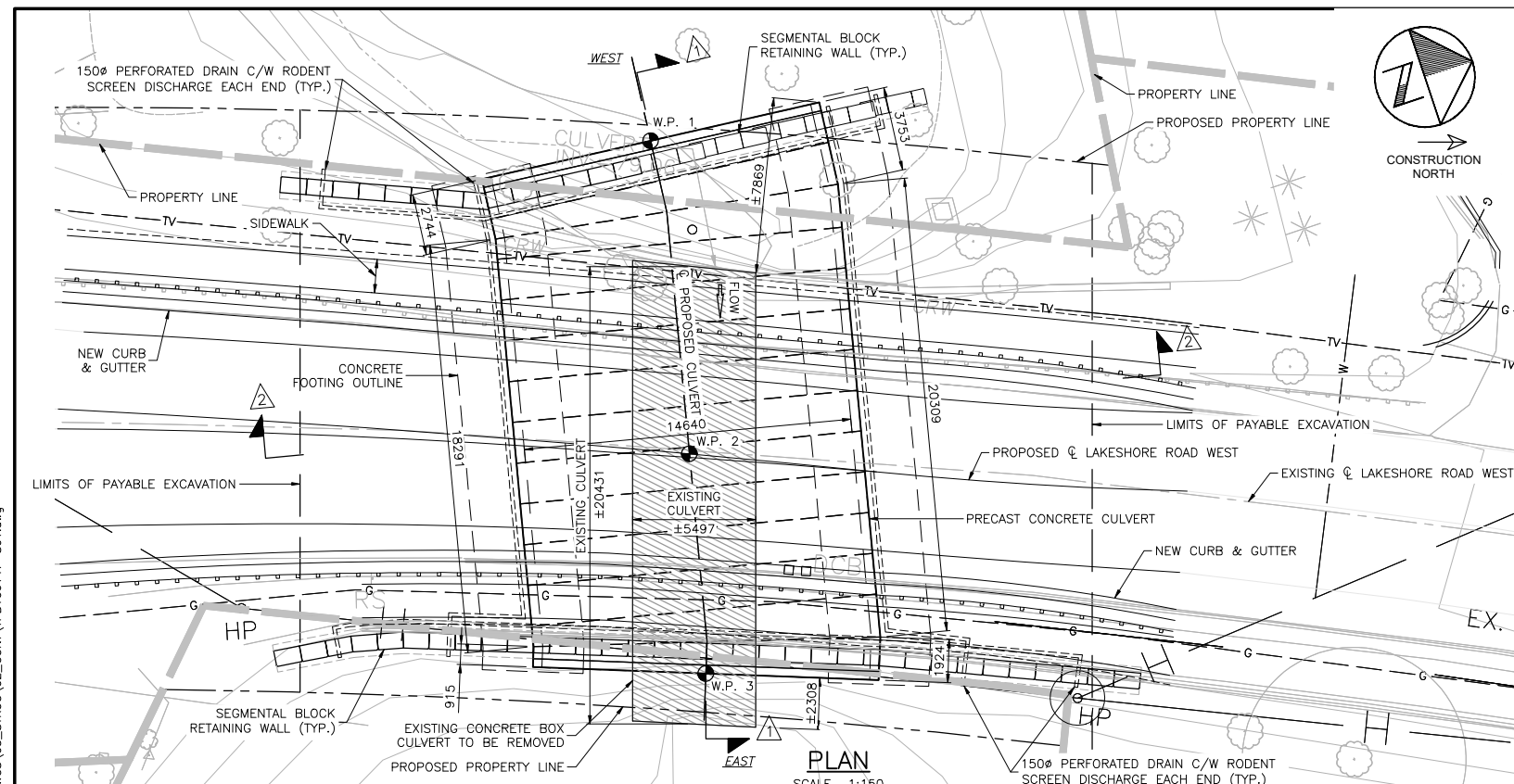
The proposed bridge deck will maintain existing vehicular traffic lanes. The proposed bridge deck will provide space for a new 1.5 m wide sidewalk along the north side, and the existing sidewalk on the south side will be maintained. A pedestrian handrail is being proposed on the south side of the bridge. The existing decorative railing on the south side of the Lakeshore Road West was installed by Appleby College. During detailed design, Appleby College should be consulted to confirm the design and colour of the proposed pedestrian handrail. The general arrangement drawing is provided in Figure 6-1.

6.3 Proposed Channel Design

The channel realignment has been designed based on geomorphic principles. The preliminary channel design is shown in Figure 6-2. Cross-sections of the proposed creek realignment are shown in Figure 6-3. Key features and benefits of proposed channel design include:

- Optimal channel orientation to align with proposed bridge structure to eliminate contact with slope and to address continued erosion.
- Pool to riffle pattern to provide consistent bedform sequence in the creek.
- Vegetated stone revetments along outside pool banks to protect vegetation roots from the potential impact of high creek flows. Need for vegetated channel revetments and proposed sizing should be confirmed at detailed design.
- Removal of the bedrock barrier in the crossing to improve fish passage. Stone treatments to promote small wildlife movement.

More details about fluvial geomorphologic considerations can be found in Appendix C.

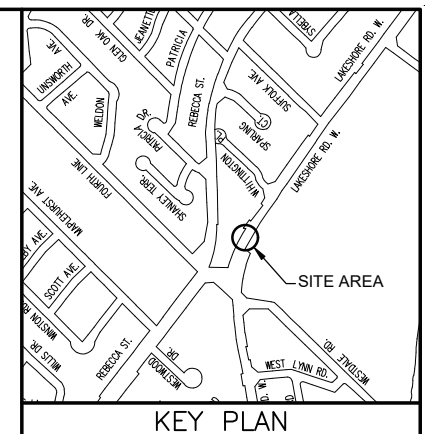


COORDINATE TABLE

CONTROL	NORTHING	EASTING	ELEVATION*	CL ROAD OFFSET	STATION
W.P. 1	4808919.523	606085.073	82.825	12.302 (WEST)	4+788.885
W.P. 2	4808917.182	606096.999	82.825	0.00	4+791.263
W.P. 3	4808914.463	606108.075	82.825	11.280 (EAST)	4+792.942

NOTES:

- DESIGN SHALL CONFORM TO THE CANADIAN HIGHWAY BRIDGE DESIGN CODE, CAN/CSA-S6-14, DESIGN LIVE LOADING IS CL-625-ONT.
- THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS OF THE EXISTING AND PROPOSED WORK AND ALL DETAILS ON SITE AND REPORT DISCREPANCIES TO THE CONTRACT ADMINISTRATOR BEFORE PROCEEDING WITH THE WORK.
- ALL SERVICES ARE TO BE ACCURATELY LOCATED PRIOR TO CONSTRUCTION AND ADEQUATE PROTECTION PROVIDED AT ALL TIMES. ANY INTERFERENCE OF EXISTING SERVICES OR UTILITIES WITH PROPOSED STRUCTURE OR CONSTRUCTION OPERATIONS IS TO BE REPORTED TO THE ENGINEER PRIOR TO THE COMMENCING OF CONSTRUCTION.
- THE SPECIFIED COMPRESSIVE CONCRETE STRENGTH (AT 28 DAYS) SHALL BE:
FOR PRECAST UNITS: 40MPa CLASS C-1
FOR CAST-IN-PLACE: 30MPa CLASS F-1
- CLEAR COVER TO REINFORCING STEEL IN CONCRETE SHALL BE:
PRECAST CONCRETE
- BOTTOM OF CULVERT TOP SLAB 40mm ±10mm
- REMAINDER 50mm ±10mm
CAST-IN-PLACE CONCRETE
- 100mm ±25mm - CONCRETE AGAINST OR PERMANENTLY EXPOSED TO EARTH
- 70mm ±20mm - REMAINDER, UNLESS OTHERWISE NOTED.
- DETAIL, BEND, PLACE AND SUPPORT REINFORCING STEEL TO CONFORM TO THE REINFORCING STEEL MANUAL OF STANDARD PRACTICE AND CSA A23.1-09, UNLESS NOTED OTHERWISE.
- EXPOSED EDGES TO BE CHAMFERED 20x20 EXCEPT AS NOTED.
- REINFORCING SHALL BE DEFORMED WELDED WIRE FABRIC TO ASTM A497M (Fy=500 MPa) AND DEFORMED BARS CONFORMING TO CSA STANDARD G30.18-09m, GRADE 400W.
- CONTRACTOR TO DESIGN, SUPPLY AND INSTALL PRECAST REINFORCED CONCRETE UNITS FOR THE SIZE, DEPTH AND LOADS INDICATED ON THE DRAWINGS, DETAILS FOR HEADER WALLS TO BE AS SHOWN.
- PROVIDE WATER TIGHT JOINTS BETWEEN ALL PRECAST CONCRETE SEGMENTS AS PER MANUFACTURER SPECIFICATIONS.
- DIMENSIONS AND ELEVATION SHOWN TO EXISTING CONDITIONS ARE TO BE FIELD VERIFIED.
- THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER STRUCTURAL DETAIL DRAWINGS.
- SOIL BEARING CAPACITY:
SERVICEABILITY LIMIT STATE: 150 KPa (UNFACTORED)
ULTIMATE LIMIT STATE: 200 KPa (FACTORED)
THE GEOTECHNICAL ENGINEER TO VERIFY THIS REQUIREMENT PRIOR TO PLACING BOX CULVERT AND CONCRETE.
- DO NOT SCALE THESE DRAWINGS.

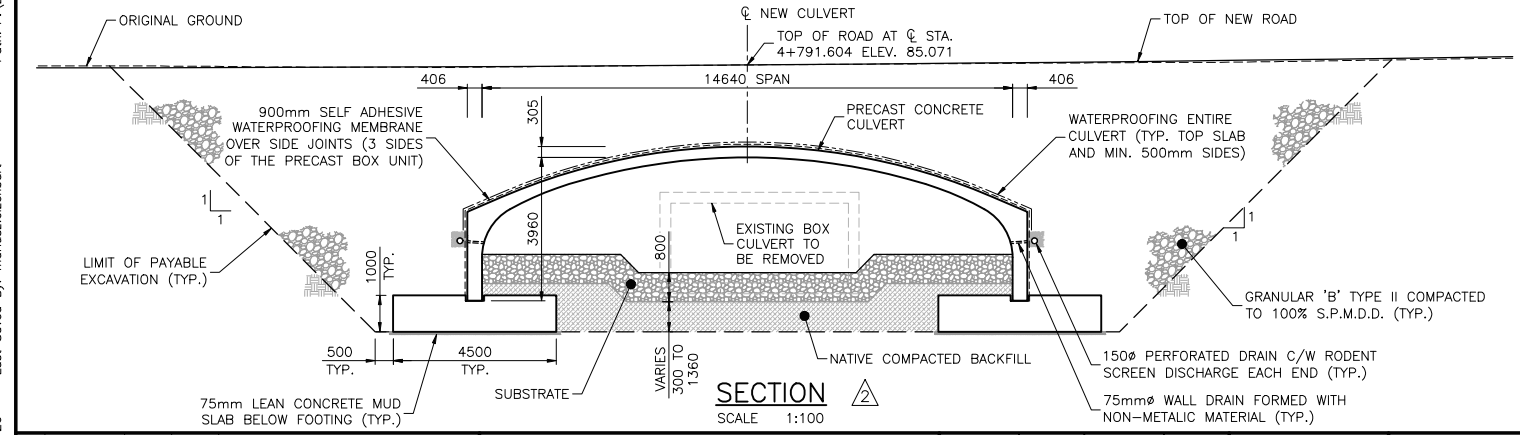
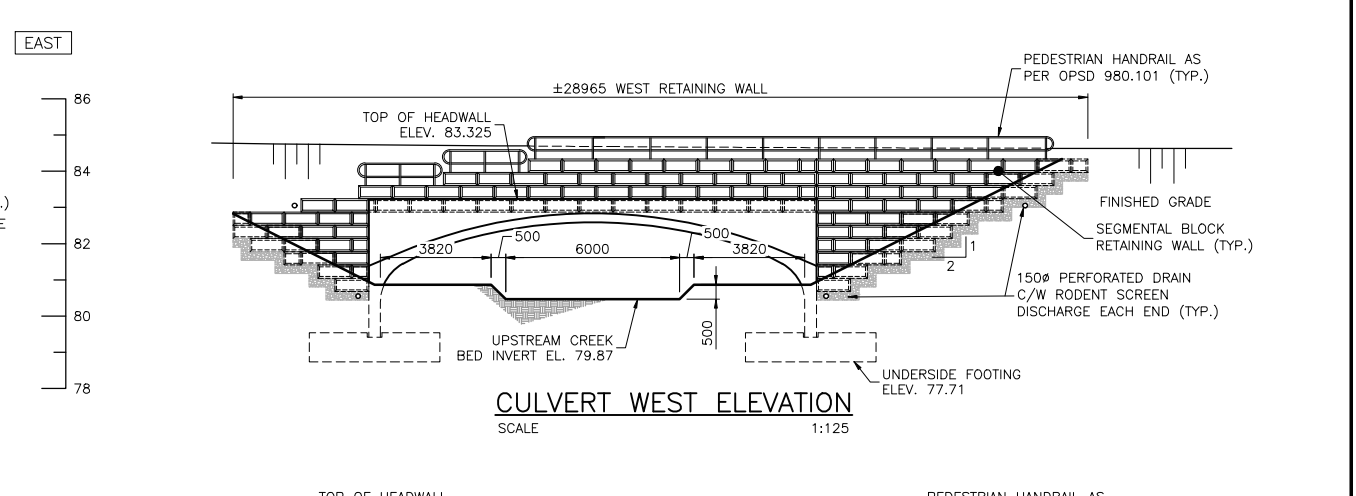
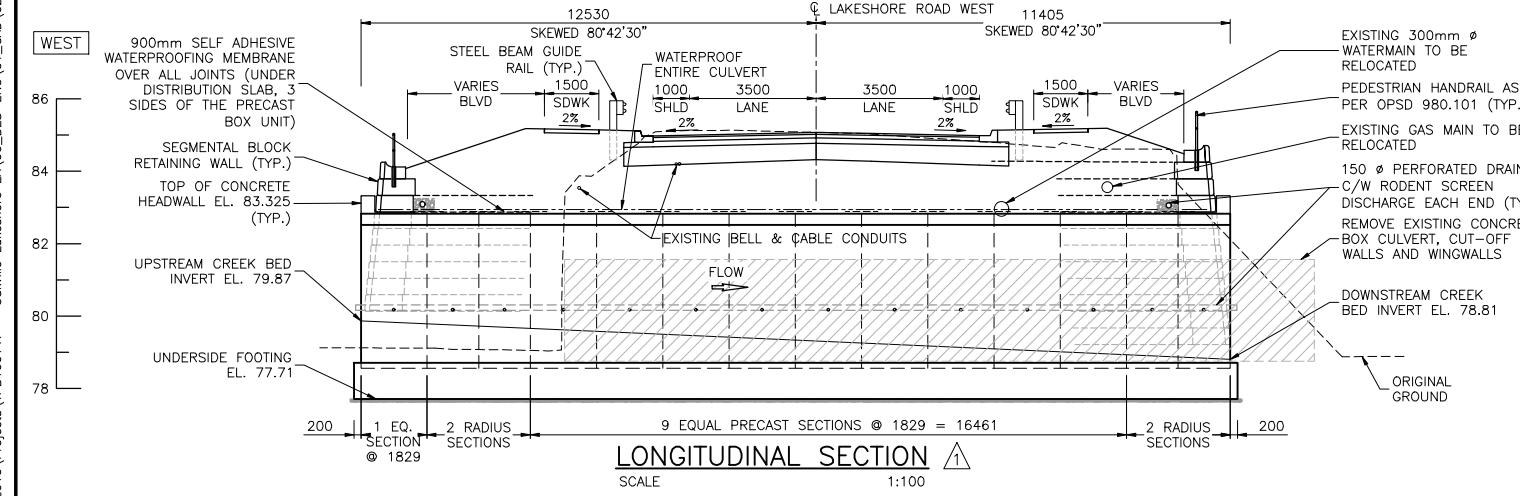


CONSTRUCTION NOTES:

- BACKFILL SHALL BE PLACED SIMULTANEOUSLY BEHIND BOTH SIDES OF CULVERT KEEPING THE HEIGHT OF THE BACKFILL APPROXIMATELY THE SAME. AT NO TIME SHALL THE DIFFERENCE IN ELEVATION BE GREATER THAN 500mm.
- THE SUB-BASE SHALL BE FREE FROM FROZEN MATERIAL AND SHALL BE COMPACTED TO SPECIFICATIONS. FROZEN AND SOFTENED MATERIALS SHALL BE REMOVED AND REPLACED WITH SUITABLE COMPACTED MATERIALS. OBTAIN ACCEPTANCE REGARDING SUB-BASE MATERIAL AND COMPACTION FROM THE OWNER'S REPRESENTATIVE PRIOR TO PLACING CONCRETE.

APPLICABLE STANDARDS:

OPSD 3190.100WALLS RETAINING AND ABUTMENT WALL DRAIN



APPROVALS			
Design	Checked		
Drawn	Checked		
Scale	AS SHOWN		
Date	MARCH 2022		

**PRELIMINARY
NOT TO BE USED
FOR CONSTRUCTION**

**LAKESHORE ROAD WEST
IMPROVEMENTS - McCRANEY
CREEK CULVERT REPLACEMENT
TOWN OF OAKVILLE**

**Figure 6-1
GENERAL ARRANGEMENT**

wood.

Contract No. _____
Consultant File No. TPB166147

Path: P:\2016\Projects\TPB166147 - Oakville Lakeshore EA\06_DES-ENG\01_CAD\02_DWG\03_STRUC\02_CON\TPB166147-501.dwg
 Plotted By: morius.eizenbort
 Last Saved By: morius.eizenbort
 Plotted: 2022-06-26
 Last Saved: 2022-06-26

Figure 6-2: McCraney Creek Preliminary Design for Channel Realignment

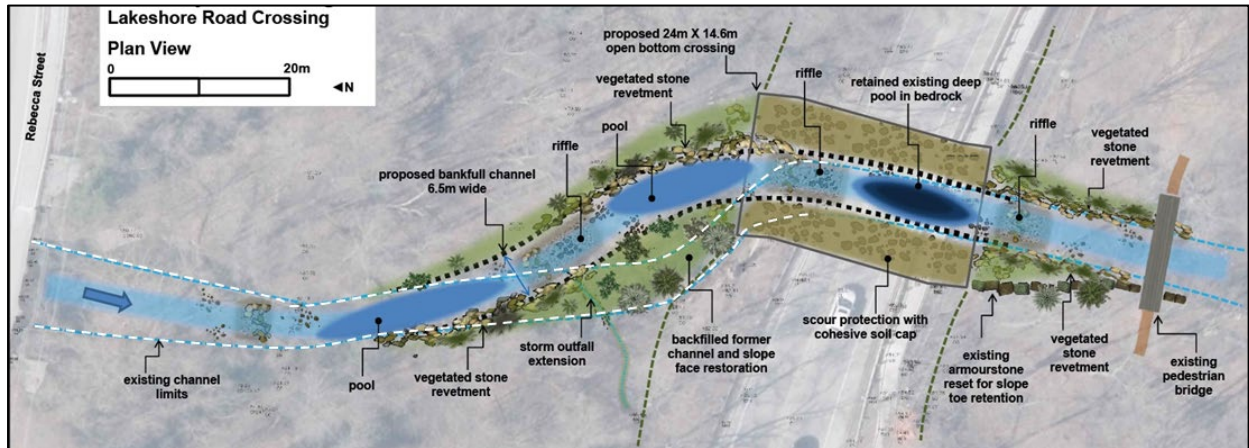
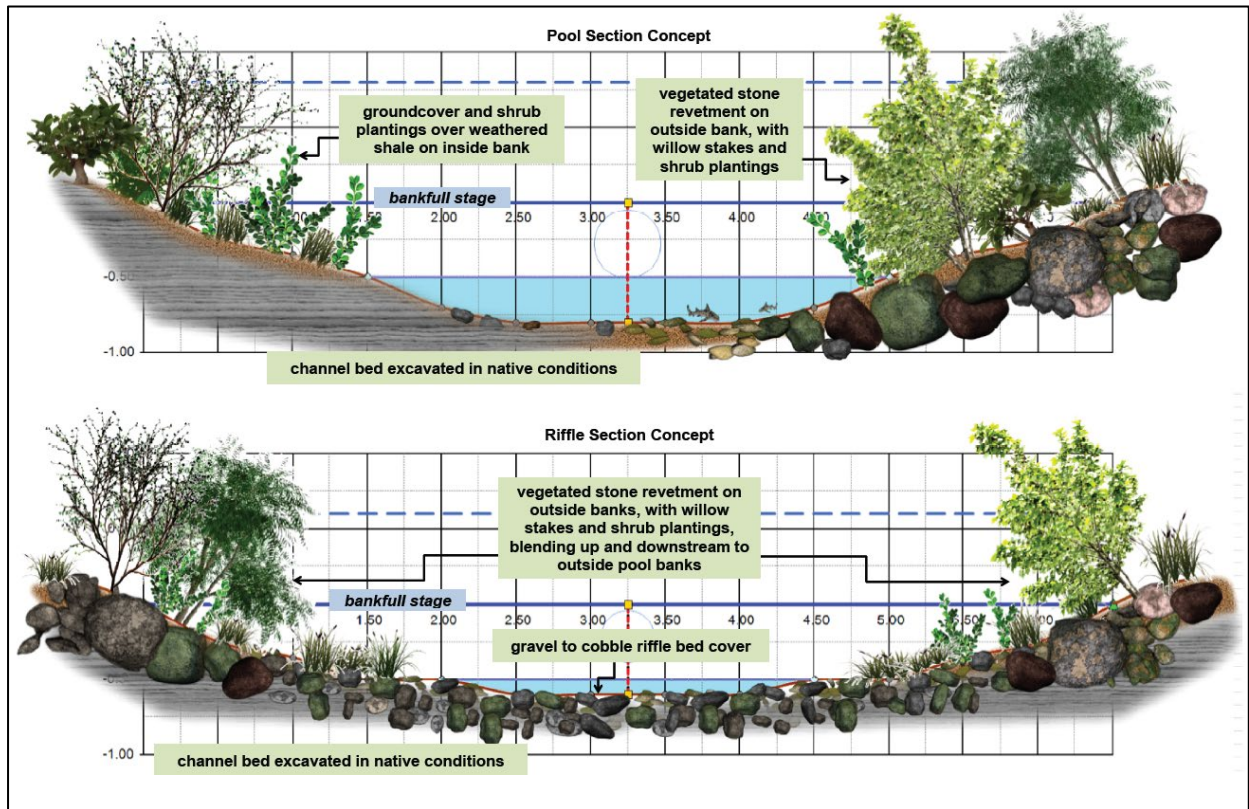


Figure 6-3: Cross-Sections for the Proposed McCraney Creek Channel



6.4 Wildlife Passage

From a wildlife passage perspective, existing conditions are impacted by the full confinement of the two existing crossing structures, the presence of a low flow bedrock encroachment on the upstream side of the existing crossing, and the lack of bedform sequencing that matches upstream and downstream. The full confinement impacts terrestrial corridors for small mammal movement, with the westerly slope toe confinement completely closing off corridor continuity on this side.

Channel realignment will achieve a better integrated corridor solution by providing channel integrity and symmetrical terrestrial function on both sides instead of just one. Realignment will eliminate the slope contact hazard and will replace it with a new slope at better angle with reinforcing vegetation.

Channel realignment and the structure replacement will result in improved channel performance and corridor function. Accommodation of bankfull channel width with overbank setbacks is intended to achieve stable geomorphic form with fish passage and habitat improvement, and terrestrial linkage. The proposed structure with a width of 14.64 metres, and a height of 3.16 metres is anticipated to provide for movement of small to mid-sized mammals.

More details about fluvial geomorphologic considerations can be found in Appendix C.

6.5 Construction Methodology and Traffic Management

During detailed design, a Construction Phasing Plan, Construction Staging Plan and Traffic Management Plan will be developed to be included in the Tender Documents for implementation during construction. These plans will identify how construction will be phased and staged, and how vehicular, pedestrian and cycling traffic will be managed during construction, taking into consideration the traffic concerns of residents along Suffolk Avenue. These plans will be developed considering that the duration of disruption to traffic on Lakeshore Road should be minimized to the degree possible by expediting construction, and measures should be put in place to avoid excessive traffic on Suffolk Avenue during construction.

The preliminary construction methodology is outlined below. It is noted that this methodology is subject to review and adjustment during detailed design phase.

At this time, it is anticipated that the replacement of the McCraney Creek Bridge will be completed in two (2) stages for the purposes of maintaining one lane of traffic serving both directions of travel. This envisioned approach of staging will split the bridge construction approximately in half, with approximately one half of the structure built during each stage. To control traffic flow, temporary traffic signals could be utilized, one at each end. These temporary signals can be interconnected with the existing traffic signals at Fourth Line. Furthermore, temporary roadway protection (shoring) such as soldier piles and lagging, can be utilized to retain and protect the active traffic lane.

Pedestrian access will be investigated in the detailed design phase and will be provided if feasible.

Flow in the McCraney Creek, will be maintained for the duration of the project. Flow within the existing structure limits will be maintained while the proposed culvert is constructed, as the proposed culvert has a significantly larger span than the existing. Subsequently, the existing culvert can serve as a temporary cofferdam until no longer necessary and then be demolished. At the end of the first stage of construction, the work will be transitioned to the next stage. This will be achieved by

shifting the traffic to the partially constructed new bridge, with construction proceeding on the opposite side.

Following each stage, remaining works will be completed, including but not limited to backfilling, culvert headwall construction, installation of segmental block wall, construction of sidewalk and curb and gutter, and pavement installation.

The total duration of work is anticipated to be approximately 6-8 months.

6.6 Excavation and Filling

Some excavation will be required for creek realignment and bridge replacement works. The amount of excavated soil and/or imported soil will be determined during detailed design phase through the development of a Soil Management and Fill Management Plan.

Management of excess soil (including excavation, transportation, temporary storage, and disposal) should be completed in accordance with Ontario Regulation 406/19 and the Ministry of the Environment, Conservation and Parks' current guidance document titled "Management of Excess Soil – A Guide for Best Management Practices" (2014).

6.7 Preliminary Cost Estimate of Proposed Works

A breakdown of preliminary cost estimate for bridge replacement and creek realignment works is provided below. It is important to note that this is a preliminary cost estimate and is subject to review and refinement during detailed design phase. The cost estimate is exclusive of the HST.

- Bridge Replacement: **\$3,500,000**
- Creek Realignment: **\$500,000***

***Note:**

The cost estimate for creek realignment is taken from the Creek Inventory and Assessment Study (2016) converted to 2022 Canadian dollars and rounded up. The cost for creek realignment works should be reviewed and confirmed during detailed design phase

6.8 Climate Change Considerations

Oakville's [Climate Change Primer](#) provides local information to residents on climate change and how to help protect human health, the natural environment, residential homes and properties against the impacts of a changing climate. For building town's resiliency, the document refers to Town's [Climate Change Strategy](#). This project will advance Town's adaptation actions related to the following impacts of climate change identified in the strategy document:

- Creeks and channels may meet or exceed capacity during extreme precipitation events.
- Extreme weather will result in increased natural debris (fallen trees, sediment and branches) entering creeks and channels.

- Warmer, shallower water will threaten sensitive aquatic species and habitats.
- Transportation infrastructure is subject to flooding due to extreme and longer duration extreme precipitation events.
- Flooding could result from an increase in the frequency, intensity and duration of extreme weather events.

7 Potential Environmental Effects and Mitigation Measures

7.1 Transportation

7.1.1 Road Network

7.1.1.1 Potential Effects

The overall benefit of the bridge replacement and creek realignment is that these works will address upstream flooding risk, deteriorating condition of the bridge structure and address erosion problem.

The construction of the proposed bridge replacement will temporarily disrupt travel along Lakeshore Road West. During consultation, area residents expressed concern that traffic will increase on Suffolk Avenue during bridge replacement works, and requested that measures be put in place to avoid that.

In order to accommodate the construction of the new bridge, it will be necessary to reduce traffic to a single lane at the construction site, alternating between eastbound and westbound, and controlled by temporary traffic signals. However, no full closure of Lakeshore Road West at McCraney Creek Bridge with a detour route (including along Suffolk Avenue) is planned.

No operational or maintenance related effects are anticipated to the road network following the replacement of the bridge. Occasional bridge and road maintenance may be required in long-term, however, it is not anticipated to have significant effects on the traffic.

7.1.1.2 Mitigation Measures

The following measures are being proposed for the detailed design and construction phases:

During detailed design, a Construction Phasing Plan, Construction Staging Plan and Traffic Management Plan should be developed to be included in the Tender Documents for implementation during construction. These plans should identify how construction will be phased and staged, and how vehicular, pedestrian and cycling traffic will be managed during construction, taking into consideration the traffic concerns of residents along Suffolk Avenue. These plans should be developed considering that the duration of disruption to traffic on Lakeshore Road should be minimized to the degree possible by expediting construction, and measures should be put in place to avoid excessive traffic on Suffolk Avenue during construction.

- Road users (including, area residents, businesses, local schools, emergency service providers (e.g., Town's Fire Department) and other key parties) should be notified of proposed construction well in advance. Attempts should be made to inform residents and businesses in a larger area, not just in the immediate vicinity of the construction area. Construction notifications could be issued via means to

be determined by the Town of Oakville and may include mailout of direct letters to the area residents and businesses, installation of signage, newspaper ads, and/or notification posting on the Town of Oakville's website, and social media platforms (e.g., Facebook and Twitter).

7.1.2 Pedestrian and Cycling Network

7.1.2.1 Potential Effects

The construction of the bridge replacement will temporarily disrupt the sidewalk on the south side of Lakeshore Road West. As noted before, there are no dedicated bike lanes on Lakeshore Road West – any cyclists using the roadway vehicular traffic lanes, will be disrupted during construction period.

7.1.2.2 Mitigation Measures

The following measures are being proposed for the detailed design and construction phases:

- Maintenance of pedestrian access through the construction zone will be investigated during the detailed design phase, as part of the development of Construction Phasing Plan, Construction Staging Plan and Traffic Management Plan.
 - The road users (including, area residents, businesses, local schools, emergency service providers (e.g., Town's Fire Department) and other key parties) should be notified of proposed construction well in advance. Attempts should be made to inform residents and businesses in a larger area, not just in the immediate vicinity of the construction area. Construction notifications could be issued via means to be determined by the Town of Oakville and may include direct mailout of letters to the area residents and businesses, installation of signages, newspaper ads, notification posting on the Town of Oakville's website, and social media platforms (e.g., Facebook and Twitter).
 - During construction, safety measures should be implemented, where necessary, to separate the construction area from pedestrians and cyclists. Signage indicating the presence of construction crews and/or activities should also be utilized.
-

7.2 Technical and Engineering

7.2.1 Infrastructure

7.2.1.1 Potential Effects

There may be potential for conflict with existing public infrastructure and private utilities during construction of the project.

7.2.1.2 Mitigation Measures

Impacts on public infrastructure and all the utilities should be confirmed during detailed design. Where utility relocation is required, the utility providers should be consulted, and utility relocation should be coordinated and completed prior to construction. During the detailed design and construction phases, consultation and coordination should be undertaken with Halton Region and utility companies to maintain and support all infrastructure and utilities in service during construction.

7.3 Social Environment

7.3.1 Existing Land-use

7.3.1.1 Potential Effects

No private property taking is required for the proposed bridge replacement and creek realignment works. Apart from this, there will be a need for space for temporary laydown areas to store and assemble construction equipment and materials. However, as discussed below, temporary laydown areas could be set up on public lands, without the need for private property. The size and location of temporary laydown areas will be identified during detailed design phase of the project.

7.3.1.2 Mitigation Measures

The following measures are being proposed for the detailed design and construction phases:

- Where possible, the road right-of-way should be used for temporary laydown areas and construction access. The undeveloped parcel of land between Fourth Line and McCraney Creek (north of Lakeshore Road West) could also be utilized for construction laydown areas and access.
 - The road users (including, area residents, businesses, local schools, emergency service providers (e.g., Town's Fire Department) and other key parties) should be notified of proposed construction well in advance. Attempts should be made to inform residents and businesses in a larger area, not just in the immediate vicinity of the construction area. Construction notifications could be issued via means to be determined by the Town of Oakville and may include direct mailout of letters to the area residents and businesses, installation of signage, newspaper ads, notification posting on the Town of Oakville's website, and social media platforms (e.g., Facebook and Twitter).
-

7.3.2 Noise

7.3.2.1 Potential Effects

The properties in the close vicinity of the construction area will experience higher noise levels during construction. Noise effects during construction will be associated

with excavation, drilling, truck traffic and operation of heavy machinery. These impacts will be temporary in nature and are largely unavoidable.

The replacement of the McCraney Creek Bridge is not predicted to increase noise from traffic operations. Therefore, no traffic operation noise mitigation measures are required.

7.3.2.2 Mitigation Measures

To minimize the potential for noise effects during construction, it is recommended that provisions be written into the contract documentation for the contractor to implement during construction, as outlined below:

- All equipment should be properly maintained to limit noise emissions. As such, all construction equipment should be operated with effective muffling devices that are in good working order
- There should be explicit indication in contract documents that Contractor is expected to comply with all applicable requirements of the contract and Town of Oakville Noise By-law
- The Contract documents should contain a provision that any initial noise complaint will trigger verification that the general noise control measures agreed to above are in effect

7.3.3 Air Quality

7.3.3.1 Potential Effects

The construction activities are anticipated to affect the local air quality. These effects include dust from various material handling operations and combustion emissions from construction equipment. Such emissions will be of a temporary nature and the effects are not predicted to move far from the immediate vicinity of the construction activities.

No effects on air quality are anticipated during operation and maintenance phases. Once the bridge replacement work is complete, the air quality conditions are anticipated to return to existing conditions. Therefore, no measures are proposed to avoid or minimize the effects on air quality during project operation and maintenance phases.

7.3.3.2 Mitigation Measures

Recommendations for mitigation measures for reducing construction related air quality impacts are discussed in the “Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities” (Cheminfo Services Inc., 2005). Standard mitigation measures and non-chloride dust suppressants identified in this document should be incorporated into Contract documents and implemented during construction to mitigate impacts on air quality. Typical mitigation measures include the following:

- Construction activities and the site should be monitored for wind direction and weather conditions to ensure that high-impact activities be reduced when the wind is blowing consistently towards nearby critical and sensitive receptors.

Visible fugitive dust should also be monitored and immediate action should be taken to determine the root cause in order to counteract this

- Each area of the construction site should be graded separately (i.e., not all at once), timed to coincide with the actual construction in that area. This allows vegetation and cover to remain intact within the construction zone, until just prior to construction occurring on that segment of the construction site
- Construction activities should be scheduled and planned to limit areas of exposed soil at any given time (i.e., clear vegetation, but strategically grub)
- Site layout should be planned to maximize separation from machinery and dust-causing activities
- Ensure that equipment (and adequate water supply and chemical dust suppressants, such as calcium chloride, if applicable) required for dust control and trained workers are available at the work site prior to commencing construction activities with potential for dust generation
- Exposed ground surfaces should be stabilized with non-erodible material as soon as practicably possible after construction in the affected area where soil surfaces will remain exposed for extended periods
- Construction vehicles / machinery and equipment should be in good repair, equipped with emission controls, as applicable, properly maintained and operated within regulatory requirements
- A minimal number of machines operating in any one area should be carefully considered during construction activities
- Minimize idling of equipment and trucks located in queuing areas in proximity of residences and other establishments

7.4 Cultural Environment

7.4.1 Built Heritage Resources and Cultural Heritage Landscapes

7.4.1.1 Potential Effects

As noted before, the McCraney Creek Bridge has no heritage status under the Ontario Heritage Act. It is not listed on the Oakville Register of Properties of Cultural Heritage Value or Interest (i.e., Heritage Register) as a property of potential cultural value and/or interest and it is not designated under any part of the Ontario Heritage Act.

Further, through correspondence, Town's Heritage Planner noted that the Heritage Planning staff visited the site and confirmed that a Cultural Heritage Evaluation Report for the structure was not required due to the substantial changes and modern materials that have modified the structure since its original construction. Town's Heritage Planner added that the property has not been identified as having potential cultural heritage value despite its age and further study was not requested, as the

priority for the Town was for the conservation of listed and designated properties in the Town.

As such, no effects are anticipated from a cultural heritage perspective.

7.4.1.2 Mitigation Measures

No mitigation measures are proposed, considering that the McCraney Creek Bridge has no potential cultural value and/or interest. Town's Heritage Planner suggested that in order to divert materials from landfills, any historic stone removed during the construction process be made available for salvage for reuse on it identified historic properties.

7.4.2 Archaeological Resources

7.4.2.1 Potential Effects

During construction, there may be a potential of uncovering archaeological resources.

7.4.2.2 Mitigation Measures

A combined Stage 1 and 2 Archaeological Assessment shall be completed during detailed design phase of this project. Additional stages of archaeological assessment may be required, based on the findings and recommendations of the Combined Stage 1 and 2 Archaeological Assessment. Archaeological concerns will not be considered addressed until all recommended archaeological assessments have been completed, and the reports have been entered onto the Ontario Public Registry of Archaeological Reports.

Additionally, the Town of Oakville is committed to continued engagement with the local Indigenous Nations. To continue to engage with the local Indigenous Nations, the Town of Oakville will invite the following Indigenous Nations to participate in the monitoring of the Stage 2 Archaeological Assessment fieldwork (and any additional archaeological assessment, if required) and report review:

- Mississaugas of the Credit First Nation
- Six Nations of the Grand River
- Haudenosaunee Development Institute, on behalf of Haudenosaunee Confederacy

The following standard measures will apply during construction:

- Should previously undocumented archaeological resources be discovered, they may indicate 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 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 Service 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 (MCM) 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.

- Archaeological sites recommended for further archaeological fieldwork or protection remain subject to Section 48 (1) of the Ontario Heritage Act and may not be altered, or have artifacts removed from them, except by a person holding an archaeological license.

7.5 Natural Environment

7.5.1 Aquatic Ecosystem

7.5.1.1 Potential Effects

The replacement of the McCraney Creek Bridge and realignment of the creek will require in-water and near-water works. During construction, runoff from construction activities may lead to a temporary increase in erosion risk due to increased area of exposed soil and stockpiled materials. This poses an increased risk of siltation to the creek leading to increased surface water turbidity which would be harmful for fish.

Debris and/or deleterious substances may enter the creek during construction activities by falling from the work overhead or going down the banks along the channel. This may result in requiring isolation of a part of the creek to clean up and thus inhibiting fish passage. Additionally, this could isolate fish temporarily from habitat. Harmful substances could impede breathing of fish and cause death.

Temporary dewatering of the work area may be necessary during the construction phase. Details of this will be determined during the detailed design phase of the project. If work area isolation and dewatering is not managed properly, there is potential for impacts on fish and fish habitat through death of fish, introduction of sediments and increased turbidity.

Spills and leaks, introduction of sediment, concrete outwash, and other deleterious substances (e.g., salt, paint, solvents, oil and grease) during construction could allow contaminated water to enter the creek. The potential for such effects is low if appropriate mitigation and environmental protection planning measures are applied.

Additionally, the limited temporary and/or permanent removal of shrubs/trees and/or riparian vegetation will be required. Vegetation removals can result in a temporary increase in erosion and sedimentation risk, and instability in channel banks.

Furthermore, vegetation removal may cause a temporary loss of overhead cover for fish and could result in increased water temperatures and instability in channel banks.

7.5.1.2 Mitigation Measures

Following mitigation measures are proposed to avoid and/or minimize potential effects on aquatic ecosystem.

- In-water works should be avoided from March 15 to July 15 of any given year to protect critical life stages of the resident fish species. This timing window will allow for resident fish communities to complete their spawning without construction disturbance. This timing window is based on the fish species found in McCraney Creek, including Rainbow Trout. The timing window is in accordance with Ministry of Natural Resources and Forestry's In-water Work Timing Window Guidelines (March 11, 2013) (Ministry of Natural Resources and Forestry, 2013).
- Work should be scheduled to avoid wet, windy and rainy periods that may increase erosion and sedimentation.
- Erosion and Sediment Control measures should be designed during detailed design and installed prior to construction activities and monitored and maintained throughout the construction to prevent material from moving down the banks into the channel. These measures should be maintained through all phases of construction until vegetation is re-established, and all disturbed ground is permanently stabilized.
- Stockpiles and embankments should be stabilized when not in use/as soon as possible following use, in order to prevent sedimentation to the creek.
- A debris containment system should be installed to catch material which may fall into the creek during work on the bridge above.
- Vegetation removal should be limited to the extent possible and the amount of time disturbed soil is exposed should be minimized. Proper revegetation can reduce the potential for bare soil and sediment entering the watercourse.
- Equipment and vehicles should be kept out of the creek channel when there are flows to reduce the potential for a harmful alteration to fish habitat. All materials and equipment used for the purpose of site preparation and construction activities should be operated and stored in a manner that prevents any deleterious substance (e.g., petroleum products, silt, etc.) from entering the creek.
- Vehicles should arrive clean and refueling and maintenance should be conducted at least 30 metres away from the creek to prevent deleterious substances from entering the creek.
- An Emergency Spill Response Plan should be developed that includes a protocol to minimize spills/leaks and their impact to the environment. Routine inspections of the Project construction site should be conducted to ensure continued use and function of best management practices, mitigation measures and spill control and prevention measures. As appropriate, spills should be reported to the Ministry of Environment, Conservation and Parks' Spills Action Centre.
- Land drainage systems, whether naturally occurring or man-made should not be used as receptors for any substance or material other than clean water complying with local municipal bylaws or storm water as intended.
- Some sections of the creek may need to be dewatered to permit works 'in-the-dry'. In these instances, cofferdams and bypass pumping and/or flumes can be

- utilized to isolate the work areas. Isolating and dewatering work areas may require fish salvage programs to avoid the stranding of fish within work areas.
- Screens should also be utilized during dewatering activities (if required) following the Fisheries and Oceans Canada’s Interim code of practice: End-of-pipe fish protection screens for small water intakes in freshwater.
 - Fish relocations may be required prior to construction activities. A Scientific License to Collect Fish Authorization, under the Fish and Wildlife Conservation Act, should be obtained from the Ministry of Natural Resources and Forestry in order to relocate any species within the in-water works area.
 - A request for review form should be submitted to Fisheries and Oceans Canada to receive advice on mitigation measures and to confirm that an authorization under Fisheries Act is not required.
 - All disturbed areas of the work site should be stabilized and revegetated promptly, and/or treated with appropriate erosion protection materials. In riparian and aquatic in-water works should occur within appropriate timing windows for construction suitable to the thermal regime and fish species evident.
-

7.5.2 Terrestrial Ecosystem

7.5.2.1 Potential Effects

The Project’s potential effects on the terrestrial ecosystem may include the following:

- Tree damage, and tree removal.
- Clearing and grubbing of vegetation.
- Contamination of vegetation communities due to the unplanned release or discharge of deleterious substances to the environment, including fuels (diesel and propane), lubricants (engine oil, transmission oil, etc.), and coolants (ethylene glycol).
- Potential increased dust generation and deposition on vegetation resulting in effects on photosynthesis, respiration, and transpiration.
- Disturbance, damage, or harm to wildlife.
- Construction activities may cause localized, short-term increases in noise and vibrations, which could disturb wildlife and deter animals from the area. Wildlife could also be disturbed by artificial lighting if construction occurs outside of daylight hours.
- Most species of birds in Canada are protected under the Migratory Birds Convention Act, 1994, through the Migratory Birds Regulations and the Migratory Birds Sanctuary Guidelines. These policies and regulations ensure the protection of listed migratory bird species, their nests, eggs and offspring. The Migratory Birds Convention Act prohibits harm or destruction of migratory birds and their nests. Removal of vegetation to accommodate the construction of the project could directly harm nesting birds.
- There are several potential maternity roost trees located in the Project area (refer to Figure 3-21). During construction, removal of potential bat maternity trees may result in potential harm to Species at Risk bats.

- During site preparation and construction wildlife may enter the work area and be at risk for mortality through conflicts with construction equipment.
- Potential increase in invasive species colonization within disturbed areas.
- Staging of equipment may encroach into adjacent natural areas beyond the proposed Project construction area which may result in additional vegetation damage or loss.
- Soil compaction from equipment, access routes, or laydown areas.

7.5.2.2 Mitigation Measures

Following mitigation measures are proposed to avoid and/or minimize potential effects on terrestrial ecosystem:

- All work zones must be clearly marked on detailed design drawings.
- The footprint of disturbance within the woodlot should be minimized to the extent possible to limit impacts to sensitive habitats utilized for nesting, roosting, migratory stopover etc.
- Staging and access areas should be minimized as much as feasible to avoid disturbance to the natural environment beyond the proposed disturbance limit.
- During detailed design, a tree inventory should be completed, and an Arborist Report and Tree Protection and Replacement Plan should be prepared to identify trees that may require removal and to protect the remaining trees. Mitigation for the loss of trees should occur in the form of replacement trees and shrubs. Replacement vegetation must be native species and suited to the local hydrology and soils of the area they are planted. During agency consultation process, Halton Region staff advised that the “treed areas on and adjacent to the subject site may be considered woodlands and are regulated by Halton Region Tree By-law No. 121-05. Any future tree removals within these areas may require prior authorization from Halton Region”. Halton Region Tree By-law No. 121-05 identifies various activities to which this By-law does not apply, including activities or matters undertaken by a municipality or a local board of a municipality. The need for tree removal authorization from Halton Region should be confirmed during detailed design phase.
- During detailed design, a Vegetation Restoration Plan should be developed to propose vegetation to restore the disturbed areas. Replacement vegetation must be native species and suited to the local hydrology and soils of the area they are planted. Restoration Plan should be developed in consultation with a fluvial geomorphologist and coordinated with the detailed design of the creek realignment. The Restoration Plan should be developed in accordance with the Conservation Halton Guidelines for Landscaping and Rehabilitation Plans (Conservation Halton, 2021).
- Disturbance and removal of existing trees and vegetation should be minimized where possible and confined to the footprint of the Project.
- All disturbed areas of the work site shall be stabilized and re-vegetated promptly, and/or treated with appropriate erosion protection materials.
- Access to any natural areas outside of the construction area should be prohibited to the extent possible to ensure the protection of these areas; this includes temporary access.

- During detailed design, an Erosion and Sediment Control Plan should be developed consistent with Erosion and Sediment Control Guideline for Urban Construction (Toronto and Region Conservation Authority, 2019), and current OPSS and Ontario Provincial Standard Drawings prior to construction. This plan should be designed to contain/isolate the work area, manage site drainage/runoff, and prevent erosion of exposed soils and migration of sediment. The erosion and sediment control measures should be implemented prior to commencement of works, and maintained through all phases of the Project, until vegetation is re-established, and all disturbed ground is permanently stabilized with a vegetative cover. The Erosion and Sediment Control Plan should illustrate the layout of the proposed erosion and sediment control measures to be implemented during construction; and should include:
 - Installation of effective erosion and sediment control measures before starting work to prevent sediment from entering natural areas. Sediment control barriers (e.g., silt fence) should be installed around the perimeter of the work area, including any areas designated as staging/storage areas. The silt fence will also prohibit wildlife from entering the work areas.
 - The contractor should implement a debris containment system to avoid debris falling into the creek during the bridge removal activities.
 - Regular inspection and maintenance of erosion and sediment control measures during construction, and
 - Removal of non-biodegradable erosion and sediment control materials once the site is stabilized.
 - All vegetation and tree removal must occur outside of the bat maternity roosting window (March 31st to September 30th) to avoid impacts to Species at Risk bats.
 - To prevent harm to nesting birds, removal of woody vegetation (i.e., trees and shrubs) should be conducted outside of the typical bird nesting period in this area (April 1st to August 31st). These timing constraints should not be perceived as absolutes. This period represents the core breeding period, although some species may nest in March and September. Ultimately, the objective from a compliance perspective is to not circumvent the Migratory Birds Convention Act and its regulations. Due diligence measures should be implemented and documented for any nest searching efforts, including record control, to ensure compliance with the Migratory Birds Convention Act.
 - For activities (including vegetation removal) that must occur during bird nesting season, surveys to identify nesting activity should be completed by an experienced Avian Biologist within 24 hours of scheduled work activities. The Avian Biologist conducting the nest sweeps must be able to identify birds by species and be knowledgeable of nesting seasons and activities for appropriate species. Due to the uncertainty that lies with nest sweeps during construction, especially during leaf-on conditions, it is, as noted, recommended that all vegetation clearing activities occur outside the above-noted bird nesting window. In the event that bird nests protected under the *Migratory Birds Convention Act*, *Fish and Wildlife Conservation Act* or *Endangered Species Act* are encountered during construction, work must stop in the vicinity of the sighting until further direction is provided. These species and their nests must not be disturbed, tormented, injured in any way, destroyed, and/or separated from young. A

protective buffer area should be established around the nest and should be determined in consultation with a qualified avian biologist, as well as the Ministry of Natural Resources and Forestry, Ministry of the Environment, Conservation and Parks, and/or Canadian Wildlife Service, as necessary. Nest surveys should only be completed in simple habitats such as singular trees or a small and well-defined area. Complex habitats such as vegetation communities with layers and dense foliage reduce the certainty of capturing all potential breeding.

- Vertical facings suitable for nesting by bird species (i.e., soil piles, excavation areas) should be covered using tarps, or plastic sheets, or any other means of preventing nesting within the construction zone. Such barriers should be installed prior to April 1 and shall remain in place until August 30, or until the completion of construction works. Alternatively, vertical facings should be maintained daily at a 45° angle to deter nesting.
- In order to prevent impacts to wildlife as a result of noise and vibrations, equipment idling should be kept to a minimum during construction. Minimizing equipment idling will also reduce carbon emissions and reduce the overall carbon footprint of construction. Construction outside of daylight hours should be avoided.
- Where feasible, works should be conducted during daylight hours, unless otherwise necessary, to avoid potential effects of artificial night lighting on crepuscular and nocturnal species.
- Sources of unnecessary noise or encroachment of worker activities into nearby habitats should be minimized to limit the extent of the project zone of influence when possible.
- The brush piles and other moveable habitat features in the area should be relocated before construction. As feasible, the work area should be surrounded by a silt (exclusion) fence within 48 hours of the commencement of construction activities to keep wildlife out of the site. The exclusion fencing should be examined daily and repaired as needed to ensure it functions as intended.
- During the detailed design phase, once the construction footprint is confirmed, an Information Gathering form should be completed and submitted to the Ministry of the Environment, Conservation and Parks to receive advice on next steps related to potential for effects on the potential habitat for Species at Risk bats.
- Construction personnel should watch for wildlife attempting to enter the work area. In the event wildlife are encountered, work shall stop, and the appropriate personnel shall be notified accordingly (e.g., site engineer, and government agency).
- An Application for a Wildlife Scientific Collector's Authorization, under the Fish and Wildlife Conservation Act, 1997, should be submitted to the Ministry of Natural Resources and Forestry and the permit should be obtained. This permit is required to relocate any wildlife (i.e., turtles, snakes, or amphibians) found in the vicinity of the subject bridge during the work activities. The contractor is responsible for the permitting and completion of the wildlife rescue and relocation work. All work must be completed by a qualified biologist.
- Equipment, materials and associated materials should be operated, stored and maintained in such a manner that prevents any deleterious substance from

entering the natural environment as indicated in OPSS 182, OPSS 517 and OPSS 805;

- A Spill Management Plan (including spill kit materials, instructions regarding their use, education of staff, and emergency contact numbers) should be developed and made available on-site at all times for implementation in the event of an accidental spill. All spills are to be reported to the Ministry of the Environment, Conservation and Parks' Spills Action Centre at 1-800-268-6060.
- Machinery should arrive on site in a clean condition and is maintained free of fluid leaks, invasive species and noxious weeds.
- Drip pans should be implemented under equipment (i.e., generators, pumps, etc.) in operation within the work areas. If refuelling and staging occurs on tree roots, a root zone protection should apply.
- All materials used or generated (e.g., organics, soils, construction waste and debris, etc.) during site preparation, construction, and clean-up should be temporarily stored, handled, and disposed of in a manner that prevents their entry to any creek. To the extent possible, the temporary on-site storage of sediment should be restricted.
- Dust production should be minimized to the extent practical by implementing dust suppression methods and thereby minimizing the zone of influence. Primary dust suppression methods can include watering in cases where watering will not promote entry of chemicals into the creek.
- Introduction of new invasive species should be prevented by washing down equipment prior to transporting to site and limiting travel of equipment and vehicles to and from the Project area.
- All heavy equipment and tools used on-site should be maintained in good working condition.
- Construction personnel should avoid idling of vehicles when not necessary for construction activities.
- Equipment and vehicles should be turned off when not in use unless required for construction activities and/or effective operation.
- Local regulatory authorities should be identified and their contact information should be made available on site during construction. Local regulatory authorities include Conservation Halton; Halton Region; Ministry of the Environment, Conservation and Parks; Ministry of Natural Resources and Forestry; Fisheries and Oceans Canada; and local emergency service providers.

7.5.3 Flooding Hazards

7.5.3.1 Potential Effects

As discussed in Section 3.5.4, the McCraney Creek Bridge is located within the Floodplain Hazard and Approximate Regulatory Limit regulated by Conservation Halton. During project construction activities, there may be potential for interfering with floodplain through cut and fill activities.

7.5.3.2 Mitigation Measures

During detailed design and prior to starting construction activities, a permit should be obtained from the Conservation Halton for works within Floodplain Hazard and Approximate Regulatory Limit regulated by Conservation Halton.

7.5.4 Soil

7.5.4.1 Potential Effects

During construction, there is potential for soil compaction from construction activities, such as equipment movement, access routes, or laydown areas. In addition, there is potential for soil contamination due to accidental spills/leakage of fluids from construction machinery.

7.5.4.2 Mitigation Measures

During construction, mitigation measures outlined in Section 7.5.2 should be implemented to avoid and/or minimize potential for effects on the soil, including soil compaction and/or soil contamination.

7.5.5 Excess Soil

7.5.5.1 Potential Effects

During construction, there may be excavated soil/materials that could not be used on site and may require removal. There may also be a need for importing additional soil on site.

7.5.5.2 Mitigation Measures

Management of excess soil (including excavation, transportation, temporary storage, and disposal) should be completed in accordance with O. Reg. 406/19 and the Ministry of the Environment, Conservation and Parks' current guidance document titled "Management of Excess Soil – A Guide for Best Management Practices" (2014). The amount of excavated soil and/or imported soil will be determined during detailed design phase through the development of a Soil Management and Fille Management Plan.

7.5.6 Groundwater

7.5.6.1 Potential Effects

Excavation will be required during construction to install bridge embankments. There may be potential to encounter groundwater during construction.

7.5.6.2 Mitigation Measures

A hydrogeological investigation should be completed during detailed design to determine the requirement for an Environmental Activity and Sector Registry or a Permit to Take Water to support the bridge replacement. The hydrogeological assessment should also identify any impacts on groundwater and propose mitigation

measures. If the hydrogeological investigation confirms the need for an Environmental Activity and Sector Registry or a Permit to Take Water, the appropriate permit should be obtained from the Ministry of the Environment, Conservation and Parks.

7.5.7 Drinking Water Source

7.5.7.1 Potential Effects

As noted in Section 3.5.7, the subject bridge is located within the Intake Protection Zone 2 associated with the Oakville Water Treatment Plant. The vulnerability score of this IPZ-2 is 4.8, which indicates a low vulnerability. Potential effects during construction may be associated with accidental spills/leakage of fluids from construction machinery.

7.5.7.2 Mitigation Measures

Mitigation measures proposed in Section 7.5 should be implemented during construction to prevent any spills and leaks, introduction of sediment, concrete outwash, and other deleterious substances (e.g., salt, paint, solvents, oil and grease) into the creek. All spills that could potentially cause damage to the environment should be reported to the Spills Action Centre of the Ministry of the Environment, Conservation, and Parks (800-268-6060).

7.5.8 Climate Change

7.5.8.1 Potential Effects

In 2017, the Ministry of the Environment, Conservation and Parks issued a guide that provides information for proponents to consider impacts of climate change on proposed undertaking and vice versa when carrying out the environmental assessments (Ministry of the Environment, Conservation and Parks, 2017). The guide requires proponents to take into account the following:

- the project's expected production of greenhouse gas emissions and impacts on carbon sinks (climate change mitigation)
- resilience or vulnerability of the undertaking to changing climatic conditions (climate change adaptation)

During the construction of the project, there will be a temporary increase in greenhouse gas emissions as a result of operation of construction machinery and equipment.

From a climate change adaptation perspective, the proposed bridge is designed to convey stormwater flows up to Regional Storm (Hurricane Hazel). This increases bridge's resiliency to the effects of flooding, which is a key hazard associated with climate change.

7.5.8.2 Mitigation Measures

In order to minimize emission of greenhouse gases during project construction, idling of construction vehicles and equipment should be minimized. In addition,

construction vehicles and equipment should be in good working order. This will help reduce inefficiencies in the operation of the construction vehicles and equipment.

8 Commitments for Additional Work

8.1 Commitments for Technical Work

Table 8-1 summarizes the commitments for additional work that will need to be addressed prior to construction.

Table 8-1: Commitments for Additional Work

CATEGORY	COMMITMENT
Transportation	<p>During detailed design, a Construction Phasing Plan, Construction Staging Plan and Traffic Management Plan should be developed to be included in the Tender Documents for implementation during construction. These plans should identify how construction will be phased and staged, and how vehicular, pedestrian and cycling traffic will be managed during construction, taking into consideration the traffic concerns of residents along Suffolk Avenue. These plans should be developed considering that the duration of disruption to traffic on Lakeshore Road should be minimized to the degree possible by expediting construction, and measures should be put in place to avoid excessive traffic on Suffolk Avenue during construction.</p>
	<p>The road users (including, area residents, businesses, local schools, emergency service providers (e.g., Town's Fire Department) and other key parties) should be notified of proposed construction well in advance. Attempts should be made to inform residents and businesses in a larger area, not just in the immediate vicinity of the construction area. Construction notifications could be issued via means to be determined by the Town of Oakville and may include mailout of direct letters to the area residents and businesses, installation of signages, newspaper ads, notification posting on the Town of Oakville's website, and social media platforms (e.g., Facebook and Twitter).</p>
	<p>During detailed design, the Project Team should review, refine (if required) and incorporate mitigation measures from Section 7.1 of this report into project planning and contract documents to avoid/minimize impacts on the transportation network.</p>

CATEGORY**COMMITMENT**

	<p>A guiderail is being proposed between the road and the sidewalk. This proposed configuration matches the existing condition on the south side. This proposed configuration should be reviewed during detailed design, and the need for the guiderail should be confirmed.</p>
	<p>A pedestrian handrail is being proposed on the south side of the bridge. The existing decorative railing on the south side of the Lakeshore Road West was installed by Appleby College. During detailed design, Appleby College should be consulted to confirm the design and colour of the proposed railing. Based on input received during the Public Information Centre, consideration should be given to match the design and colour of pedestrian handrail with that of the existing railing on the Appleby College property.</p>
Social and Economic Environment	<p>During detailed design, Construction Staging Plan should be developed such that impacts to private properties should be avoided, including obstruction to driveway access. Where possible, road right-of-way should be used for temporary laydown areas and construction access. The undeveloped parcel of land between Fourth Line and McCraney Creek (north of Lakeshore Road West) could also be utilized for construction laydown areas and access.</p>
	<p>During detailed design, the Project Team should include note in the contract documents that Contractors are expected to comply with all applicable requirements of the contract and Town of Oakville's noise by-law.</p>
	<p>During detailed design, the Project Team should ensure that the Contract documents contain a provision that any initial noise complaint will trigger verification that the general noise control measures agreed to above are in effect.</p>
	<p>During detailed design, the Project Team should review, refine (if required) and incorporate mitigation measures from Section 7.3 of this report into project planning and contract documents to avoid/minimize impacts on the social and economic environment.</p>

CATEGORY**COMMITMENT****Cultural Environment**

A combined Stage 1 and 2 Archaeological Assessment shall be completed during detailed design phase of this project. Additional stages of archaeological assessment may be required, based on the findings and recommendations of the Stage 2 assessment. Archaeological concerns are not considered addressed until all recommended archaeological assessments have been completed, and the reports have been entered onto the Ontario Public Registry of Archaeological Reports.

The following Indigenous Nations should be invited to participate in the monitoring of the Stage 2 Archaeological Assessment fieldwork (and any additional archaeological assessment, if required) and report review:

- Mississaugas of the Credit First Nation
- Six Nations of the Grand River
- Haudenosaunee Development Institute, on behalf of Haudenosaunee Confederacy

During detailed design, the Project Team should review, refine (if required) and incorporate mitigation measures/recommendations from the combined Stage 1 and 2 Archaeological Assessment Report into project planning and contract documents to avoid/minimize impacts on the cultural environment.

Should previously undocumented archaeological resources be discovered, they may indicate 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 archaeological assessment, in compliance with Section 48 (1) of the Ontario Heritage Act.

CATEGORY**COMMITMENT**

	<p>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 Service 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 (MCM) 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.</p>
	<p>Archaeological sites recommended for further archaeological fieldwork or protection remain subject to Section 48 (1) of the Ontario Heritage Act and may not be altered, or have artifacts removed from them, except by a person holding an archaeological license.</p>
	<p>During detailed design, staging, and access areas should be minimized as feasible to avoid disturbing the natural environment beyond the proposed disturbance limit.</p>
Natural Environment – Terrestrial and Aquatic Ecosystems	<p>A Natural Environment Assessment should be completed during the detailed design phase. As part of the Natural Environment Assessment, targeted terrestrial and aquatic habitat assessments should be completed based on secondary source information review, information input from regulatory agencies (e.g., Conservation Halton, Ministry of Natural Resources and Forestry) and dedicated field terrestrial and aquatic field investigations to confirm the findings and recommendations presented in this report.</p>

CATEGORY**COMMITMENT**

During detailed design, a tree inventory should be completed, and an Arborist Report and Tree Protection and Replacement Plan should be prepared to identify trees that may require removal and to protect the remaining trees. Mitigation for the loss of trees should occur in the form of replacement trees and shrubs. Replacement vegetation must be native species and suited to the local hydrology and soils of the area they are planted. During consultation, Halton Region staff advised that the “treed areas on and adjacent to the subject site may be considered woodlands and are regulated by Halton Region Tree By-law No. 121-05. Any future tree removals within these areas may require prior authorization from Halton Region”. Halton Region Tree By-law No. 121-05 identifies various activities to which this By-law does not apply, including activities or matters undertaken by a municipality or a local board of a municipality. The need for tree removal authorization from Halton Region should be confirmed during detailed design phase.

During detailed design, a Vegetation Restoration Plan should be developed to propose vegetation to restore the disturbed areas. Replacement vegetation must be native species and suited to the local hydrology and soils of the area they are planted. Restoration Plan should be developed in consultation with a fluvial geomorphologist and coordinated with the detailed design of the creek realignment. The Restoration Plan should be developed in accordance with the Conservation Halton Guidelines for Landscaping and Rehabilitation Plans (Conservation Halton, 2021). Given the existing conditions have a significant presence of invasive species, an Invasive Species Management Plan should also be developed during detailed design phase and implemented during/after construction to ensure the survivability of the proposed plantings.

During detailed design, an Erosion and Sediment Control Plan should be developed consistent with the Erosion and Sediment Control Guideline for Urban Construction (Toronto and Region Conservation Authority, 2019), and current OPSS and Ontario Provincial Standard Drawings prior to construction. This Plan should incorporate requirements identified in Section 7.5 of this report.

CATEGORY**COMMITMENT**

During detailed design phase, the following timing restrictions should be incorporated into the project schedule:

- In-water works should be avoided from March 15 to July 15 of any given year to protect critical life stages of the resident fish species. This timing window will allow for resident fish communities to complete their spawning without construction disturbance. This timing window is based on the fish species found in McCraney Creek, including Rainbow Trout. The timing window is in accordance with Ministry of Natural Resources and Forestry's In-water Work Timing Window Guidelines (March 11, 2013) (Ministry of Natural Resources and Forestry, 2013)
- To prevent harm to nesting birds, removal of woody vegetation (i.e., trees and shrubs) should be conducted outside of the typical bird nesting period in this area (April 1 to August 31). These timing constraints should not be perceived as absolutes. This period represents the core breeding period, although some species may nest in March and September. Ultimately, the objective from a compliance perspective is to not circumvent the Migratory Birds Convention Act and its regulations. Due diligence measures should be implemented and documented for any nest searching efforts, including record control, to ensure compliance with the Migratory Birds Convention Act.
- All vegetation and tree removal must occur outside of the bat maternity roosting window (March 31 to September 30) to avoid impacts to Species at Risk bats. This activity should be incorporated into project's construction schedule during detailed design.

During detailed design phase, once the construction footprint is confirmed, an Information Gathering Form should be completed and submitted to the Ministry of the Environment, Conservation and Parks to receive advice on next steps related to potential for effects on the potential habitat for Species at Risk bats.

A request for review form should be submitted to Fisheries and Oceans Canada to receive advice on mitigation measures and to confirm that an authorization under Fisheries Act is not required.

CATEGORY**COMMITMENT**

	<p>Fish relocations may be required prior to construction activities. A Scientific License to Collect Fish Authorization, under the Fish and Wildlife Conservation Act, should be submitted to the Ministry of Natural Resources and Forestry in order to relocate any species within the in-water works area.</p>
	<p>An Application for a Wildlife Scientific Collector's Authorization, under the Fish and Wildlife Conservation Act, 1997, should be submitted to the Ministry of Natural Resources and Forestry and the permit should be obtained. This permit is required to relocate any wildlife (i.e., turtles, snakes, or amphibians) found in the vicinity of the subject bridge during the work activities. The contractor is responsible for the permitting and completion of the wildlife rescue and relocation work. All work must be completed by a qualified biologist.</p>
Natural Environment – Flooding Hazard	<p>Existing and proposed floodplain mapping must be provided to Conservation Halton at detailed design. This mapping should be supported by hydraulic modelling. In addition, the most current hydraulic modelling must be used to confirm culvert and stone sizing for the proposed structure replacement. Conservation Halton should be contacted for most current hydraulic model.</p>
	<p>During detailed design, a permit should be obtained from the Conservation Halton for works within Floodplain Hazard and Approximate Regulatory Limit regulated by Conservation Halton.</p>
Natural Environment – Erosion Hazard	<p>Erosion hazard delineation will be completed during detailed design to confirm that the proposed alternative does not increase the erosion hazard (long-term stable top of slope) on private property as a result of channel relocation. In addition, consideration should also be given to the design of storm sewer outfalls to minimize erosion potential, as appropriate.</p>

CATEGORY**COMMITMENT**

Natural Environment – Fluvial Geomorphological Design	The detailed design for creek realignment should be completed by a fluvial geomorphologist with input from an ecologist. Input should also be sought from the fluvial geomorphologist for the channel design under the bridge. Conservation Halton should be consulted to seek input into creek channel realignment detailed design. The cost for creek realignment works should be reviewed and confirmed during detailed design phase.
Natural Environment – Soil/Subsurface Conditions	During detailed design phase, a geotechnical investigation should be completed to determine subsurface soil conditions and make recommendations for the bridge embankments.
Natural Environment – Excess Soil / Fill Import	The amount of excavated soil and/or imported soil should be determined during detailed design phase through the development of a Soil Management and Fille Management Plan.
Natural Environment – Groundwater	A hydrogeological investigation should be completed during detailed design to determine the requirement for an Environmental Activity and Sector Registry or a Permit to Take Water to support the bridge replacement. The hydrogeological assessment should also identify any impacts on groundwater and propose mitigation measures. If the hydrogeological investigation confirms the need for an Environmental Activity and Sector Registry or a Permit to Take Water, the appropriate permit should be obtained from the Ministry of the Environment, Conservation and Parks.
Technical Environment – Infrastructure	Impacts to existing infrastructure and utilities should be confirmed during detailed design. Where utility relocation is required, the utility providers should be consulted, and utility relocation should be coordinated.

CATEGORY**COMMITMENT**

	<p>During detailed design, consultation should be undertaken with Halton Region to understand the requirements for construction around Halton Region infrastructure (i.e., the existing watermain and sewer line).</p>
	<p>During detailed design and construction phases, consultation and coordination should be undertaken with Oakville Hydro to maintain the hydro infrastructure in service during construction works, where possible.</p>
Consultation	<p>Consult with regulatory agencies (such as, Ministry of the Environment, Conservation and Parks (Regional Environmental Planner – Project Review Unit); Ministry of Natural Resources and Forestry; Conservation Halton; Halton Region, etc.) and Indigenous Nations to share the technical assessments completed as part of detailed design.</p>

8.2 Commitments for Permits and Approvals

Table 8-2 outlines the permits and approvals that will be required to facilitate construction of this project.

Table 8-2: Permits and Approvals

PERMIT AUTHORITY	PERMIT / APPROVAL
Fisheries and Oceans Canada	A request for review form should be submitted to Fisheries and Oceans Canada to receive advice on mitigation measures and to confirm that an authorization under Fisheries Act is not required.
Ministry of Citizenship and Multiculturalism	A combined Stage 1 and 2 Archaeological Assessment (and further stages of assessment, if recommended) should be completed and submitted by the licensed archaeologist for ministry's review during the detailed design phase. A letter issued by the ministry indicating that archaeological concerns have been addressed and the report(s) have been entered into the Ontario Public Register of Archaeological Reports shall be obtained prior to any ground disturbing activities.
Ministry of Natural Resources and Forestry	Fish relocations may be required prior to construction activities. An application for License to Collect Fish for Scientific Purposes, under the Fish and Wildlife Coordination Act, should be submitted to the Ministry of Natural Resources and Forestry and authorization should be obtained in order to relocate any species within the in-water works area.
	Wildlife Scientific Collectors Authorization should be obtained for intentional or anticipated incidental capture, handling and/or relocation of herpetofauna (e.g., snakes, frogs).
Ministry of the Environment, Conservation and Parks	An Environmental Activity and Sector Registry should be completed or a Permit to Take Water should be obtained, if the need is identified based on the results of hydrogeological investigation.
	An Information Gathering Form should be submitted to the Ministry of the Environment, Conservation and Parks to receive advice on next steps related to the potential for effects on the potential habitat for Species at Risk bats.

PERMIT AUTHORITY PERMIT / APPROVAL

Conservation Halton	A permit under Ontario Regulation 162/06 should be obtained from Conservation Halton for works within Floodplain Hazard and Approximate Regulatory Limit regulated by Conservation Halton.
Halton Region	During consultation, Halton Region staff advised that the “treed areas on and adjacent to the subject site may be considered woodlands and are regulated by Halton Region Tree By-law No. 121-05. Any future tree removals within these areas may require prior authorization from Halton Region”. Halton Region Tree By-law No. 121-05 identifies various activities to which this By-law does not apply, including activities or matters undertaken by a municipality or a local board of a municipality. The need for tree removal authorization from Halton Region should be confirmed during detailed design phase.

8.3 Monitoring Plan

The project construction should be subject to daily on-site inspection to ensure that mitigation measures and commitments identified in this report are adhered to by the Contractor. Monitoring should include various activities, including but not limited to:

- A regular monitoring/inspection program during the course of the Project construction to confirm environmental protection measures and commitments identified in Section 7.0 and Section 8.0 of this report are being applied.
- Monitoring and maintenance of erosion and sediment control measures and addressing any failures.
- Maintenance of records of monitoring, maintenance and construction incidents

9 Consultation

9.1 Consultation Approach

9.1.1 Project Webpage

A project webpage was developed for this project on the Town of Oakville's website (Figure 9-1). Information related to the Class EA study was posted on this webpage, including study notices, Public Information Centre materials, study reports and links to other relevant studies. The project webpage can be accessed by clicking on this link: <https://www.oakville.ca/residents/mccraney-creek-bridge-replacement-ea.html>.

Figure 9-1: Screenshot of Project Webpage

McCraney Creek Bridge replacement Environmental Assessment (EA)

The Town of Oakville has initiated an environmental assessment study for the replacement of the McCraney Creek bridge. This Study will satisfy the requirements of a Schedule 'B' project as outlined in the Municipal Class Environmental Assessment (Class EA) document (October 2000, as amended in 2015).

This Class EA Study will build on and utilize information from previously completed reports that were developed as part of the [Lakeshore Road West Improvements](#) project, which was initiated in November 2016, as a Schedule 'C' Municipal Class EA Study.

Online Public Information Centre June 16-30, 2022

We want your input. Our online Public Information Centre is taking place from June 16 – 30, 2022. Please review the presentation material and reports, and provide your comments using the online comment form.

Residents were also invited to join an online presentation via Zoom on Tuesday, June 21, 2022, to ask questions of the study team and provide comments.

- [McCraney Creek Bridge replacement - June, 2022, Public Information Centre Presentation \(pdf\)](#)
- [Evaluation of Alternatives Tables for McCraney Creek Bridge Replacement \(pdf\)](#)
- [General Arrangement drawing for the proposed bridge structure \(pdf\)](#)
- [McCraney Creek Memo with Attachments, 2018 \(pdf\)](#)
- [Terrestrial Habitat Existing Conditions Report, 2017 \(pdf\)](#)
- [Aquatic Habitat Existing condition Report – Oct 2017 \(pdf\)](#)
- [Fluvial Geomorphology Review and Preliminary Channel Design Fourteen Mile Creek & McCraney Creek \(March 19, 2018\) \(pdf\)](#)
- [Lakeshore Road West Improvements Stormwater Management Report](#)
- [Stage -1 Archeological Assessment – May 2017 \(pdf\)](#)
- [Cultural Heritage Report - Updated 2020 \(pdf\)](#)

Related studies

Town of Oakville [Creek Erosion Inventory and Assessment Study Report 2010](#) and Town of Oakville [Creek Erosion Inventory and Assessment Study Report 2021](#)

- Identified that the McCraney Creek is forced to take an almost 90 degree turn into the bridge structure, and recommended that the channel realignment should be conducted upstream of the crossing to orient flows such that they pass through the crossing at an optimal angle, thus reducing stress on the structure itself.

[Flood Mitigation Opportunities Study for Fourteen Mile and McCraney Creek Systems](#) (Underway as of 2022)

- Includes recommendation to replace McCraney Creek Bridge to increase its capacity to reduce upstream flooding risk.

McCraney Creek Bridge Replacement Schedule 'B' Municipal Class Environmental Assessment

Public Information Centre (16 June 2022 – 30 June 2022)
Online Presentation (21 June 2022 at 6:00 PM)

McCraney Bridge EA Public Meeting Tuesday June 21, 2022

9.1.2 Study Contact List

A Study Contact List was developed at the commencement of this Class EA study. This list included contacts from the federal and provincial government agencies, Conservation Halton, Halton Region, Town of Oakville, Indigenous Nations, utility

companies, and key stakeholders (e.g., Coronation Residents Parks Association, OakvilleGreen Conservation Association, etc.). The Contact List was updated during the study to add and/or remove comments based on the requests received. Contact groups from the Study Contact List are listed in the (Table 9-1). In addition to these groups, a Consultation Area was identified. Notices were hand delivered to all the properties within the Consultation Area. This area is shown in Figure 9-2.

Table 9-1: Contact Groups on the Study Contact List

CONTACT GROUP	NAME
Indigenous Nations	<ul style="list-style-type: none"> – Mississaugas of the Credit First Nation – Six Nations of the Grand River – Haudenosaunee Confederacy Chiefs Council represented by Haudenosaunee Development Institute
Federal Government Agencies	<ul style="list-style-type: none"> – Fisheries and Oceans Canada
Provincial Government Agencies	<ul style="list-style-type: none"> – Ministry of the Environment, Conservation and Parks – Ministry of Heritage, Sport, Tourism and Culture Industries – Ministry of Northern, Natural Resources and Forestry
Halton Region	<ul style="list-style-type: none"> – Public Works – Legislative & Planning Services – Infrastructure Planning & Policy – Waste Management Planning & Collection – Road Operations – Water Resources – Halton Ecological and Environmental Advisory Committee – Chief of Police
Town of Oakville	<ul style="list-style-type: none"> – Transportation and Engineering – Road and Works Operations – Planning Services – Parks and Open Space – Community Development Commission – Community Services Commission – Community Infrastructure Commission – Corporate Services Commission

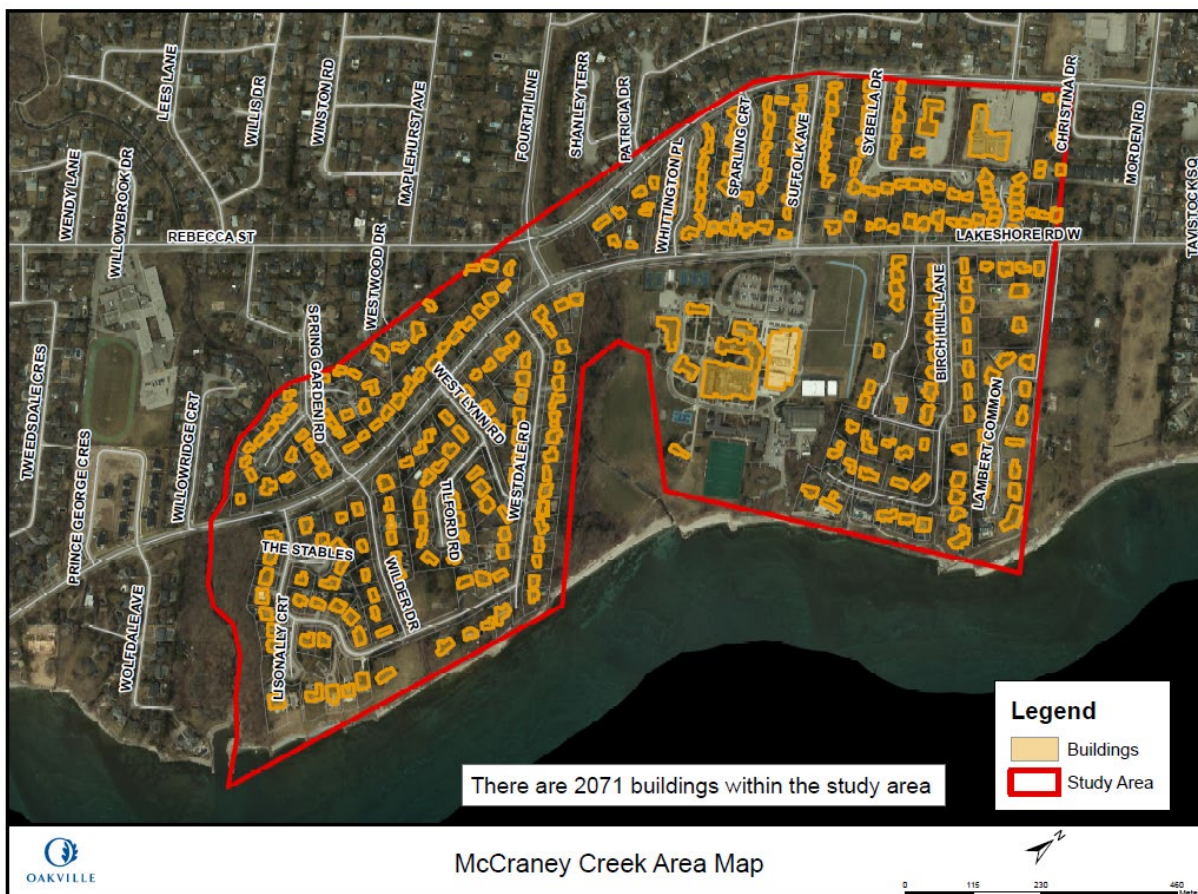
CONTACT GROUP

NAME

Conservation Authority	– Conservation Halton
Schools	– Halton District School Board – Halton Catholic District School Board – Appleby College
Utilities	– Bell Canada – Enbridge Gas Inc. – Oakville Hydro – Rogers Communications
Elected Officials	– Mayor and Councilors
Stakeholders	– Various

The final Study Contact List is provided in Appendix E.

Figure 9-2: Consultation Area for Notice Distribution



9.1.3 Study Notices

9.1.3.1 Notice of Study Commencement and Public Information Centre

A Notice of Study Commencement and Public Information Centre was issued to introduce the Class EA Study and invite the public, Indigenous Nations, regulatory agencies and key stakeholders to participate in the Study process. Table 9-2 lists the methods of distribution of the Notice of Study Commencement and Public Information Centre.

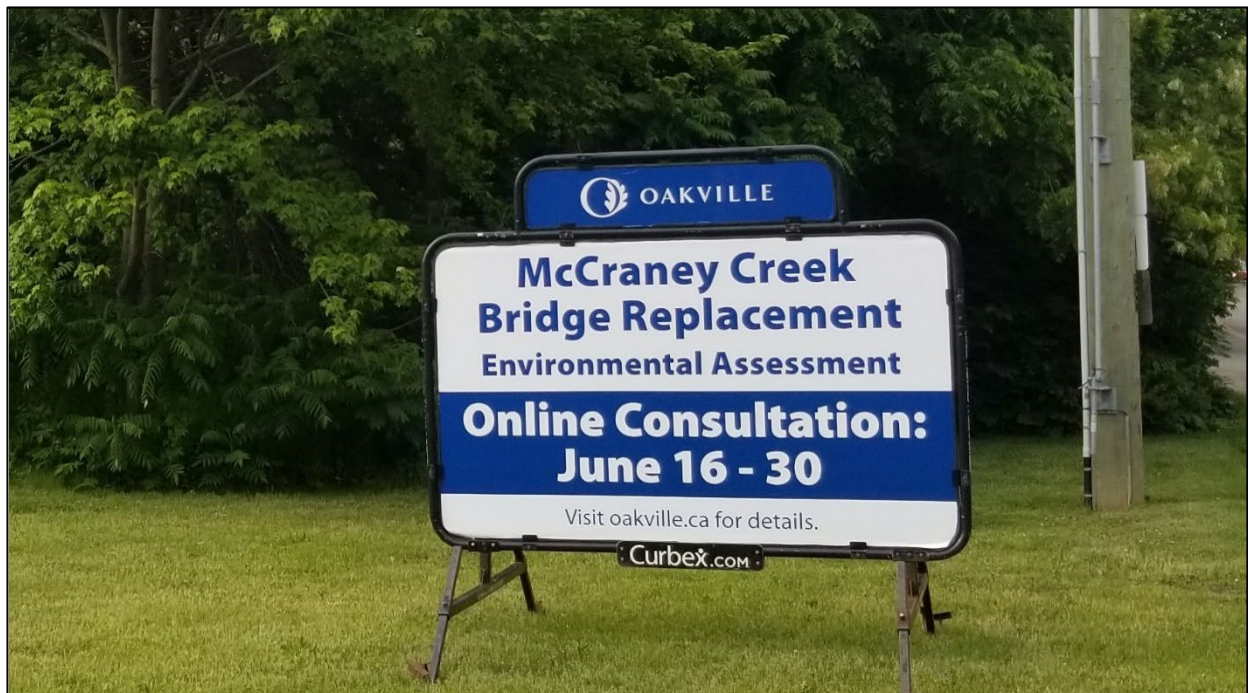
In addition to notice distribution, signs were posted on site to invite the road users to participate in the online consultation. Signs were installed at the intersections of Lakeshore Road with Fourth Line and Dorval Drive. A photograph of the one of the on-site signs is provided in Figure 9-3.

Table 9-2: Distribution Method for the Notice of Study Commencement and Public Information Centre

NOTICE DISTRIBUTION METHOD	DATE
Email circulation to the Mayor and Ward 2 Councilors	31 May 2022
Hand-delivery to the area residents	2 June 2022
Email circulation to the contacts on the Study Contact List (including Indigenous Nations, Government Agencies, Utility Companies, and Stakeholders)	6 June 2022
Posting on Town's website	9 June 2022
Email reminder to the contacts on the Study Contact List (including Indigenous Nations, Government Agencies, Utility Companies, and Stakeholders)	24 June 2022
Publication in Newspaper	16 June 2022 30 June 2022

The Notice of Commencement and Public Information Centre is provided in Appendix F.

Figure 9-3: Photo of the Roadside Sign



9.2 Public Consultation

An Online Public Information Centre was hosted from 16 June 2022 to 30 June 2022. As part of this event, information materials were posted on the Project website and comments were invited during a two-week period (16 June to 30 June). In addition, an online presentation was hosted on 21 June 2022. Interested individuals were invited to attend the online presentation and ask questions/submit comments. The email address of the Town staff and an online form were also posted on the project webpage for anyone that wanted to submit comments during the comment period.

Individuals, who attended the online presentation and asked questions, received responses during the online presentation. Anyone who submitted questions and/or comments outside of the online presentation, received a written response from the Study Team. The table below summarizes key comments received from the public and key stakeholders and also provides a summary of Study Team's responses.

Table 9-3: Summary of Key Comments from Public and Stakeholder and Study Team’s Response

SUMMARY OF KEY COMMENTS FROM PUBLIC AND STAKEHOLDER

SUMMARY OF STUDY TEAM’S RESPONSES

<p>Increase in traffic on nearby local streets during construction</p>	<p>During detailed design, a Construction Phasing Plan, Construction Staging Plan and Traffic Management Plan should be developed to be included in the Tender Documents for implementation during construction. These plans should identify how construction will be phased and staged, and how vehicular, pedestrian and cycling traffic will be managed during construction, taking into consideration the traffic concerns of residents along Suffolk Avenue. These plans should be developed considering that the duration of disruption to traffic on Lakeshore Road should be minimized to the degree possible by expediting construction, and measures should be put in place to avoid excessive traffic on Suffolk Avenue during construction.</p>
<p>Impacts to natural environment and mitigation measures required to address those impacts</p>	<p>This Project File Report identifies the project’s environmental effects and proposes mitigation measures. These measures, which include protection of terrestrial and aquatic habitats, wildlife and aquatic species, will be incorporated into tender documents during the detailed design phase, to ensure that environmental protection is the key priority during construction, and damage to the environment can be avoided/minimized to the extent possible.</p> <p>Necessary reviews and approvals from regulatory agencies, for example, Conservation Halton, Fisheries and Oceans Canada will be obtained during detailed design phase. Construction will be conducted in accordance with and subject to the conditions of permits and approvals from regulatory agencies.</p> <p>Commitments for future work are identified in Section 8 of this report.</p>

Public Information Centre presentation is provided in Appendix G, along with comments received and responses provided. Names and contact information of the members of the public have been redacted for privacy purposes.

9.3 Indigenous Consultation

Indigenous engagement is a key component of the Class EA process. On March 16, 2022, the Ministry of the Environment, Conservation and Parks identified the following Indigenous Nations that may be interested in the project:

- Mississaugas of the Credit First Nation
- Six Nations of the Grand River
- Both the Haudenosaunee Confederacy Chiefs Council and the Haudenosaunee Development Institute.

Following understood consultation protocols with these Indigenous Nations, the Study Team contacted the Indigenous Nations about this Class EA Study. A summary of outreach to the Indigenous Nations is provided in Table 9-4. Record of correspondence with the Indigenous Nations is provided in Appendix H.

9.4 Agency Consultation

A summary of correspondence with government agencies is provided in Table 9-5. Record of correspondence with government agencies is provided in Appendix I.

9.5 Utility Consultation

A summary of correspondence with utilities is provided in Table 9-6. Record of correspondence with utility companies is provided in Appendix J.

Table 9-4: Summary of Correspondence with the Indigenous Nations

DATE	METHOD	COMMUNICATION SUMMARY
Mississaugas of the Credit First Nation (MCFN)		
06 June 2022	Email	Study Team provided the Notice of Commencement and PIC.
28 July 2022	Email	Study Team followed-up to inquire if Mississaugas of the Credit First Nation had any comments or questions about the project.
28 July 2022	Letter via Email	<p>Mississaugas of the Credit First Nation shared a letter noting that the Nation <i>does not</i> have a high level of concern regarding the proposed project and therefore, by way of the letter, approved the continuation of this project. The Nation requested that the Study Team continue to notify them about the status of the project, and in case if there are any changes to the project, the Study Team provide them with a copy of all associated environmental and archaeology reports.</p> <p>The letter also noted that it is MCFN’s policy that their Field Liaison Representatives are on location whenever any fieldwork for environmental and/or archaeological assessments are undertaken.</p>
26 September 2022	Email	Study Team shared Draft Project File Report for review and comment.
26 September 2022	Email	<p>MCFN noted that there are no comments or concerns regarding the consultation for the McCraney Bridge Replacement Project.</p> <p>MCFN’s email noted that the Stage 1 Archaeological Assessment was forwarded to their archaeology staff for comments; however, no comments further were received.</p>

DATE	METHOD	COMMUNICATION SUMMARY
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Six Nations of the Grand River (SNGR)		
06 June 2022	Email	— Study Team provided the Notice of Commencement and PIC.
28 July 2022	Email	— Study Team followed-up to inquire if Six Nations of the Grand River had any comments or questions about the project.
28 July 2022	Email	— Six Nations of the Grand River noted that they do not participate in Public Information Centres. They expressed interest in a meeting to learn more about this project, specifically the environmental impacts of the project and also, any archaeology work being planned on this site.
02 August 2022 05 August 2022 09 August 2022	Emails	— Study Team and SNGR shared availabilities for a virtual meeting. A meeting was scheduled for 06 September 2022.
06 September 2022	Virtual Meeting	<ul style="list-style-type: none"> — Study Team delivered a presentation to provide an overview of the project, Class EA process, identification and evaluation of alternatives and the recommended solution. — SNGR asked questions related to various aspects of the project. Study Team provided responses to SNGR's questions to their satisfaction. No concerns were raised by SNGR. Minutes of this meeting are provided in Appendix J.
07 September 2022	Emails	<ul style="list-style-type: none"> — SNGR requested a copy of presentation from the meeting of 06 September 2022 for their records. — Study Team shared a pdf version of the presentation on the same day.

DATE	METHOD	COMMUNICATION SUMMARY
13 September 2022	Email	<ul style="list-style-type: none"> – Study Team shared minutes of the meeting of 06 September 2022 for SNGR’s review. – Study Team also shared an updated that the draft Project File Report will be shared with SNGR for review and comment soon.
26 September 2022	Email	<ul style="list-style-type: none"> – Study Team shared Draft Project File Report for review and comment.
11 October 2022	Email	<ul style="list-style-type: none"> – Study Team sent a follow-up reminder email regarding review of the Draft Project File Report. – No comments were received from SNGR on the Draft Project File Report.
Haudenosaunee Development Institute on behalf of Haudenosaunee Confederacy Chiefs Council		
06 June 2022	Email	<ul style="list-style-type: none"> – Study Team provided the Notice of Commencement and PIC.
06 June 2022	Email	<ul style="list-style-type: none"> – HDI requested a meeting to discuss fieldwork participation.
06 June 2022	Email	<ul style="list-style-type: none"> – Study Team provided dates for the meeting.
06 June 2022	Email	<ul style="list-style-type: none"> – HDI confirmed availability for the meeting and Study Team subsequently sent out a meeting invite for 7 June 2022.
07 June 2022	Virtual Meeting	<ul style="list-style-type: none"> – Study Team and HDI had a meeting to discuss the project. HDI identified interest in fieldwork participation in detailed design and requested the application for development be submitted.
08 June 2022	Email	<ul style="list-style-type: none"> – Study Team requested clarification on the purpose of the fee noted in the HDI Development Application.

DATE	METHOD	COMMUNICATION SUMMARY
08 June 2022	Email	<ul style="list-style-type: none"> – HDI provided a response that the HDI Application for Development fee is used to pay for staff’s time to review project documents. HDI provided further clarification that HDI’s fieldwork monitoring program is different, HDI asked to have monitors present during the review process as this is HDI’s due diligence and quality assurance as stewardships of the land.
13 July 2022 20 July 2022	Emails	<ul style="list-style-type: none"> – Study Team shared availability for a virtual meeting to further discuss this project and the applicability of HDI’s development application to this project. A meeting was scheduled for 28 July 2022.
28 July 2022	Virtual Meeting	<ul style="list-style-type: none"> – Meeting to discuss the Haudenosaunee Development Institute’s Application for Consideration and Engagement for Development and the applicability to the McCraney Creek Bridge Replacement Project. – HDI noted that they do not provide consent to this project and are unsure if the proponent had submitted the application. – It was discussed that HDI will advise whether the town can provide the engagement fee to HDI without having to complete the HDI Application for Consideration and Engagement for Development, as that form appears to be relevant to land development type of projects. – Minutes of this meeting are provided in Appendix J.
16 August 2022	Email	<ul style="list-style-type: none"> – Study Team followed up with HDI to inquire if they had any further guidance for the Study Team on whether it’s possible to pay the fee, without completing HDI’s application form. – No response was received from HDI.

DATE	METHOD	COMMUNICATION SUMMARY
07 September 2022	Email	<ul style="list-style-type: none"> – Study Team provided an update that the Project Team will be distributing the Draft Project File Report for HDI’s review and comment. Study Team also inquired what the fee will be for reviewing the Draft Project File Report and if it’s acceptable for HDI to invoice the Town directly for the review. – No response was received from HDI.
09 September 2022	Email	<ul style="list-style-type: none"> – Study Team shared minutes of the meeting of 28 July 2022 and followed up to request guidance and confirmation on the fees and invoice process associated with the review of the Draft Project File Report. – No response was received from HDI.
19 September 2022	Voicemail Email	<ul style="list-style-type: none"> – Study Team followed up via a voicemail and email regarding the meeting summary of 28 July 2022 and the invoice process for the review of the Draft Project File Report. – No response was received from HDI.
26 September 2022	Email	<ul style="list-style-type: none"> – Study Team shared Draft Project File Report for review and comment.
03 October 2022	Phone Call	<ul style="list-style-type: none"> – Study Team followed up via phone to request guidance on the fees and invoice process associated with the review of the Draft Project File Report. It was discussed that HDI had a meeting planned later that week and the Study Team can expect to hear back from HDI after the meeting on further direction regarding funding.
07 October 2022	Email	<ul style="list-style-type: none"> – HDI advised that the Town of Oakville provide the initial fee for HDI to review the Project File Report. HDI also shared information on how the Town can provide the fee.
11 October 2022	Email	<ul style="list-style-type: none"> – Study Team noted that the Town has completed the payment process and the cheque was to be mailed out early following week. Study Team hoped that this allows HDI to begin the review of the draft Project File Report.

Table 9-5: Summary of Correspondence with the Government Agencies

DATE	METHOD	COMMUNICATION SUMMARY
Fisheries and Oceans Canada		
24 June 2022	Email	<ul style="list-style-type: none"> — Department staff provided a response to the Notice of Study Commencement and Public Information Centre, noting that the staff do not review project notifications for administrative processes. Suggested reviewing Department website (https://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html) to determine whether the project requires a review by the Department. If the project needs a review, a Request for Review Form should be submitted to the Department.
12 July 2022	Email	<ul style="list-style-type: none"> — Study Team provided a response that based on the proposed works, a Request for Review form will need to be submitted to Fisheries and Oceans Canada to review the project. A commitment will be included in project’s EA Report that this form should be completed and submitted to Fisheries and Oceans Canada during detailed design phase of the project, when more detailed information about project’s proposed construction methodology has become available.
Ministry of the Environment, Conservation and Parks		
17 February 2022	Email	<ul style="list-style-type: none"> — Study Team sent introductory project email along with the Project Information Form, noting that this Class EA Study will build on and utilize information from previously completed reports that were developed as part of the Lakeshore Road West Improvements project. — Study Team inquired about the Indigenous Nations that should be consulted for this Class EA Study, and also requested Ministry’s feedback on proposed Class EA approach.
18 February 2022	Email	<ul style="list-style-type: none"> — The Ministry staff provided a response, noting that the staff is fine with the proposed approach. Ministry staff also noted that a list of potentially interested Indigenous Nations would be shared soon, and Ministry’s formal acknowledgement letter will be issued after

DATE	METHOD	COMMUNICATION SUMMARY
		the Notice of Commencement is received.
16 March 2022	Email	The Ministry identified the following Indigenous Nations that may be interested in the project: <ul style="list-style-type: none"> – Mississaugas of the Credit First Nation – Six Nations of the Grand River – Both the Haudenosaunee Confederacy Chiefs Council and the Haudenosaunee Development Institute.”
Ministry of Natural Resources and Forestry		
23/24 June 2022	Email	– Study Team requested natural heritage information.
24 June 2022	Email	– Ministry staff shared the Natural Heritage Information Request Guide to assist in accessing natural heritage information.
26 July 2022	Email	<ul style="list-style-type: none"> – Study Team shared a list of fish species recorded in McCraney Creek through various information resources (LIO/GeoHub, fish community information provided by Conservation Halton, and past reports). Study Team noted that based on the fish species recorded in McCraney Creek, it is anticipated that the in-water works restriction window of March 15 to July 15 will apply. Study Team requested Ministry staff to confirm this. – No response was received at the time of preparation of this report.
Ministry of Citizenship and Multiculturalism (Previously Ministry of Tourism, Culture, and Sport)		
30 June 2022	Email	– Ministry staff provided a response to the Notice of Study Commencement and Public

DATE	METHOD	COMMUNICATION SUMMARY
		<p>Information Centre, recommending if the bridge was not evaluated as part of a Cultural Heritage Study, the project team should consult the Municipal Engineers Association screening criteria to determine the need for a Cultural Heritage Study. Ministry staff also noted if the study area for this project includes lands that were not included in the previous archaeological assessment, an additional Stage 1 Archaeological Assessment will be required.</p> <ul style="list-style-type: none"> – A meeting was planned for 08 July 2022, however, due to technical difficulties, the Ministry staff could not join the meeting.
19 July 2022	Email	<ul style="list-style-type: none"> – Study Team provided responses to Ministry’s comments of 30 June 2022. – Study Team noted that the Study Team have reviewed Municipal Engineers Association’s “Municipal Heritage Bridges – Cultural, Heritage and Archaeological Resources Assessment Checklist”. The McCraney Creek Bridge structure falls within the category of a “culvert”, which is not subject to a cultural heritage evaluation per the Municipal Heritage Bridges Checklist. Study Team added that the Study Team also consulted with the Town’s Heritage Planner to obtain input on McCraney Creek Bridge’s cultural heritage value. On 07 July 2022, the Town’s Heritage Planner provided a letter, confirming that McCraney Creek Bridge has no heritage status under the Ontario Heritage Act. It is not listed on the Oakville Register of Properties of Cultural Heritage Value or Interest (known as the Heritage Register) as a property of potential cultural value and/or interest and it is not designated under any part of the Ontario Heritage Act. – With regards to archaeological resources, Study Team noted that Halton Region completed a Stage 1 Archaeological Assessment in December 2010, in support of the Wastewater Pumping Station Master Plan for the Region. This report assessed all areas that encompass the entire Study Area for this project and identified areas of archaeological potential that will be subject to Stage 2 Archaeological Assessment. Study Team noted that the Town will complete a combined Stage 1 and 2 Archaeological Assessment as part of detailed design phase for the extended areas that were not previously assessed as part

DATE	METHOD	COMMUNICATION SUMMARY
		of the Lakeshore Road West Stage 1 Archaeological Assessment. In addition, commitments and mitigation measures related to the archaeological resources will be included in the Project File Report.
19 July 2022	Email	<ul style="list-style-type: none"> – Ministry staff noted that they believe that the application of the culvert criteria in the MEA Bridge Checklist is incorrect. Ministry staff recommended that a cultural heritage evaluation is prepared for the culvert since it appears it has not yet been evaluated. However, if the Study Team have consulted with the Town’s Heritage Planning staff and they accept the approach not to evaluate the bridge, the Study Team could include this as supporting information in the EA reporting. – With regards to archaeological resources, Ministry staff advised that Study Team’s approach to the additional archaeological assessment and the proposed conditions within the EA is acceptable to MTCS.
26 October 2022	Email	– Ministry provided comments on the Draft Project File Report.
04 November 2022	Email	– Study Team provided responses to Ministry’s comments.
Conservation Halton		
17 February 2022	Email	<ul style="list-style-type: none"> – Study Team sent an introductory project email, noting that this Class EA Study will build on and utilize information from previously completed reports that were developed as part of the Lakeshore Road West Improvements project. – Study Team noted that the Study Team will be contacting Conservation Halton again in the near future to schedule a meeting to discuss this Class EA Study further.

DATE	METHOD	COMMUNICATION SUMMARY
01 April 2022	Email	<ul style="list-style-type: none"> – Conservation Halton staff provided a cover letter and EA Checklist for this Class EA Study.
19 May 2022	Email	<ul style="list-style-type: none"> – Study Team shared Study Team’s availability for a meeting and inquired for Conservation Halton’s staff availability. – Conservation Halton staff confirmed the availability for a meeting for 1 June 2022.
19 May 2022	Email	<ul style="list-style-type: none"> – Study Team sent a meeting invite and shared the following documents with Conservation Halton, in advance of the meeting: <ul style="list-style-type: none"> – Pdf table that includes evaluation of four alternatives for McCraney Creek Bridge Replacement – General Arrangement drawing for the proposed bridge structure – Aquatic and Bat Habitat Surveys for Proposed Channel Realignment of McCraney Creek North of Lakeshore Road to Rebecca Street (January 24, 2018) – Fluvial Geomorphology Review and Preliminary Channel Design Fourteen Mile Creek & McCraney Creek (March 19, 2018) – Lakeshore Road West Improvements Stormwater Management Report (04/06/2021)
1 June 2022	Meeting	<ul style="list-style-type: none"> – Meeting to present the recommended solution for McCraney Creek Bridge Replacement and Creek Realignment. Please refer to Appendix I for the minutes of this meeting.
7 June 2022	Email	<ul style="list-style-type: none"> – Study Team shared link to Town’s “2021 Creek Inventory and Assessment Report”: https://www.oakville.ca/environment/natural-areas-streams.html
7 June 2022	Email	<ul style="list-style-type: none"> – Conservation Halton staff confirmed receipt of the Notice of Study Commencement and PIC as well as the additional background materials.

DATE	METHOD	COMMUNICATION SUMMARY
9 June 2022	Email	— Study Team shared the minutes of the meeting of June 01, 2022.
10 June 2022	Email	— Conservation Halton's Water Resources staff noted that no additions/edits on meeting minutes.
14 June 2022	Email	<p>— Conservation Halton's Planning Ecology staff noted that given the biophysical data is over a decade old, it is recommended that more recent information be considered in the EA. Staff suggested requesting Conservation Halton's records of fish, wildlife, and plant species observed in the study area. Staff noted that Conservation Halton has fish records up until 2018 and the staff will be completing fish surveys of McCraney Creek at Lakeshore Road in summer 2022.</p> <p>— Conservation Halton staff noted that there are no further comments on the meeting minutes.</p>
23 June 2022	Email	— Study Team submitted a digital information request to Conservation Halton to request Conservation Halton's records of fish, wildlife, and plant species for use in the Class EA Study.
28 June 2022	Email	— Conservation Halton staff provided a response to the Notice of Study Commencement and Public Information Centre, noting that the staff have reviewed the PIC materials provided in support of this study and have no formal comments.
21 July 2022	Email	— Conservation Halton shared the requested data.
Halton Region		
16 June 2022	Email	— Halton Region's Public Works staff provided a response to the Notice of Study Commencement and Public Information Centre, noting that there is an existing 300mm

DATE	METHOD	COMMUNICATION SUMMARY
		PVC watermain located on Lakeshore Road West at the bridge site.
22 June 2022	Email	<ul style="list-style-type: none"> – Study Team staff requested information about the Regional assets in the project area. Study Team also requested information on any requirements that should be considered during detailed design phase. Study Team added that any requirements from the Region will be included in the Project File Report as a future commitment for the detailed design phase.
22 June 2022	Email	<ul style="list-style-type: none"> – Halton Region’s Public Works staff shared figure showing Region’s watermain and sanitary sewer located in the project area.
4 July 2022	Email	<ul style="list-style-type: none"> – Halton Region’s Legislative & Planning Services staff provided a response to the Notice of Study Commencement and Public Information Centre, noting that the staff intend on commenting in relation to Regional Official Plan policies on the Regional Natural Heritage System. Staff will be providing comments.
18 July 2022	Email	<ul style="list-style-type: none"> – Study Team followed up to inquire if the Halton Region staff reviewed the Public Information Centre materials, and if there are any comments. No comments received related to the Natural Heritage System at the time of preparation of this report.
27 July 2022	Email	<ul style="list-style-type: none"> – Halton Region’s Water & Wastewater Infrastructure Planning staff shared information on the existing water and wastewater infrastructure in the area surrounding the McCraney Creek Bridge. The staff added that plans to protect, re-locate or remove any water or wastewater infrastructure as a result of this project should be noted in EA reporting. Halton Region staff also noted that they would like to be included on future submissions for this project.
9 August 2022	Email	<ul style="list-style-type: none"> – Halton Region’s Community Planning Division of Planning Services shared comments on the McCraney Creek EA.

DATE **METHOD** **COMMUNICATION SUMMARY**

30 August 2022	Email	— Study Team provided responses to Halton Region’s Community Planning Division’s comments.
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9.6 Review of Draft Environmental Study Report

The draft Environmental Study Report was shared with the following groups on 26 September 2022 for review and comment by 26 October 2022:

- Mississaugas of the Credit First Nation
- Six Nations of the Grand River
- Haudenosaunee Confederacy Chiefs Council, C/O Haudenosaunee Development Institute
- Ministry of the Environment, Conservation and Parks
- Ministry of Natural Resources and Forestry
- Ministry of Citizenship and Multiculturalism (previously Ministry of Tourism, Culture and Sport)
- Conservation Halton
- Halton Region (various departments)
- Town of Oakville (various departments)

This opportunity for review of the draft report was provided before issuing the Notice of Study Completion. An additional reminder email was sent on 11 October 2022.

Comments received on the draft Environmental Study Report and Study Team's responses are provided in Table 9-6. Correspondence with agencies, stakeholders, and Indigenous Nations with regards to the review of the draft Environmental Study Report are provided in Appendix F, Appendix H and Appendix I, respectively.

Table 9-6: Comments Received on Draft Environmental Study Report and Study Team’s Responses

COMMENT	STUDY TEAM’S RESPONSE
<p>Mississaugas of the Credit First Nation (MCFN) (26 September 2022)</p>	
<p>MCFN noted that there were no comments or concerns regarding the Consultation for the McCraney Bridge Replacement Project.</p> <p>MCFN’s email noted that the Stage 1 Archaeological Assessment was forwarded to their archaeology staff for comments; however, no comments further were received.</p>	<p>No response required.</p>
<p>Ministry of Natural Resources and Forestry (MNR) (18 October 2022)</p>	
<p><i>It is noted in the Report that authorization from MNR per the Fish and Wildlife Conservation Act may be required prior to start of construction, as well as, required permits/approvals from Halton Conservation Authority, DFO, Halton Region and MECP for multiple aspects of the proposed project.</i></p> <p><i>MNR has no further comment at this time, but please circulate the MNR when the detailed design report has been completed so the MNR may confirm whether permits/authorizations are required and if so provide the process for how to obtain them.</i></p>	<p>Project File Report includes a commitment to obtain authorization from the MNR during detailed design phase. As such, the team responsible for the next phase will be contacting the Ministry to obtain the required authorization.</p>
<p>Conservation Halton (25 October 2022)</p>	
<p><i>General Comments</i></p>	

COMMENT**STUDY TEAM'S RESPONSE**

<p><i>McCraney Creek is a confined channel. Erosion hazard mapping (existing and proposed condition) should be completed to confirm the proposed alternative does not increase the erosion hazard (long-term stable top of slope) on private property as a result of channel relocation. This should be completed prior to selection of the preferred alternative. At detailed design, the erosion hazard should be plotted on drawings submitted to CH for permit.</i></p>	<p>Erosion hazard delineation will be completed during detailed design to confirm that the proposed alternative does not increase the erosion hazard (long-term stable top of slope) on private property as a result of channel relocation. This commitment has been added in Table 8-1.</p>
<p><i>Existing and proposed floodplain mapping must be provided at detailed design, supported by hydraulic modelling. Please add this requirement to Table 8-1.</i></p>	<p>This commitment has been added in Table 8-1.</p>
<p><i>Draft Project File Report</i></p>	
<p><i>Section 3.5 Natural Environment</i></p> <p><i>Include a section on erosion hazard associated with McCraney Creek, which is a confined channel with physical and long-term stable top of slope hazards.</i></p>	<p>We have added discussion about erosion hazard associated with McCraney Creek in a new Section 3.5.5.</p>
<p><i>Section 3.5.3 Terrestrial Ecosystem, page 31</i></p> <p><i>We recommend providing additional information on facilitating wildlife passage, specifically: the target species, the openness ratio and the proposed measures that will be taken to ensure wildlife passage. For further guidance, Conservation Halton's Road Ecology Quick Reference Guide may be of assistance, available online here: https://www.conservationhalton.ca/wp-</i></p>	<p>We have added discussion about wildlife passage in a new Section 6.4.</p>

COMMENT**STUDY TEAM'S RESPONSE**

<p>content/uploads/2022/05/Conservation-Halton-Road-Ecology-Quick-Reference-Guide-September-2018.pdf</p>	
<p><i>Section 3.5.3 Terrestrial Ecosystem, page 31</i></p> <p><i>Given the existing conditions have a significant presence of invasive species, we recommend incorporating an invasive species management plan to ensure the survivability of the proposed plantings. This can be provided at detailed design.</i></p>	<p>This commitment has been added to the commitment related to the Vegetation Restoration Plan in Table 8-1.</p>
<p><i>Section 3.5.4 Flooding Hazards, page 33</i></p> <p><i>At detailed design, the most current hydraulic modelling must be used to confirm culvert and stone sizing for the proposed crossing replacement. Contact CH for most current hydraulic model.</i></p>	<p>This commitment has been added in Table 8-1.</p>
<p>Table 5-1 Evaluation of Alternatives for McCraney Creek Bridge, page 38</p> <p>CH staff note the criteria “Effects on and Risks from Erosion Hazard” should include discussion of potential alternatives on delineation of the erosion hazard (I.e., Long-Term Stable Top of Slope) where creek realignment is proposed, noting also that hardening of banks is typically not credited by CH for reduction of erosion allowance. Evaluation of alternatives should include delineation of the LTSTS.</p>	<p>Erosion hazard delineation will be completed during detailed design to confirm that the proposed alternative does not increase the erosion hazard (long-term stable top of slope) on private property as a result of channel relocation. This commitment has been added in Table 8-1.</p>
<p>Table 5-1 Evaluation of Alternatives for McCraney Creek Bridge, page 39</p>	<p>In-water works timing window in Table 5-1 has been updated to be consistent with the in-water works timing window provided in</p>

COMMENT

STUDY TEAM'S RESPONSE

Revise the construction timing window for fish to be consistent with the timing window provided in section 7.5.1.2.

Section 7.5.1.2.

Section 6.1 Proposed Bridge Design

Update this section to comment on bridge size from a fluvial geomorphological perspective (e.g., will bridge span 100-year erosion rate or 3x bankfull width?)

Section 6.1 has been updated to note that the minimum crossing opening width recommended for McCraney Creek is 13.5m, which encompass bankfull width of 6.5m with 3.5m overbanks on both sides. This is based on the discussion provided in *Fluvial Geomorphology Review and Preliminary Channel Design Fourteen Mile Creek & McCraney Creek (March 2018)* (Appendix C). As shown in Figure 6-1: General Arrangement Drawing for the Proposed Bridge, the span for the proposed bridge span is 14.64 m.

The proposed McCraney bridge size will span the 100-year horizon. The intent of a minimum 3.5m overbank from 6.5m bankfull is that this is the OMNRF guideline-based setback *interpretation* that correlates to the potential adjustment over 100 years. The “100-year erosion rate” would thus hypothetically be 3.5cm yr^{-1} . Implementing long term scour protection treatment within the crossing, and the daylight contraction and expansion zones, will however do one of two things based on the report recommendations: 1) implementing the 100-year event based treatment, with a conservative factor of safety, will effectively result in no measurable channel movement at all, or 2) implementing the more realistic to construct 25-year event based treatment, with unadjusted factor of safety, will effectively result in no movement until an event greater than the 25-year occurs. The potential movement will not be severe however, given the relatively close risk thresholds based on unadjusted velocities, i.e., 3.34m s^{-1} at the 100-year and 3.09m s^{-1} at the 25-year.

COMMENT**STUDY TEAM'S RESPONSE**

<p><i>Section 6.3 Proposed Channel Design</i></p> <p><i>Need for vegetated channel revetments and proposed sizing should be confirmed at detailed design.</i></p>	<p>Section 6.3 has been updated to note that the need for vegetated channel revetments and proposed sizing should be confirmed at detailed design.</p>
<p><i>Section 7 Potential Environmental Effects and Mitigation Measures</i></p> <p><i>Include a section on erosion hazard, confirming no increase in hazard and associated 7.5 m regulatory allowance impacting private property.</i></p>	<p>Erosion hazard delineation will be completed during detailed design to confirm that the proposed alternative does not increase the erosion hazard (long-term stable top of slope) on private property as a result of channel relocation. This commitment has been added in Table 8-1.</p>
<p><i>Section 7.3.1 Existing Land Use</i></p> <p><i>Further to Comment 1, this section should confirm no increase in erosion/flooding hazard and 7.5 m regulatory allowance onto private property results from the proposed works.</i></p>	<p>Erosion hazard delineation will be completed during detailed design to confirm that the proposed alternative does not increase the erosion hazard (long-term stable top of slope) on private property as a result of channel relocation. This commitment has been added in Table 8-1.</p>
Halton Region (25 October 2022)	
<p><i>The Water and Wastewater Infrastructure Planning team has reviewed the project file report, and we note no further comments. Thank you for including information on the 300 mm watermain and the 1200 mm sanitary sewer near the project area. Our team agrees with the commitment to consult and coordinate with the Region during the detailed design stage should any Regional water and wastewater infrastructure be impacted.</i></p>	<p>No response required.</p>
Ministry of Citizenship and Multiculturalism (26 October 2022)	

COMMENT

STUDY TEAM'S RESPONSE

<p><i>Section 3.4.1 Built Heritage Resources and Cultural Heritage Landscapes</i></p> <p><i>Although a letter from the Town's Heritage Planner was included in Appendix A, it is not clear that staff have accepted the approach to not evaluate the bridge/culvert, which is over 80 years old. Please refer to our advice dated July 19, 2022.</i></p>	<p>Town's Heritage Planner provided a letter on 04 November 2022, noting that "<i>Heritage Planning staff have visited the site and can confirm that a CHER is not required due to the substantial changes and modern materials that have modified the structure since its original construction. The property has not been identified as having potential cultural heritage value despite its age and Heritage Planning staff have not requested any further study as our priority is for the conservation of listed and designated properties in the Town of Oakville.</i></p> <p><i>However, in order to divert materials from landfills, Heritage Planning staff have requested that any historic stone removed during the construction process be made available for salvage for reuse on it identified historic properties."</i></p>
<p><i>Section 3.4.2 Archaeological Resources</i></p> <p><i>The draft report informs that "the Town will complete a combined Stage 1 and 2 Archaeological Assessment as part of detailed design phase for the extended areas that were not previously assessed as part of the Lakeshore Road West Stage 1 Archaeological Assessment (2017)". This approach is acceptable to MCM.</i></p>	<p>No response required.</p>
<p><i>Section 7.4.1 Built Heritage Resources and Cultural Heritage Landscapes</i></p> <p><i>This section will need to be updated based on comments above (on Section 3.4.1).</i></p>	<p>Town's Heritage Planner provided a letter on 04 November 2022, noting that "<i>Heritage Planning staff have visited the site and can confirm that a CHER is not required due to the substantial changes and modern materials that have modified the structure since its</i></p>

COMMENT

STUDY TEAM'S RESPONSE

original construction. The property has not been identified as having potential cultural heritage value despite its age and Heritage Planning staff have not requested any further study as our priority is for the conservation of listed and designated properties in the Town of Oakville.

However, in order to divert materials from landfills, Heritage Planning staff have requested that any historic stone removed during the construction process be made available for salvage for reuse on it identified historic properties.”

Section 7.4.2.2 Mitigation Measures and Table 8-1 Commitments for Technical Work

The standard measures need to be updated as follows:

Should previously undocumented archaeological resources be discovered, they may indicate 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 ~~inform the MHSTCI and~~ engage a licensed consultant archaeologist to carry out archaeological assessment 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

Standard mitigation measures in Section 7.4.2.2 and Table 8-1 have been updated based on Ministry's suggested wording.

COMMENT

STUDY TEAM'S RESPONSE

~~*remains, in accordance with Ontario Regulation 30/11, the coroner shall notify and the Registrar, Ontario Ministry of Public and Business Service Delivery, which administers provisions of that Act related to burial sites. of Cemeteries at the Bereavement Authority of Ontario. If human remains are encountered, all activities must cease immediately and the local police as well as the Registrar, Burials of the Ministry of Government and Consumer Services (416-326-8800) must be contacted. In situations where human remains are associated with archaeological resources, the Ministry of Citizenship and Multiculturalism (MCM) MHSTCI 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.*~~

8.2 Commitments for Permits and Approvals

Although MCM does not have an approval role, but a regulatory role, the table should read as follows:

- Ministry of Citizenship and Multiculturalism – A combined Stage 1 and 2 Archaeological Assessment (and further stages of assessment, if recommended) will be submitted by the licensed archaeologist for the ministry's review during the detailed design phase. A letter issued by the ministry indicating that archaeological concerns have been addressed and the report(s) have been entered into the Ontario Public Register of Archaeological Reports shall be obtained prior to any ground disturbing activities.*

Commitment related to archaeological assessment(s) has been updated based on Ministry's suggested text.

COMMENT**STUDY TEAM'S RESPONSE****Ministry of the Environment, Conservation and Parks (26 October 2022)**

The ministry has reviewed the draft Project File Report. We understand the preferred alternative is to replace the existing bridge with a new structure with slightly adjusted ends to better align with the re-alignment of McCraney Creek Bridge.

The project aims to improve the safety and long-term stability of the bridge, as well as to address erosion issues and improve aquatic habitat in this section of McCraney Creek. We have no technical comments or concerns at this time. However, it is noted that the Natural Environment Assessment and other detailed technical investigations will be undertaken during the detail design phase. Therefore, the ministry would like to be consulted during the detail design phase. Please notify the ministry when these reports are available.

A commitment has been included in Table 8-1 to contact Ministry of the Environment, Conservation and Parks during detailed design phase to share the technical assessments completed as part of detailed design.

Six Nations of the Grand River (SNGR) (28 October 2022)

SNGR Archaeology Supervisor noted that there are no issues or questions pertaining to the methodologies conducted for Stage 1 Archaeological Assessment; and there are no comments.

SNGR added that winter assessments are not a preferred approach for SNGR. SNGR appreciated inclusion of Indigenous communities.

No response required.

10 Next Steps

10.1 Section 16 Order Request Process

This report has documented the planning, decision making and consultation process for McCraney Creek Bridge Replacement in accordance with the Municipal Class Environmental Assessment process for a 'Schedule B' project. This report will be made available for a formal review period for review by the public, Indigenous Nations, government review agencies, and key stakeholders. Interested persons may provide written comments to the following contact in accordance with the timeline identified in the Notice of Study Completion:

Syed Rizvi, M.Sc., P. Eng.
Transportation Engineer
Transportation and Engineering
Corporation of the Town of Oakville
1225 Trafalgar Road
Oakville, ON L6H 0H3
syed.rizvi@oakville.ca

In addition, a request may be made to the Ministry of the Environment, Conservation and Parks for an order requiring a higher level of study (i.e., requiring an individual/comprehensive EA approval before being able to proceed), or that conditions be imposed (e.g., require further studies), only on the grounds that the requested order may prevent, mitigate or remedy adverse impacts on constitutionally protected Aboriginal and treaty rights. Requests on other grounds will not be considered. Requests should include the requester contact information and full name. Requests should specify what kind of order is being requested (request for conditions or a request for an individual/comprehensive environmental assessment), how an order may prevent, mitigate or remedy potential adverse impacts on Aboriginal and treaty rights, and any information in support of the statements in the request. This will ensure that the ministry is able to efficiently begin reviewing the request. The request should be sent in writing or by email to:

Minister of the Environment, Conservation and Parks
Ministry of Environment, Conservation and Parks
777 Bay Street, 5th Floor
Toronto ON M7A 2J3
minister.mecp@ontario.ca

Director, Environmental Assessment Branch
Ministry of Environment, Conservation and Parks
135 St. Clair Ave. W, 1st Floor
Toronto ON, M4V 1P5
EABDirector@ontario.ca

Requests should also be copied to the Town of Oakville contact identified above. All personal information included in your request – such as name, address, telephone number and property location – is collected, under the authority of section 30 of the

Environmental Assessment Act and is collected and maintained for the purpose of creating a record that is available to the general public. As this information is collected for the purpose of a public record, the protection of personal information provided in the Freedom of Information and Protection of Privacy Act (FIPPA) does not apply (s.37). Personal information you submit will become part of a public record that is available to the general public unless you request that your personal information remain confidential.

11 References

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