



## **QEW/Credit River Improvement Project**

# **Design and Construction Report #3**

Date:	October 20, 2021
Prepared By:	Joanne Wang, M.E.S., MCIP, RPP, Senior Environmental Planner
Reviewed By:	Sonia Rankin, B.Sc. Environmental Assessment & Planning Specialist, Environmental Manager and Nicolas Brzezinski, Environmental Manager
Approved By:	Emma Docherty, Environmental Director

## **Public Record**

This Design and Construction Report (DCR) is available for a 30-day public review period inclusively between October 20, 2021 and November 19, 2021. It is available on the Project Website.

**<http://www.qewcreditriver.ca>**

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To obtain additional information, provide comments on this Design and Construction Report, or if you have any accessibility requirements in order to participate in this Project, please contact us via the information below.

**Email:** info@qewcreditriver.ca

**Phone (24 Hrs):** +1-866-624-9114

**Address:** 1004 Middlegate Road, Suite 1000, Mississauga, Ontario  
L4Y 1M4

## Executive Summary

EDCO has been retained by the Ministry of Transportation (MTO) and Infrastructure Ontario (IO) to design, construct and finance the Queen Elizabeth Way (QEW) Credit River Improvement Project, from west of Mississauga Road to west of Hurontario Street in the City of Mississauga. The Project is located within the Region of Peel and the Project Limits include a portion of the QEW highway that is approximately 2.6 km.

This Design and Construction Report (DCR) is the third DCR (DCR 3) for the Project. DCR 3 has been prepared to document the detail design for the remaining components of the Project that were not covered by DCR 2, which was published in January 2021. DCR 3 addresses the environmental concerns and the environmental and engineering mitigation and protection measures that were developed to address them. It also describes the external consultation with key stakeholders and governmental authorities. The preparation of DCR 3 fulfills the documentation requirements for a Group 'B' Project under the MTO Class Environmental Assessment for Provincial Transportation Facilities (2000) (MTO Class EA).

The Project is following the process for a Group 'B' project and involves extensive consultation throughout. Building upon the previous consultation efforts by MTO, EDCO will continue consultation on the Project by reviewing and responding to local stakeholders and Government Authorities comments and questions throughout the Project and in accordance with MTO's Class EA.

DCR 2, made available January 2021, documents the design of the Project components which began in April 2021 and included:

- The new QEW bridge over the Credit River and widening of the QEW mainline highway to accommodate the widening of the highway;
- Reconfiguration of the Mississauga Road interchange with replacement of the existing bridge at Mississauga Road;
- Realignment of local roads including Premium Way and South Sheridan Way;
- New Active Transportation bridge over the QEW; and
- Support facilities and features including utility relocations, drainage, culvert, and stormwater management improvements, illumination, noise walls, and Advanced Traffic Management System.

A description of the remaining components of the Project for which EDCO have now completed design is included in **Section 3.1** of this DCR. These components of the

Project focus on rehabilitation work to be completed by EDCO and finishing elements of the work such as landscape, ecological restoration and 'soft' infrastructure such as commemoration and the aesthetic treatments to be installed at select locations.

**Section 3.2** outlines the environmental concerns and commitments for the work documented in DCR 3. These commitments are also presented in **Table 3-3 (Section 3.3)**, which carries forward the environmental assessment (EA) commitments from previous design and EA stages of the Project. Key environmental commitments are linked to the Permits, Licences, Approvals and Authorizations (PLAAs) for fisheries, species at risk, permit to take water; navigation and, environmental management plans to be used as guidance and directives during design and construction for the Project.

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## **List of Acronyms**

AA	Archaeological Assessment
AMP	Access Management Plan
ANSI	Area of Natural and Scientific Interest
BMP	Best Management Practices
CA	Contracting Authority
CAHP	Canadian Association of Heritage Professionals
CGP	Clearing and Grubbing Plan
CNWA	Canada Navigable Water Act
CRA	Commercial/ Recreational/ and or Aboriginal (Fishery)
CVC	Credit Valley Conservation
DBB	Design Bid Build
DBF	Design Build Finance
DCR	Design and Construction Report
DFO	Fisheries and Oceans Canada
EA	Environmental Assessment
EAA	Environmental Assessment Act
EC	Environment Canada
EASR	Environmental Activity and Sector Registry
EBL	East Bound Lane
EHS	Environmental Health and Safety
ER	Elizabeth Royal
ESA	Endangered Species Act
ESCP	Erosion and Sediment Control Plan
GA	Government Authority
HONI	Hydro One Networks Inc.
IO	Infrastructure Ontario
LOA	Letter of Advice
MBCA	Migratory Birds Convention Act
MECP	Ministry of Environment, Conservation and Parks
MENDM	Ministry of Energy, Northern Development and Mines
MHSTCI	Ministry of Heritage, Sport, Tourism and Culture Industries
MNDMNR	Ministry of Northern Development, Mines, Natural Resources and Forestry
MMAH	Ministry of Municipal Affairs and Housing
MP	Member of Parliament



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MPP	Member of Provincial Parliament
MTO	Ministry of Transportation
NPP	Navigation Protection Program
NSA	Noise and Vibration Sensitive Area
OMAFRA	Ontario Ministry of Agricultural and Rural Affairs
OPSD	Ontario Provincial Standard Drawing
OPSS	Ontario Provincial Standards and Specifications
P3	Public Private Partnership
PIC	Public Information Centre
PLAA	Permits, Licences, Approvals and Authorizations
PSW	Provincially Significant Wetlands
PTEC	Permission to Enter and Construct
PTTW	Permit to Take Water
QEW	Queen Elizabeth Way
SAR	Species at Risk
SARA	Species at Risk Act
SWM	Stormwater Management
TC	Transport Canada
TESR	Transportation Environmental Study Report
TNPI	Trans-Northern Pipelines Inc.
TPA	Technically Preferred Alternative
WBL	West Bound Lane

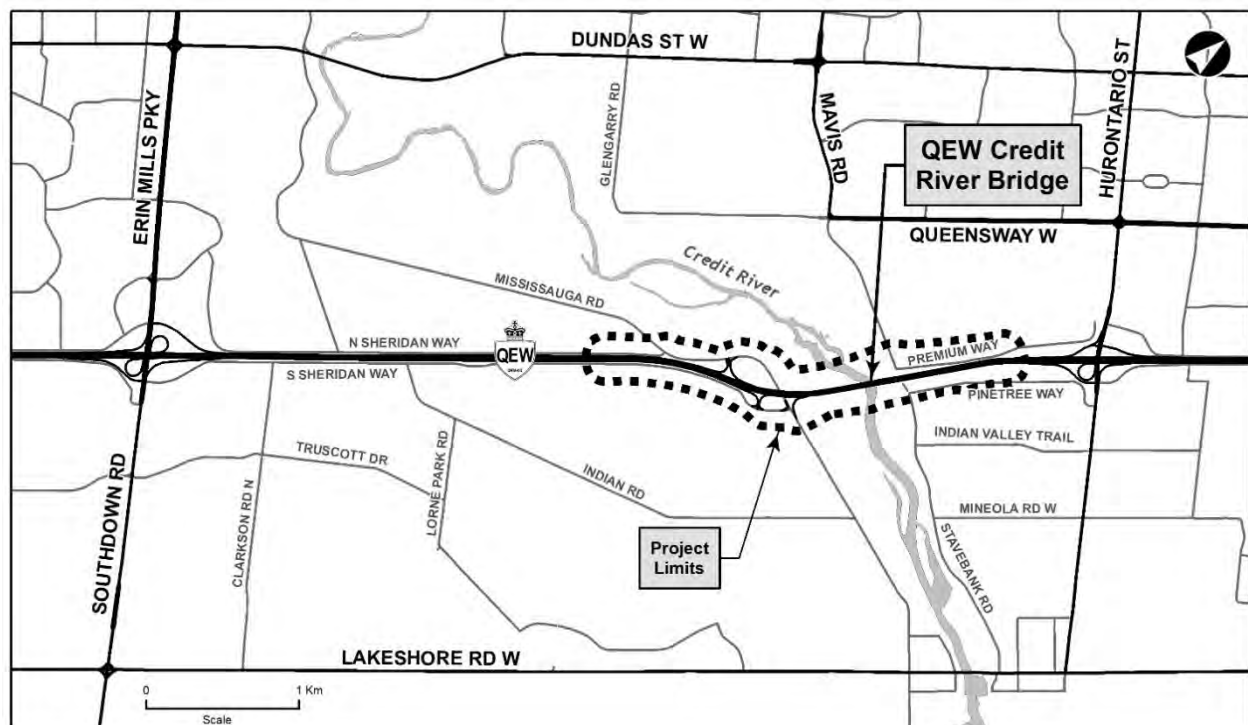
# 1 Overview

## 1.1 Summary Description of the Undertaking

The Queen Elizabeth Way (QEW) was built as a 4-lane highway from Toronto to Niagara Falls and Fort Erie and is Canada's first superhighway. The highway was dedicated the QEW in 1939 and officially opened in 1940. The QEW is a critical component of the provincial highway network and is one of Ontario's most important transportation facilities in terms of commuter and trade traffic – carrying more than 200,000 vehicles per day.

The 250 metres long QEW Credit River Bridge, located in the City of Mississauga, is over 80 years old and recent investigations of the bridge determined that it is in need of major repair. To address the condition of the QEW Credit River Bridge and the future transportation requirements of this segment of the QEW, the Ministry of Transportation Ontario (MTO) has identified improvements to approximately 2.6 km of the QEW from west of Mississauga Road to west of Hurontario Street including the Credit River crossing (**Figure 1**).

**Figure 1: Project Limits**



The QEW Credit River Improvement Project involves several components. EDCO has started construction of the components of the Project for which detail design was completed. The design of these elements was documented in DCR 2, which was made available for stakeholder review in January of 2021 and included:

- The new QEW bridge over the Credit River and widening of the QEW mainline highway;
- Reconfiguration of the Mississauga Road interchange with replacement of the existing bridge at Mississauga Road;
- Realignment of local roads including Premium Way and South Sheridan Way;
- New Active Transportation bridge over the QEW; and
- Support facilities and features including utility relocations, drainage, culvert, and stormwater management improvements, illumination, noise walls, and Advanced Traffic Management System.

Since January 2021, EDCO has advanced design for the other components of the Project, including works associated with:

- Rehabilitation of the existing QEW bridge over the Credit River;
- New Active Transportation bridge over the Credit River and aesthetic treatments for the Active Transportation bridge over the QEW highway near Stavebank Road; and
- Landscape design.

Some small refinements to design of selected components of the Project detailed in DCR 2 and initial design elements associated with a Commemorative Strategy have also been identified. Final design for the commemorative elements are subject to consultation with Indigenous communities and City of Mississauga.

Refer to **Section 3.1** for details of these designs.

## **1.2 Environmental Assessment Process and Project History**

The purpose of *Ontario's Environmental Assessment Act* (EAA) is to help protect and conserve Ontario's environment by ensuring that projects subject to the Act follow a planning process leading to environmentally sound decision making. The MTO Class EA for Provincial Transportation Facilities (2000) (MTO Class EA) outlines the environmental assessment process to be followed for specific groups of provincial transportation projects. The MTO Class EA is a planning document approved under the EAA that provides a streamlined process that projects or activities within a defined

“class” must follow. Provided this process is followed, projects and activities included under the MTO Class EA do not require formal review and approval under the EAA. This Project is following the requirements of the Group ‘B’ process under the MTO Class EA.

## **1.3 Project History**

In 2013, the MTO completed a preliminary design study for a Group ‘B’ Project under the MTO Class EA to determine a long-term strategy to address the rehabilitation needs of the QEW Credit River Bridge and future transportation requirements for the QEW from west of Mississauga Road to west of Hurontario Street. The preliminary design and EA study resulted in the development of a technically preferred alternative (TPA) which included rehabilitation of the existing QEW Credit River Bridge structure and twinning to the north. The results were documented in a Transportation Environmental Study Report (TESR), *Queen Elizabeth Way (QEW) from West of Mississauga Road to West of Hurontario Street, Preliminary Design and Class Environmental Assessment Study* (GWP 08-20008). June 2013.

In 2017 a detail design assignment was initiated to prepare the Project for implementation as a Design-Bid-Build (DBB) contract. Between 2017 and 2019 additional environmental investigations, impact assessment and agency/public consultation were completed in support of this detail design. In 2019, MTO and IO initiated the procurement process for the Design, Build, Finance (DBF) Public-Private Partnership (P3) delivery model for the Project.

To facilitate the construction of site access and facilitate early works, the MTO prepared the first DCR (DCR 1) for the QEW Credit River Improvement Project. DCR 1 was completed in accordance with the MTO Class EA process and filed for 30-day public review (June 2020) to cover the advanced works for the Project and to complete the 5-year review of the TESP. No significant changes were identified during the 5-year review of the TESP; therefore, a TESP addendum was not warranted.

As a result of the P3 procurement process, EllisDon Capital Inc. and Coco Paving Inc. Joint Venture (‘EDCO’) was selected as the private sector consortium (‘Project Co’) responsible for the final design, construction, and financing of the Project through a single contract. EDCO will advance the Project and is responsible for fulfilling the detail design obligations defined in the TESP including environmental mitigation measures, continued consultation and filing this DCR. Upon completion of the DCR review period, and subject to acquiring the necessary permits, approvals and authorizations, EDCO will issue Environmental Clearance to allow construction of the works included in this DCR to commence.

EDCO are also responsible for construction of the Project. Responsibility for the long-term maintenance and operation of the QEW and Credit River Bridge once the Project is complete will remain with MTO. The Active Transportation facilities and other municipal infrastructure components of the Project will be transferred to the City of Mississauga as agreed, for future maintenance and operation.

## **1.4 Purpose of Report**

This DCR has been prepared to document the detail design for the remaining components of the Project that were not covered by DCR 2, address the environmental concerns that were identified for those works, describe the environmental and engineering mitigation and protection measures that have been developed and considered to address environmental concerns, and describe the public and agency consultation completed to date. The preparation of this DCR fulfills the documentation requirements for a Group 'B' Project under the MTO Class EA process.

As noted, this DCR focuses on the remaining components of the Project that were not covered by DCR 2, which includes:

- Rehabilitation of the existing QEW/Credit River Bridge;
- Active Transportation crossing of the Credit River;
- Landscape design;
- Commemorative Strategy;
- Detail design refinements; and
- Upcoming traffic staging.

A detailed description of the works included in this DCR is provided in **Section 3**.

## 2 Consultation Process

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Consultation is an integral component of the MTO Class EA process as it provides a protocol to share information, generate ideas, identify stakeholder issues and is essential to the successful completion of the study. Consultation is considered to be effective when it strives to be inclusive, timely and clear, and aims to achieve the following goals as outlined in the MTO Class EA:

- Identify public concerns and values;
- Identify agency concerns;
- Collect information about the existing environment;
- Involve stakeholders, government and the public in the generation and evaluation of alternatives;
- Provide relevant information regarding decisions and potential effects; and
- Provide regulatory compliance regarding the EA process.

A significant amount of consultation was undertaken during the preliminary design and initial detail design activities completed by MTO between 2010 and 2020 (**Section 2.6**). The primary tools and techniques used to facilitate the consultation process through preliminary design, detail design and this DBB phase included: Public Notifications, Project Website, Community Workshops, Newsletters and Public Information Centres (PICs).

During the current Design-Build phase, consultation has taken place in accordance with the consultation principles outlined in the MTO Class EA and will provide a process for external consultation with Governmental Authorities (GAs), public stakeholders and engagement with Indigenous communities. Opportunities are provided at key stages during the Project to provide input and obtain information about the Project.

EDCO's consultation plan fosters a two-way dialogue with interested stakeholders and provides a process that is transparent, open, traceable, timely, accountable, respectful and defensible. Consultation activities are customized for each of the two phases of the Project: Design Phase and Construction Phase.

**Design Phase Consultation:** is intended to reach potential affected and interested stakeholders to provide them with Project information; obtain input and feedback on the design; and be responsive to concerns raised. Engagement with GAs will facilitate information exchange for the purposes of satisfying environmental legislative requirements. EDCO will engage GAs as described in the DCRs to negotiate and secure necessary PLAA to reflect EDCO design refinements if required. EDCO will

consider all comments received through stakeholder review of this DCR and provide responses directly to commenters.

**Construction Phase Consultation:** is intended to maintain awareness about construction activities and be responsive to concerns raised. Consultation during construction is anticipated to focus on connecting with GAs to confirm EDCO's compliance with the Projects PLAAs and connections with local stakeholders to respond to enquires and provide regular updates regarding traffic staging, construction milestones and monitoring and site inspection efforts.

## **2.1 External Agencies and Municipalities**

### **2.1.1 Government Authority Meetings**

Meetings with GAs are to be held on a regular basis throughout the Project term. These meetings are attended by qualified representatives from EDCO and the individual GAs. Additionally, Environmental Workshops with focused participants are carried out where necessary and appropriate on an ad-hoc basis. GAs being consulted during the Project include, but are not limited to:

- Department of Fisheries and Oceans (DFO);
- Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI);
- Ministry of Northern Development, Mines, Natural Resources and Forestry (MNDMNR);
- Ministry of the Environment, Conservation and Parks (MECP);
- Transport Canada, Navigation Protection Program (TC, NPP);
- Environment Canada (EC);
- Ministry of Municipal Affairs and Housing (MMAH);
- Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA);
- Ministry of Indigenous Affairs (IAO);
- Ministry of Energy, Northern Development and Mines (MENDM);
- Metrolinx / GO Transit;
- Credit Valley Conservation (CVC);
- City of Mississauga; and
- Region of Peel.

## **2.2 Indigenous Communities**

The following Indigenous communities have been engaged by the MTO throughout the Project. Each community was notified at each of the key milestones:

- Six Nations of the Grand River;
- Huron-Wendat Nation;
- Mississaugas of the Credit First Nation; and
- Haudenosaunee Development Institute.

Consultation with Indigenous communities regarding the content and displays for the commemorative displays are on-going for the project.

## **2.3 Public**

EDCO will continue consultation on the Project by reviewing and responding to all stakeholder comments and questions. Key public stakeholders include property owners directly impacted by the proposed works, users of the QEW highway and other roadways included in the Project limits, businesses and community interest groups.

## **2.4 Project Notification of DCR 3**

A Project notice advising of the DCR 3 submission was published in the Toronto Star, Mississauga News and Le Métropolitain on October 14, 2021. Letters to everyone on the Project contact list including relevant GAs, Indigenous communities, municipalities, emergency services, interest groups and stakeholders were distributed by email and mail in conjunction with the newspaper notice, the week of October 11, 2021. A copy of the Project's DCR 3 notification is included in **Appendix A**.

In addition, Project flyers were distributed through Canada Post to each of the mail carrier routes listed in **Table 2-1** advising of the filing of DCR 3 .

**Table 2-1: Mail Carrier Routes for Project Notifications**

<b>L5A</b>	<b>L5B</b>	<b>L5C</b>	<b>L5G</b>	<b>L5H</b>
LC0316	LC0320	LC0001	LC0142	LC0123
LC0318	LC0322	LC0002	LC0143	LC0125
LC0320	LC0324	LC0004	LC0144	LC0129
	LC0327	LC0005	LC0145	LC0130
	LC0329		LC0146	LC0134
	LC0331			LC0136
				LC0137



## **2.5 Project Website**

A Project Website ([www.qewcreditriver.ca](http://www.qewcreditriver.ca)) has been set up to provide information to interested parties and to provide a means for the public to directly contact the Project Team via email at any time during the design and construction phases.

The website hosts all pertinent Project information such as notices, and reports for public review. The website also includes a “Contact Us” feature to allow the public to submit comments and questions.

In addition to material prepared by EDCO for the Project, the website includes materials prepared by MTO during the preliminary design phase of the Project and the initial detail design work. Content of the website is provided under the following general headings:

- Home
- Project Overview
  - About the Project
  - About EDCO
  - Frequently Asked Questions (FAQs)
  - Project Gallery
  - Newsletter's
- Environmental Assessment
  - EA Process
  - Previous EA Reports
    - QEW TESR (June 2013).
    - Notice of DCR 1 Submission.
    - DCR 1 – Advance Works (June 2020)
    - Notice of Works on Non-Schedule Waters (June 2020)
    - Notice of DCR 2 Submission.
    - DCR 2 – New Credit River Bridge / Work Beginning 2021 (January 2021)
  - Current EA Reports
    - Notice of DCR 3 Submission

- DCR 3 – Rehabilitation of the existing QEW/Credit River Bridge, Active Transportation crossing of the Credit River, Landscape design, and detail design refinements
  - Public Information Centre
- Traffic Impacts
- Contact Us

## **2.6 Preliminary Design Consultation Summary**

Consultation was initiated by the MTO in 2010 during preliminary design in accordance with the MTO Class EA process for a Group ‘B’ project. The results of this phase of consultation are documented in Section 3 of the TESR filed for public review in 2013 and available on the Project Website. Public consultation during preliminary design involved the following components:

- 2010: Notice of Study Commencement and publication of Notice (OGN) in local newspapers and launching of the Project Website.
- 2010-2012: Three Public Information Centres (PIC) and three Community Workshops. Notifications for the PICs were issued similarly to the Notice of Study Commencement, while community workshops were attended by direct invitation to key community stakeholders.

In addition to consultations with public stakeholders and interest groups, the MTO also engaged with GAs, Indigenous communities and utility providers. This involved various meetings and consultations throughout the preliminary design study and is documented in Section 3 of the TESR.

The TESR was filed for a 45-day public review period between June 4 and July 19, 2013. This period allowed for comments to be received on the preliminary design.

## **2.7 Detail Design Consultation Summary To Date**

In 2017 and 2018, MTO held public meetings to gather information as part of the initial detail design process. That information has been considered in the development of EDCO’s design and was provided via:

- Stakeholder responses to the 2017 Notice of Study Commencement; and
- Stakeholder comments and feedback provided at two PICs and two community workshops.

Consultation continued in 2019 and included a PIC on November 7, 2019 specifically to present the option of replacing the existing Credit River Bridge. In response to stakeholder feedback provided at this PIC (November 2019), the option of replacing the existing Credit River Bridge was discontinued.

In 2020, MTO published DCR 1 for the project. MTO received 38 comments related to the QEW Credit River Improvement Project and in response to DCR 1 which documented the advanced works. Comments on DCR 1 generally focused on:

- Requests for more information and to be added to or update the contact list;
- Project and construction schedule;
- Construction staging, traffic and access;
- Property impacts;
- Specific design details related to: Commemorative strategies; Active transportation as it relates to crossings and trails; QEW interchanges;
- Recommendations for site restoration;
- P3 Process and Design-Build details; and
- Utility relocations including pipeline works with Trans-Northern Pipelines Inc. (TNPI).

Additional comments were also provided to MTO regarding the TNPI pipeline work and the associated valve compound which were approved through the Canadian Energy Regulator under a separate approval process.

EDCO received approximately 23 comments related to DCR 2 which documented the new QEW bridge and widening of the QEW; reconfiguration of the Mississauga Road interchange with replacement of the existing bridge at Mississauga Road; Realignment of local roads including Premium Way and South Sheridan Way; New Active Transportation bridges over the QEW; and support facilities and features. Comments on DCR 2 generally focused on:

- Ministry feedback from MHSTCI and MNDMNRF (formerly MNRF);
- Project Schedule;
- Construction staging, temporary road closures and navigation;
- Utility relocations;
- Noise and noise barrier walls;
- Design elements for pedestrian / cycling elements; and

- General design and construction questions for the broader Project.

### **2.7.1 Public Information Centre 2021**

A PIC was held on August 5, 2021 to obtain feedback and comments on EDCO design of rehabilitation of the existing QEW Credit Bridge, Active Transportation crossing of the Credit River, Landscape Design, Commemorative Strategy, detail design refinements and traffic staging. The PIC comment period was open from August 5 to September 2, 2021. EDCO provided responses to the comments in early September.

Notification for the PIC was provided through:

- Notice of the PIC was published in the local newspapers: Mississauga News (English) and Le Métropolitain (French) on July 29, 2021. (Appendix A)
- Letters to individuals on the Project Team's study mailing list; and
- Details of PIC were posted on the Project Website's Home Page (<https://qewcreditriver.ca/>).

The PIC was hosted virtually by EDCO, with information accessed through the Project Website. The presentation was available all day on August 5, 2021. A Question-and-Answer session was hosted through the Zoom platform from 4:00 p.m. to 6:30 p.m. on August 5, 2021. Instructions on how to register for the Question-and-Answer session were available on the Project Website.

The purpose of this PIC was to present the designs for the following Project components and receive feedback on the:

- Rehabilitation of the Existing QEW/Credit River Bridge;
- Active Transportation Crossing of the Credit River;
- Landscape Design;
- Commemorative Strategy;
- Detail Design Refinements; and
- Traffic Staging.

This PIC also presented Project overview and timelines, as well as next steps.

A total of 139 people registered for the live Q&A Session and 94 viewers watched the PIC presentation via the project website. Sixty-six (66) people participated in the Q&A Session for all or part of the broadcast. Attendees at the live Q&A Session included a

local ward Councillor, representatives from both the City of Mississauga and Gordon Woods Homeowners Association, and local residents.

In addition to responding to comments provided during the Q&A Session, EDCO encouraged attendees to express, in writing, all comments and concerns they had regarding the Project. Prior to the Q&A Session, eight stakeholders had submitted comments to EDCO for response during the live broadcast. Approximately 85 comments or questions were provided to EDCO during the live Q&A Session.

Comments submitted since the PIC have focused on landscape design, Active Transportation crossing over the QEW, traffic, and noise and vibration concerns. A summary of comments received as part of the PIC and live Question and Answer session is presented in **Table 2-2**. A copy of the Public Information Centre Summary Report is available in **Appendix A**.

**Table 2-2: Summary of PIC Stakeholder Comments & EDCO Responses**

Stakeholder Comment	EDCO Response
<p><b>PIC Format and Timing, and concerns stakeholders were only given a few hours after viewing presentation to pose questions.</b></p>	<p>EDCO's approach to releasing the material and holding the Q&amp;A Session the same day was developed based on past experience and PIC formats.</p> <p>Note also that the PIC format allowed for comments and questions on the PIC material to be submitted up until September 2 of this year (2021) and that members of the team will happily speak to people directly and address their questions and provide written responses to the comments submitted through the website or on a PIC comment sheet.</p>
<p><b>Vibration Concerns and Complaints</b></p>	<p>Please contact the EDCO Team if you have any concerns or complaints regarding vibration, noise or any other matter.</p> <p>A review of potential noise and vibration impacts as a result of construction was carried out by a noise and vibration specialist, prior to EDCO's work starting and in order to identify mitigation measures to be to be used during construction.</p> <p>EDCO recognizes the work may be creating some disturbance to local residents and welcomes feedback and discussions with any stakeholders who have concerns or who would like to understand specific works near their property that may be creating a disturbance or nuisance.</p>

Stakeholder Comment	EDCO Response
<p><b>Provide more design details related to:</b></p> <ul style="list-style-type: none"> <li>• <b>stormwater management, and pond design, depth and size, applicable regulations/standards</b></li> <li>• <b>North-South Active Transportation Crossing height, width, accessibility features, are trees included on the south side of the crossing</b></li> </ul>	<p>The design of these components of the Project were documented in DCR 2, prepared by EDCO for public review in January 2021, and remains available through the Project Website.</p> <p>The purpose of this PIC was to present initial designs for components of the Project that were not included in DCR 2 which is why limited information about these pieces of the Project is provided in our PIC materials.</p> <p>Post PIC, EDCO have reviewed alternatives to sharing this information and generated Newsletters to provide additional details related to stormwater management design and the North-South Active Transportation crossing. These newsletters were distributed to stakeholders on the Project contact list and are available through the Project Website.</p>
<p><b>Provide more design details related to Premium Way:</b></p> <ul style="list-style-type: none"> <li>• <b>realignment and landscape design</b></li> </ul>	<p>Premium Way, between Dickson Road and Lynchmere Avenue must be realigned to north by about 5 m to accommodate the widened QEW highway. No realignment of Premium Way is required between Dickson Road and Stavebank Road.</p>

Stakeholder Comment	EDCO Response
<ul style="list-style-type: none"> <li><b>vines were going to be included at the base of the noise wall here</b></li> </ul>	<p>The landscape design developed by EDCO has recommended approximately 500-550 plants and shrubs along Premium Way, and to just before Lynchmere Avenue including species such as Bush Honeysuckles, Meadow Roses, Winterberries, Serviceberries, and Maple-leaf Viburnums. PIC slide # 21 speaks to the landscaping design along Premium Way and within the Project Limits.</p> <p>Landscape design in the area is still being finalized and will include vines at the base of the noise wall. Due to the scale of the imagery for the PIC materials, the vines are not shown on the drawings and renderings; however, these will be documented as plantings in DCR 3 to be prepared by EDCO (2021).</p>
<p><b>Landscape design:</b></p> <ul style="list-style-type: none"> <li><b>It is not appropriate to landscape natural areas like Credit River valley</b></li> <li><b>Natural areas should include recommendations from wildlife experts</b></li> </ul>	<p>EDCO agrees that Credit River valley and the natural areas surrounding all watercourses in the Project should be protected and have limited our clearing of any natural areas to the extent possible. The landscape design for the Project is properly referred to as the Landscape and Ecological Restoration Plan for the Project, recognizing the need for rehabilitation or restoration of impacted natural areas as well as landscaping in other areas. The measures identified in the PIC materials and captured in our detail design, have been developed based on input from a number of specialists including terrestrial biologists, recognizing the environmental considerations like wildlife use.</p>



Stakeholder Comment	EDCO Response
<ul style="list-style-type: none"> <li>• <b>Look at Vineland research to see what they are doing regarding trees</b></li> <li>• <b>Please provide the detail design plans for review</b></li> </ul>	<p>EDCO can review this research to understand what is being recommended by the stakeholder but we must meet the requirements for our work which are based on Provincial and local standards for the area.</p> <p>The landscape design is still being finalized and will consider comments provided in response to this PIC.</p> <p>Detail design of the landscape design will be included in DCR 3 being prepared for public review in Fall 2021. Stakeholders will be able to review the DCR materials and provide comments and questions to EDCO at that time.</p>
<p><b>East-West Active Transportation Crossing</b></p> <ul style="list-style-type: none"> <li>• <b>Comments regarding ‘suicide proofing’ and previous commitment the barrier would be floor to ceiling with no gaps / no possible access</b></li> </ul>	<p>Thank you for raising this important question. We will review the design in detail with our structural design team to understand the design fully and if any adjustments are needed to fulfill this previous commitment related to safety.</p> <p>We will confirm number of light fixtures being implemented on the crossing but can confirm that graffiti resistant solution will be applied.</p> <p>EDCO’s review and any refinements to the design made will be captured in DCR 3 which is planned for public review in Fall 2021.</p>

Stakeholder Comment	EDCO Response
<ul style="list-style-type: none"> <li>• How many lights will be on this bridge?</li> <li>• Will graffiti prevention measures be in place?</li> </ul>	
<p><b>How have EDCO considered the larger environment, humans, communities, wildlife, etc.?</b></p>	<p>EDCO's work builds on the previous preliminary and detail design work completed by the Ministry of Transportation and documented in the TESR and DCR prepared for the Project. This work, and EDCO's continuation of the EA process includes a review of the environment to fully understand potential impacts and develop mitigation strategies to compensate for those impacts.</p> <p>During construction, EDCO have also developed and implemented a comprehensive environmental management system that includes a number of plans and requirements to minimize impacts from construction. A handful of the measures are noted on the PIC displays and, in the presentation, and include approaches and best management practices to minimising or avoiding impacts like dust, noise issues, preventing wildlife from entering the work area, preventing workers and equipment from accessing sensitive areas in the corridor, etc.</p>

Stakeholder Comment	EDCO Response
<b>Will the video of the Q&amp;A Session be made available on the website for stakeholders to review?</b>	The PIC event, and all consultation with stakeholders, will be summarized in DCR 3 for the Project which EDCO intends to make available for public review in the Fall 2021. Video of the Q&A session will not be made available on the Project website.

## **2.8 On-Going Consultation**

EDCO will continue consultation on the Project by reviewing and responding to stakeholder and GA comments and questions throughout. The Project Website will remain active throughout the Project for anyone with questions or concerns to contact the Project Team. Traffic notices related to temporary closures during construction will be made available on the Project Website and issued so as to provide advance notice of any traffic disruptions. EDCO will continue to provide Project updates by issuing Project notifications, newsletters and flyers for key Project milestones.

EDCO has reviewed all comments and questions submitted in response to the Project. These comments have been considered as part of the EA process and finalizing the detail design for work documented in DCR 3. EDCO will consider and address comments received during the public review period for this DCR prior to issuing environmental clearance.

Past EA documentation, such as the TESR (June 2013), DCR 1 (June 2020) and DCR 2 (January 2021) will be available for reference on the Project Website for the duration of the Project.

## 3 Detailed Description of the Recommended Design

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The Project is being constructed in three key phases. The first phase was initiated by MTO in Summer 2020 with the completion of DCR 1. Work included in DCR 1 consisted of installation of cofferdams and access routes on the east and west sides of the Credit River, minor archaeological work within the Credit River and erection of environmental protection measures in areas within the Credit River Valley. EDCO are responsible for Phase 2 and 3 works.

Work related to the second phase of construction was documented in DCR 2 and consisted of the new Credit River Bridge, widening of the QEW mainline, reconfiguration of the Mississauga Road interchange with replacement of the overpass structure, realignment of Premium Way and South Sheridan Way, new Active Transportation bridge over the QEW, utility relocations, culvert replacements, drainage improvements and new stormwater management facilities and various components including works related to noise barrier walls, illumination and Advanced Traffic Management System (ATMS). Construction of these elements of the Project began in April 2021.

Work related to the third phase of construction is documented in this DCR 3, which consists of rehabilitation of the existing Credit River Bridge with Active Transportation crossing of the river; landscaping and ecological restoration and commemorative displays; and the refined or new design components for Active Transportation, roadway or highway improvements for the Project not previously covered in DCR 2.

### 3.1 Major Features of Work included in DCR 3

DCR 3 has been developed to capture EDCO's design of Project components detailed in the sections below. DCR 3, covering Phase 3 work includes:

- Rehabilitation of the existing QEW/Credit River Bridge;
- Active Transportation crossing of the Credit River;
- Landscape design;
- Commemorative Strategy; and
- Detail design refinements.

### 3.1.1 Rehabilitation of the Existing QEW/Credit River Bridge

The existing QEW Credit River Bridge (MTO Site 24X-0203/B1) is located approximately 500 m east of the QEW Mississauga Road Interchange and approximately 1,500 m west of the QEW Hurontario Street Interchange, in the City of Mississauga, Region of Peel. Refer to **Figure 2** for the existing QEW Credit River Bridge.

**Figure 2: Existing QEW Bridge crossing the Credit River**



The existing structure is a 256 m long multiple-span concrete spandrel arch bridge. The total width of the deck is 29.0 m. The bridge was originally built in 1935 and was widened on both sides in 1960. The 1977 rehabilitation included patch repair in the deck soffit and piers, expansion joints replacement at west abutment and piers. The 1987 rehabilitation included removal of the concrete curbs, steel panel railing and concrete posts and construction of new concrete barrier walls, patch repairs to the deck, floor beams and substructure. The most recent rehabilitation (under Contract No. 2011-2003) included the installation of a structural steel shoring system and corrugated steel deck panels under the original 1935 portion of the deck, patch repairs to the floor beams and substructures.

The original 1935 bridge deck is in poor condition. Based on the condition survey and structural evaluation, the major work to rehabilitate the existing bridge will require replacement of the existing bridge deck and barrier walls. Rehabilitation work includes:

- Removal and replacement of the deck and floor beams in the main arch spans with a new 225 mm thick deck and matching floor beams;
- Removal and replacement of the deck and longitudinal beams in the approach spans with a new 225 mm thick deck and prestressed NU girders;
- Construction of new TL-5 concrete barrier walls and new asphalt and waterproofing;
- Converting to integral abutments and replacing the approach slabs;
- Rehabilitation of the concrete substructure including the arch ribs, spandrel columns, piers, wingwalls, and abutment; and
- Installation of noise barrier on the south side only.

Deck replacement work will be initiated in 2023, once traffic has been shifted to the new QEW Credit River Bridge and is summarized on **Figure 3** via an overlay of the general arrangement drawing for the existing QEW Credit River Bridge rehabilitation.

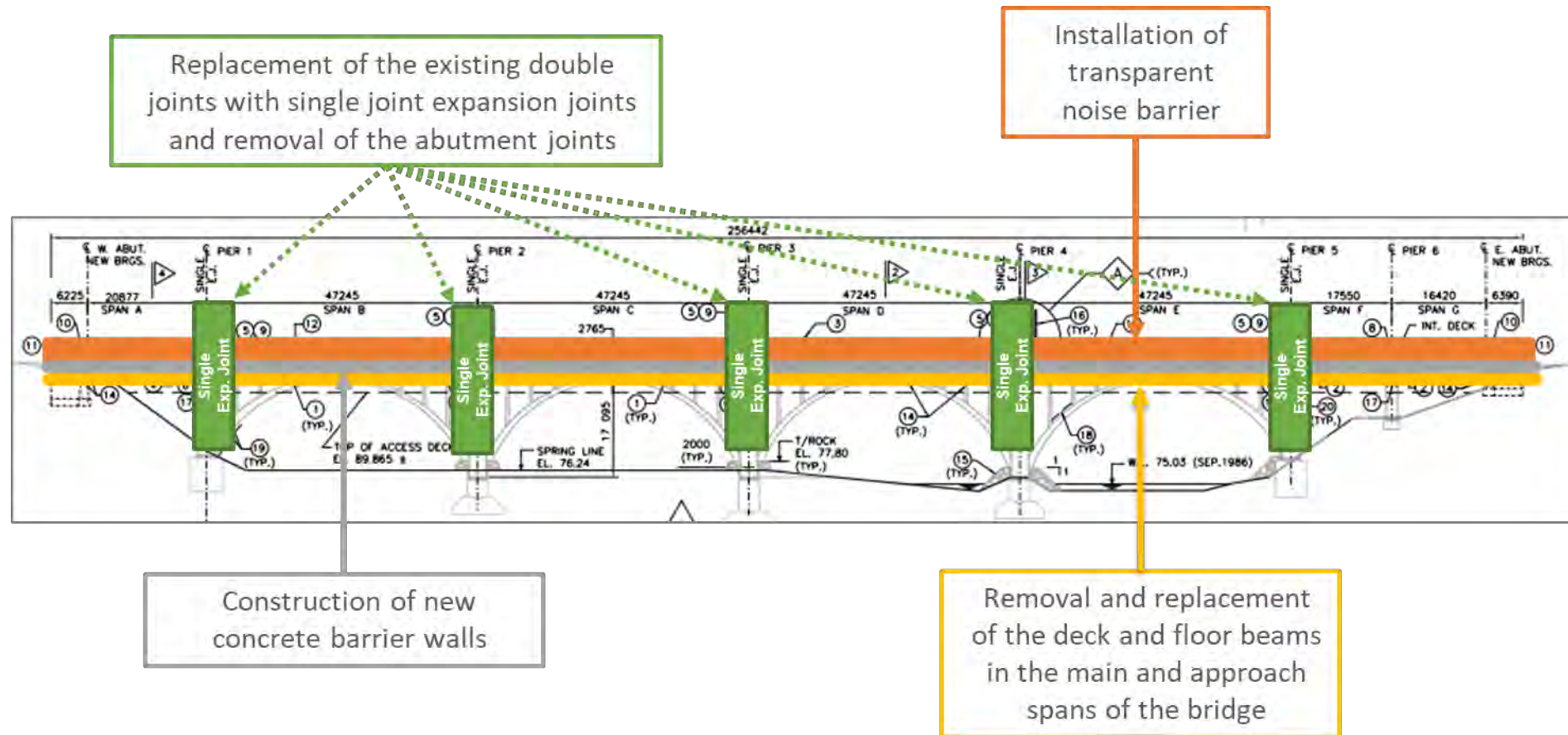
The existing QEW Credit River Bridge is a key heritage element of the Project as it was identified as a Provincial Heritage Property of Provincial Significance (PHPPS) by the MTO under the Ontario Heritage Act (Part III.1) in September 2009. Construction of this major transportation route between Toronto and Hamilton was one of the most influential highway developments in Ontario's history with the Credit River Bridge being the first major structure to be built along the corridor. As can be seen in **Figure 2**, the QEW Credit River Bridge serves as an excellent example of a spandrel arch bridge in Ontario and it is the longest of the first four bridges to be built along the initial portion of the QEW.

In order to retain the heritage attributes of the structure, rehabilitation work includes:

- Preserving and repairing the existing piers, arch ribs and spandrel columns, piers and wingwalls; and
- Ensuring new concrete related works match the existing concrete.

EDCO has hired a specialist with proven experience in the repair of historic concrete to monitor construction activities related to rehabilitation of the existing QEW Credit River Bridge.

**Figure 3: General Arrangement Drawing for the QEW Credit River Bridge Rehabilitation**





Upon completion of the rehabilitation works the existing bridge will have:

- A transparent noise barrier wall installed on the outside of the bridge along the eastbound lanes. The noise wall will be mounted on the outside of the barrier walls.
- The ER lights will be re-instated on south side of the bridge along the eastbound lanes. The ER lights that were previously on the northside of the bridge along the westbound lanes will be installed on the north side of the new bridge to recreate the existing view of the lights arching over the highway corridor, similar to the current configuration.
- The positioning of the lights will be such that the vertical frame posts for the noise barrier wall will not obstruct the view of the light poles.

Refer to **Figure 4** for a 3-D rendering illustrating the new QEW Credit River Bridge that showcases the ER lights being installed on both bridges to replicate the current positioning on the final corridor crossing of the Credit River. The new QEW Credit River Bridge will retain the character of the bridge lighting for travellers on the QEW.

**Figure 4: 3-D Rendering of the New QEW Credit River Bridge**

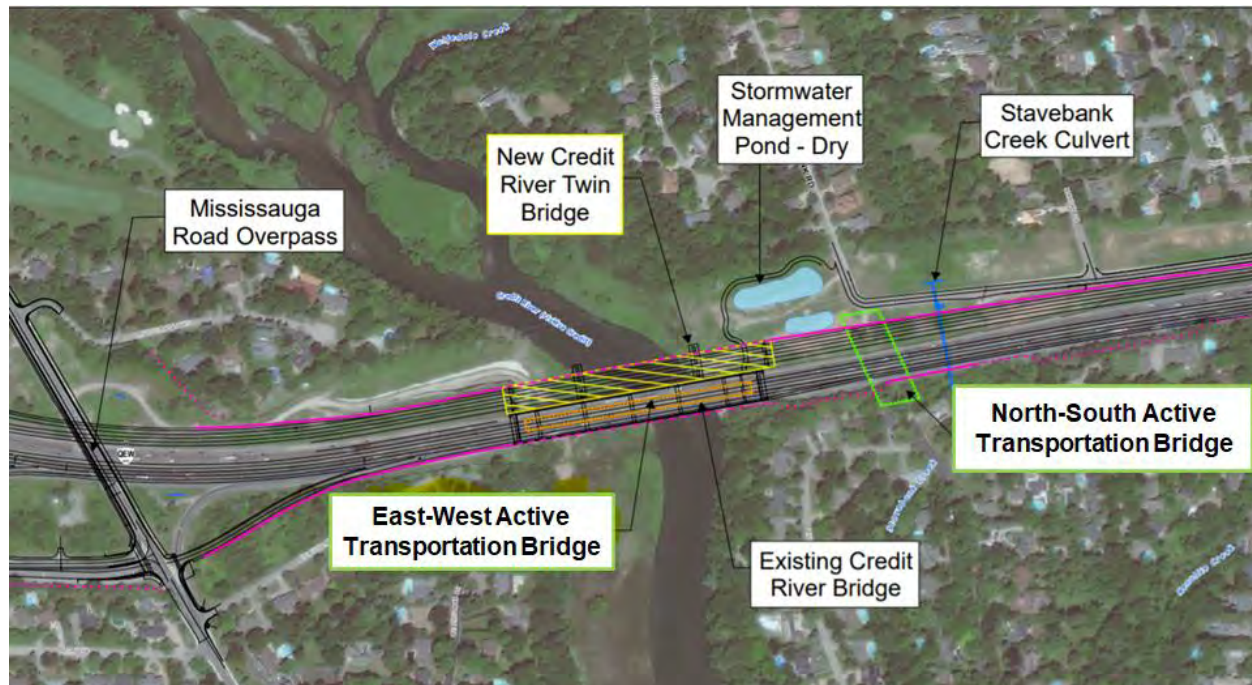


### **3.1.2 Active Transportation Crossing of the Credit River**

Two Active Transportation crossings are included in the QEW Credit River Improvement Project. The North South Active Transportation crossing will cross the QEW highway near Stavebank Road and was previously documented in DCR 2. The East West Active

Transportation crossing will cross the Credit River, underneath the existing QEW Credit River Bridge. Refer to **Figure 5** for the locations of Active Transportation crossings within the Project Limits.

**Figure 5: Active Transportation Crossings within the Project Limits**



### 3.1.2.1 East-West Active Transportation Crossing

The new Active Transportation bridge (refer to **Appendix B** for the General Arrangement drawings) across the Credit River will be constructed on the underside of the existing QEW Credit River Bridge, connecting to multi-use trails on both sides of the river. An existing maintenance structure will be converted into the permanent Active Transportation bridge over the Credit River. The existing structure is a 197.8 m long by 9 m wide steel girder structure with timber decking constructed below the deck of the existing QEW Credit River Bridge. There are four spans of 47.245 m that comprise the main structure and a single 8.8 m long approach span. The structure was originally built in 2011 and was intended only as a temporary construction platform to aid in the deck soffit repairs and strengthening of the QEW Credit River Bridge.

To accomplish the conversion from the existing maintenance bridge to a publicly accessible crossing, the existing timber decking will be removed and replaced by a cast-in-place concrete deck. The existing 8.8 m long west approach span will be removed,

and a new 13.5 m long approach span will be installed at the west end as well as a new 22.5 m long approach span at the east end.

Design of the East-West Active Transportation crossing includes:

- Pole mounted lights to give visibility at night and during low light conditions; and
- Protective picket barrier with guard rails and handrails:
  - The picket barrier will provide safety while still permitting views of the river and valley and heritage elements of the existing QEW bridge.

The deck surface will provide a stable and accessible surface for walking, running, cycling and mobility assistive devices. EDCO is evaluating minor refinements to the barrier and handrail design with the Ministry and the City of Mississauga. An example of what this new crossing will look like is shown in the following two conceptual renderings (**Figures 6 and 7**).

**Figure 6: East-West Active Transportation Crossing**





**Figure 7: East-West Active Transportation Crossing**



Many components of the existing platform will be retained as part of the conversion to a permanent Active Transportation structure and therefore control the design and structure type. The existing piers are anchored to the concrete spread footings of the QEW Credit River Bridge and the existing steel piers and main span steel girders will remain, with some minor modifications to accept a new cast-in-place concrete deck.

New stainless-steel railings will be installed on both sides of the new bridge deck. Additional bracing will be installed at the existing piers to increase the strength of the existing pier columns. The west abutment will be founded on piles supported on the bedrock. Piles were chosen at the west abutment to provide extra stiffness to the abutment and minimize the movements due to the west abutment's proximity to an existing retaining wall as well as to minimize the related excavation. The east abutment is founded on spread footings supported on bedrock since there are no other constraints on the foundation.

The existing four 47.245 m long main spans will remain continuous over the piers while the new approach spans will be simply supported. This configuration was chosen due to the relatively unbalanced span lengths. If the approach spans were made continuous with the main spans, there would have been uplift at the abutment bearings that would have required a large counterweight to balance out.

### **3.1.3 Landscape Design**

Landscaping and ecological restoration will offset the impacts of construction and related activities on the existing environment. Landscape design is intended to restore disturbed areas and support new natural communities to provide seamless connections for wildlife and other stakeholders in the area. The landscape design has been informed by:

- Field investigations to confirm existing conditions related to invasive species, SAR species and rare plants;
- Environmental protection measures to stabilize environmentally sensitive areas such as the banks of watercourses;
- Restoration plantings in areas with environmental sensitivity;
- Landscape planning which includes deliberate use of plantings and landscape architecture to protect and enhance ecologically significant areas;
- Wildlife planning which involves planning the work and landscaping or ecological restoration to minimize impacts to wildlife and restore areas as soon as possible; and
- Monitoring during construction to ensure measures and design adapt to any changes in design or construction and, post construction to ensure successful establishment of the plantings and vegetation.

#### **3.1.3.1 Field Investigations and Reassessment of Impacts**

EDCO undertook field investigations within the Project Limits in December 2020. Ecological surveys were intended to confirm existing conditions, identify rare plants, delineate invasive species patches and confirm the area of known or potential SAR habitat previously noted to be within the project limits.

EDCO will be undertaking several different field investigations throughout the span of the Project to ensure compliance and mitigation of environmental impacts.

#### **3.1.3.2 Environmental Protection**

EDCO's approach and strategy for minimizing impacts to ecological and natural heritage features includes identifying Environmentally Sensitive Areas and employing mitigation measures associated with these Environmentally Sensitive Areas.

The environmental protection and implementation plan for vegetation, fish and fish habitat, wildlife and invasive species during all Project activities are documented in a Landscape and Ecological Restoration Plan. Drawings that show the landscaping plan are included in **Appendix C**.

### **3.1.3.3 Landscape Planning**

Landscaping planning for the Project includes the usages of plantings and landscape architecture to protect and enhance ecologically significant areas.

Vegetation planting alongside other restoration methods will be used to ensure the landscape within the Project Limits is restored to an appropriate level. This will include restoration of natural areas consistent with environmental legislation, policy and feature requirements; and plantings appropriate to stabilize and restore areas disturbed during construction.

The landscape design drawings for the Project is shown in **Appendix C**. Descriptive renderings that illustrate the landscaping design within the project limits is shown in **Figures 8 and 9**, with focused areas showing in **Figures 10 and 11**.

### **3.1.3.4 Wildlife Plan and Monitoring**

EDCO will continue to obtain a scientific collectors permit under the Fish and Wildlife Conservation Act from the MNDMNRF Aurora district office in order to conduct any relocation of wildlife on site.

Monitoring efforts are being undertaken by EDCO site personnel within the Project Limits for the duration of construction, to ensure that the project team continues to comply with environmental obligations. This on-going monitoring is intended to keep track of any changes in environmental features such as erosion and identify wildlife that may require relocation.

### **3.1.3.5 Landscape Treatments within the Project Limits**

The intent of the landscape design is to restore the landscape to pre-disturbance conditions for areas affected by the improvements to the QEW within Project Limits. Areas to be restored will be vegetated with species suited to the site characteristics and their intended functions. Ecological linkages between native vegetation remnants will be restored with a variety of native species that differ in size, while remaining appropriate for planting within the Credit Valley Watershed. Restorative efforts include woodlot restoration and edge managements, vegetative salvaging and relocation, riparian plantings, and landscape treatments for wildlife passage promotion. These efforts will

utilise a combination of native species of deciduous trees (such as Maples, Oaks, and Poplars), coniferous trees (such as Spruces, Pines, and Cedars), deciduous shrubs (such as Dogwoods, Willows, Viburnums, and Serviceberries), herbaceous plantings, and seed mixtures approved by the CVC.

Additionally, for areas with proposed site conditions that differ from the existing conditions, the landscape design aims to support the new conditions while blending it as seamlessly as possible into the adjacent terrain and vegetative communities. Such improvements that have resulted in these differing conditions include the addition of Stormwater Management Ponds, Multi-Use Paths/Trails, and Active Transportation bridges. The Stormwater Management Ponds will be planted and seeded with native species that conform with the CVC guidelines. The naturalized areas adjacent to the Multi-Use Paths/Trails and Active Transportation bridges will utilize a combination of deciduous trees and shrubs, coniferous trees and shrubs, and vines to both mimic the vegetative communities that existed prior to disturbance, screen undesired views and structures, and promote safety through Crime Prevention Through Environmental Design (CPTED) principles, while respecting mature planting heights within HONI-owned lands. (See roll plan renderings in **Figure 8** and **Figure 9**).

#### **3.1.3.5.1 Mississauga Road Interchange**

Landscape treatments (**Figure 8**) in the vicinity of the Mississauga Road interchange include:

- Plantings and landscape design in areas of the Project where vegetation was removed during construction;
- Landscape plantings for the wet pond (a stormwater management facility) within the Mississauga Road interchange;
- The multi-use trail will have landscape plantings integrated with the trail and provide seating opportunities at regular intervals; and
- Commemorative displays will be installed along the trail, with one commemorative storyboard to be installed near the trail head at Mississauga Road.





Figure 8: Landscape Rendering - Western Limits



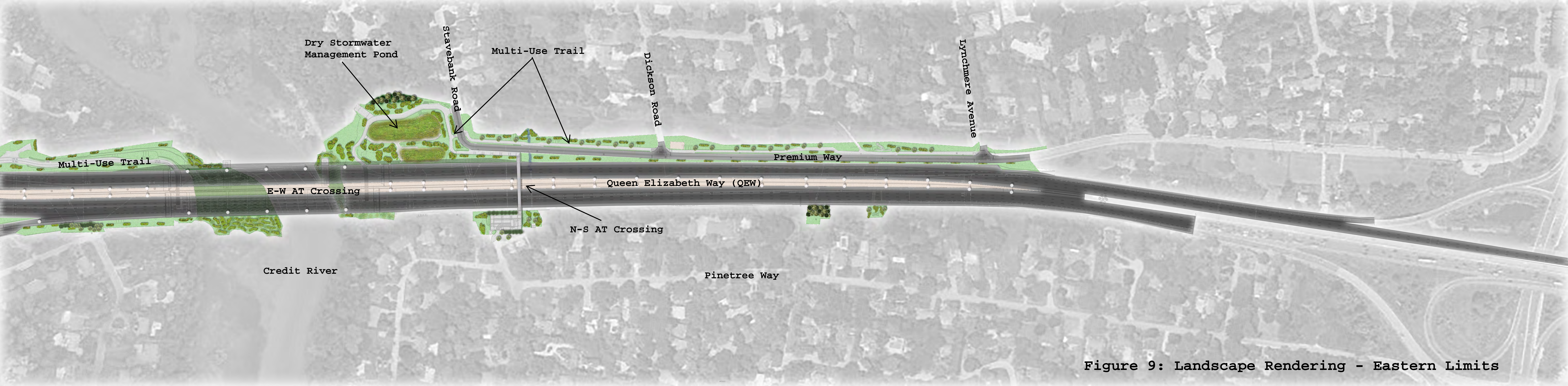


Figure 9: Landscape Rendering - Eastern Limits



### **3.1.3.5.2 Premium Way**

Landscape treatments (**Figure 9**) along Premium Way include:

- Plantings within the Credit River Valley in recognition of wildlife passage and habitat requirements along the floodplain, including restoration for wetland communities;
- Landscape plantings within the dry-pond;
- Plantings and landscape design from the Credit River and to the Project Limits to restore areas where vegetation was removed during construction; and
- Commemorative displays will be installed along the trail, with one display located near the trail head at Stavebank Road and Premium Way.

Landscape designs and the selection of plant types have been selected in consultation with the City and Hydro One and will incorporate native plants species consistent with those recommended by the CVC. The plantings along Premium Way will have Downy Serviceberry, which is a deciduous tree species. Shrubs will include Bush Honeysuckle, Meadow Rose, Maple-leaf Viburnum and Winterberry. And the ground surface will be seeded with a Credit Valley Conservation Upland Native Meadow mix, which will include Black-eyed Susan, Goldenrod, Heart-leaved and New England Asters and Open Field Sedge.

### **3.1.4 Commemorative Strategy**

The Ministry developed the conceptual commemorative strategy through two workshops with key stakeholders to discuss heritage features, suggest topics of commemoration and consider locations where the commemorative features could be situated within the Project Limits.

The environmental features recommended as subjects to commemorate included: the QEW / Credit River Bridge, Indigenous significance of the area, and the natural environment.

Commemorative information and imagery will be displayed through storyboards the design of which is still being defined and which will be finalised in consultation with Indigenous Groups and the City of Mississauga.

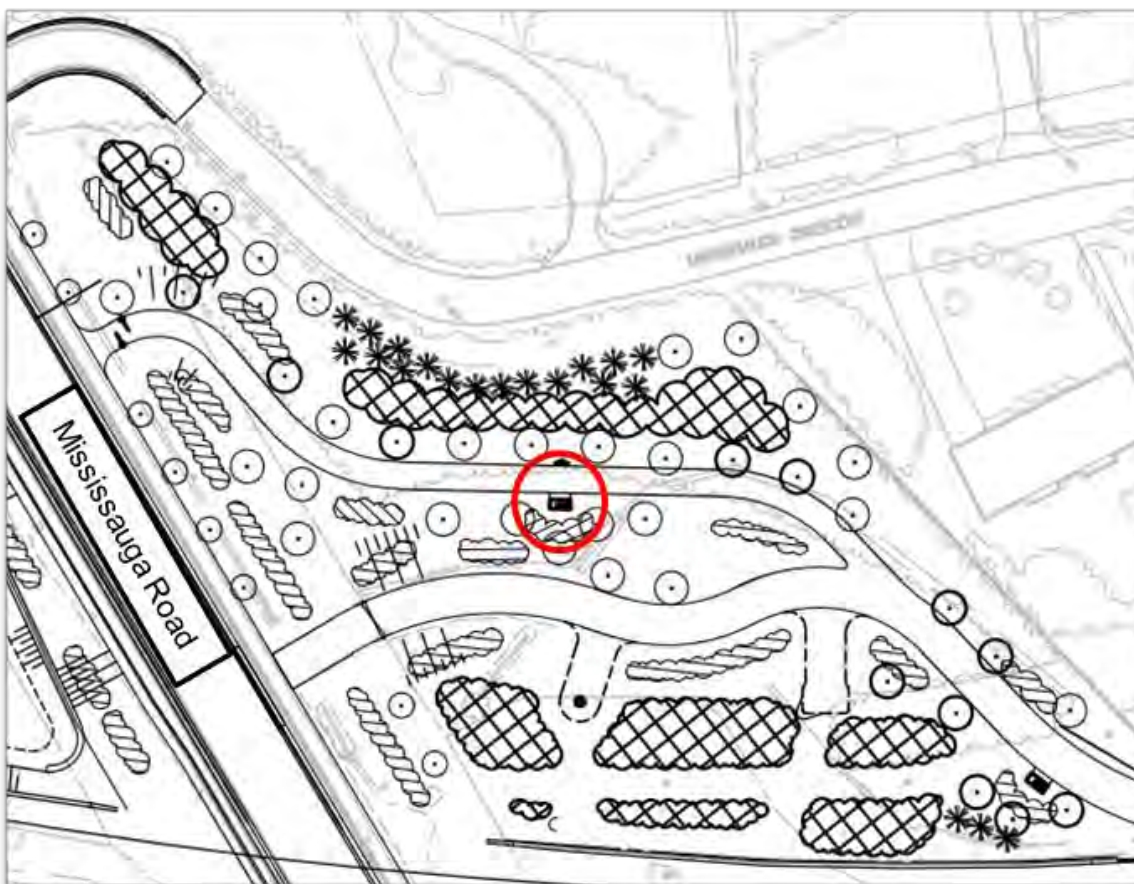
### **3.1.4.1 Commemorative Locations**

Locations recommended for the Commemorative Strategy elements include the placement of individual storyboard displays at four locations along the Active Transportation trail between Mississauga Road and Premium Way and crossing over the Credit River. As shown in red in **Figures 10 and 11**:

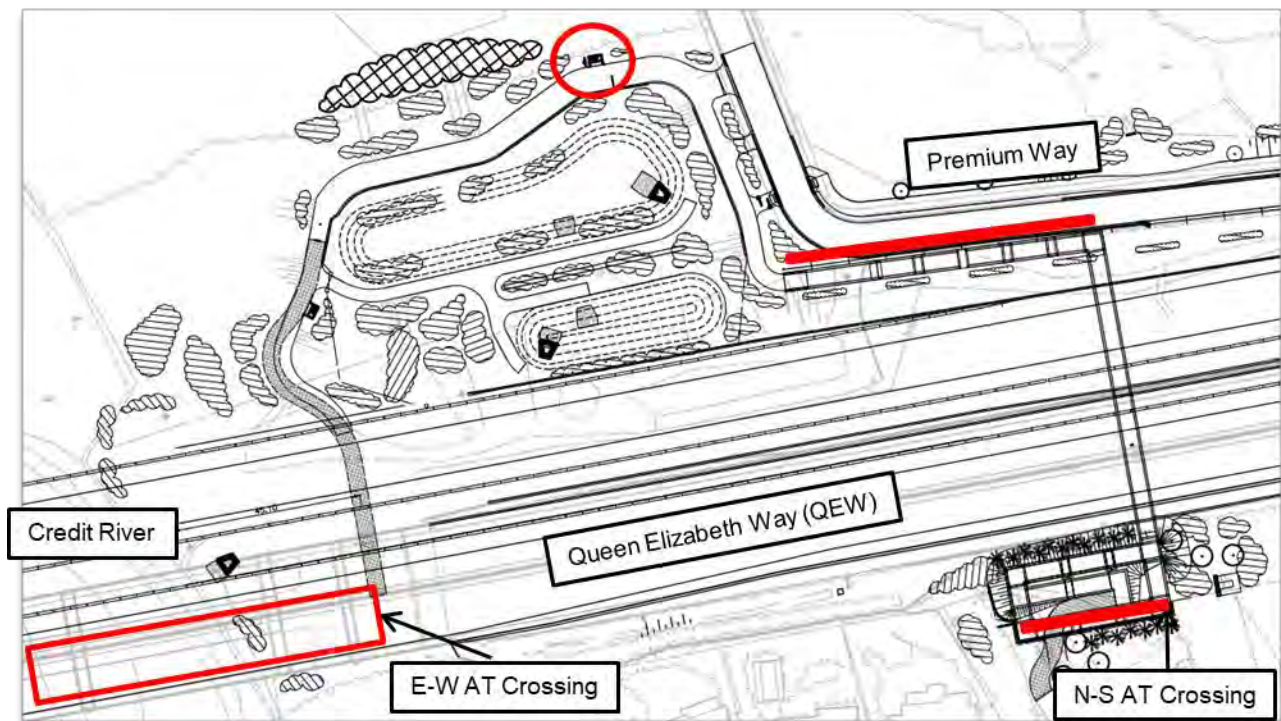
- The first location is within a pedestrian plaza near the Mississauga Road trailhead;
- The second and third locations are to be mounted displays on the Active Transportation bridge over the Credit River; and
- The fourth location is within a pedestrian plaza near at the edge of the river valley and open area associated with the landscaped stormwater management dry pond.

Initial content and imagery of the displays have been developed and will be finalized through consultation with Indigenous communities and the City of Mississauga staff. Additional details regarding the commemorative strategy will be shared with the public through the Project Website once available.

**Figure 10: Commemorative Location within a pedestrian plaza near the Mississauga Road trailhead**



**Figure 11: Commemorative Locations**

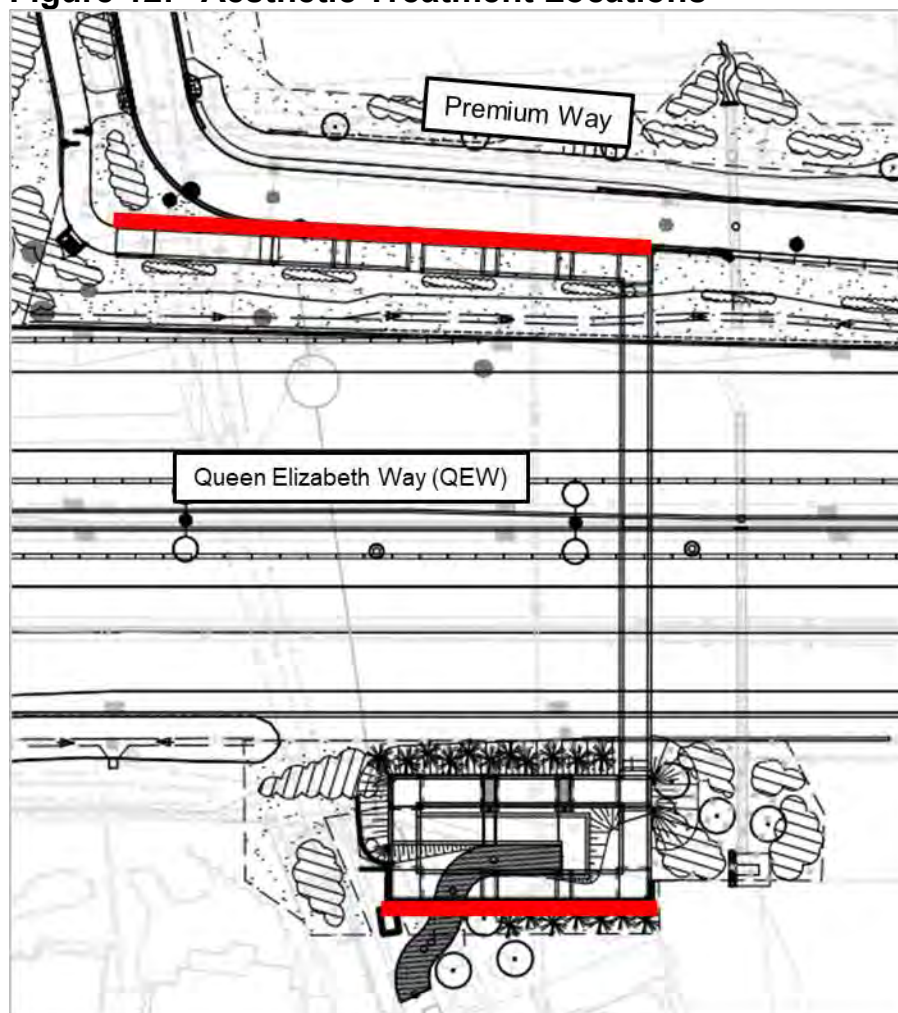


### 3.1.4.2 Aesthetic Treatments

In addition to the commemorative displays, aesthetic treatments will be integrated with north-south Active Transportation crossing of the QEW.

Based on suitable space and visibility, and subject to the City of Mississauga staff input the proposed aesthetic treatments will be incorporated on the North-South Active Transportation at two locations. The first location is on the retaining wall for the pathway ramp along Premium Way, which would be visible to pedestrians along the local trail and as you travel south on Stavebank Road, before making the turn onto Premium Way. The second location involves placement of treatments on ramp elements on the south side of the QEW for people entering from the Stavebank Road access of the bridge crossing. See **Figure 12** for the locations of the proposed aesthetic treatments.

**Figure 12: Aesthetic Treatment Locations**



EDCO is working with the City of Mississauga to confirm the location and design of the aesthetic treatments. Concepts being considered include images and icons with a theme for Active Transportation or natural heritage. The recommended aesthetic treatment details will be shared with the public through the Project Website prior to installation.

### **3.1.5 Detail Design Refinements**

Detail design refinements documented in this DCR include changes to the design since DCR 2 (January 2021) that result in additional consultation or approval required from regulatory agencies. These included refinements to culvert C6, C7 and the storm sewer outfall to the Credit River. Design drawings for C6, C7 and the outfall are presented in **Appendix B**.

## **Culvert C6**

Design refinements include updates to the design for the culvert at Stavebank Creek (C6) previously documented in DCR 2 (January 2021). The design change was necessary to accommodate the Trans-Northern Pipelines pipeline that runs parallel along the north side of Premium Way and passes under the culvert extension. The refinement to C6 design results in a change in the type of culvert over the pipeline to meet TNPI requirements. EDCO's design refinements incorporate natural channel designs and takes into consideration drainage, fluvial and fisheries elements to minimize impacts to fish and fish habitat. EDCO consulted with the Fisheries and Oceans Canada (DFO) on the design (June 15, 2021) to update the Letter of Advice issued for the proposed culvert works.

Refer to **Table 3-1** for changes to the Reference Concept Design.

**Table 3-1: Design Changes from Reference Concept Design to Current EDCO Design**

<b>Culvert C6 Stavebank Creek</b>	<b>Original LOA</b>	<b>Current EDCO Design</b>
CSP Culvert		6.47m (1.8 m * 1.2 m)
Chamber 1 Size (transition chamber)		1.8m length x 2.4m width
Concrete Box Culvert 1 Length	30.19 m	18.266m
Chamber 2 Size	1.8m wide and 2.4m tall	3m length x 2.4m width
Concrete Box Culvert 2 Length		77.610m
Opening Size 1	1.8 x 1.2	1.8 x 1.2
Total Length of culvert and chambers	110.72m	101.02
Baffle detail	Four 0.5m wide x 0.9m long baffles placed every 1m towards the end of the downstream culvert	Four 0.5m wide x 0.9m long baffles placed every 1m towards the end of the downstream culvert
Plunge pool Area (d/s tie-in)	23 m <sup>2</sup>	23 m <sup>2</sup>
Armour Stone Wall (d/s)	10m stretch	5m

## **Culvert C7**

Design refinements include updates to the design for the culvert at Kenollie Creek (C7) previously documented in DCR 2 (January 2021). The design change was necessary to accommodate the Trans-Northern Pipelines pipeline that runs parallel along the north



side of Premium Way and passes under the culvert extension. The refinement to C7 design results in a change to the placement of the culvert over the pipeline to meet TNPI requirements, compared to the design presented to DFO and covered under the original LOA. EDCO's design refinements incorporate natural channel designs and takes into consideration drainage, fluvial and fisheries elements to minimize impacts to fish and fish habitat. EDCO consulted with the Fisheries and Oceans Canada (DFO) on the design (June 15, 2021) to update the Letter of Advice issued for the proposed culvert works.

**Table 3-2: Design Changes from Reference Concept Design to Current EDCO Design**

Culvert C7	Original LOA	Current Design
Length	82.19m	73.43m
Opening Size	3m x 2.1m	3m x 2.1m
Baffle detail	Four 0.5m wide x 0.9m long baffles placed every 1m towards the end of the downstream culvert	Four 0.5m wide x 0.9m long baffles placed every 1m towards the end of the downstream culvert
Plunge pool Area (d/s tie-in)	23m <sup>2</sup>	24 m <sup>2</sup>
Armour Stone Wall (d/s)	14m	11.5 m (L-shaped)
Culvert velocity/fish passage	~1.2 m/s (2-year flood event)	~1.3 m/s (2-year flood event)

### **Storm sewer Outfall to Credit River**

In addition to the design refinements at the two culverts, resulting in amendments to the *Fisheries Act* LOA, refinements were undertaken for the replacement of a 1200mm stormwater sewer pipe within the QEW right-of-way and extending from Hurontario Street interchange westerly until connecting to culvert C7 at Kenollie Creek.

During a drainage survey (February 22, 2021), EDCO confirmed that there was no connection between the 1200mm stormwater sewer pipe and Culvert C7 and that the 1200 mm stormwater sewer is in fact out letting to the Credit River.

As a result of the survey findings, EDCO considered opportunities and constraints to reconfiguring the existing drainage pattern ensure proper connection and drainage for the storm sewer system along the QEW at Premium Way.



EDCO determined this is not feasible to discharge the 1200 mm stormwater sewer to Culvert C7, as this would result in additional flows to Kenollie Creek. In addition, EDCO assessed and confirmed that the option to discharge flow from the stormwater sewer into the new dry pond being constructed on the east side of Credit River is not feasible. Therefore, the final design results in a drainage storm sewer system that maintains the existing drainage patterns.

### **3.1.6 Traffic Staging**

On the QEW, the existing number of lanes will be maintained during peak periods with some work requiring temporary night-time and weekend lane closures. A shift in the existing lane alignments is also required for the work beginning in 2021 to facilitate access to areas where improvements to the QEW and Mississauga Road interchange reconfigurations will take place. Temporary traffic restrictions are required to allow for work to occur safely. They can also allow for work to be completed quicker resulting in less overall impact. Current traffic restrictions include:

- Premium Way long term closure – Summer and Fall 2021
  - Direct access to Premium Way and a few neighbouring streets/properties will continue to be temporarily closed to local traffic. Access will be provided via either Stavebank Road or Harborn Road, depending on the construction stage.
- QEW westbound on-ramp at Mississauga Road closure – Summer 2021 to mid-Fall 2023
  - On-ramp traffic will continue to be detoured to the Erin Mills/QEW interchange (N-W on-ramp) via North Sheridan Way. The detour will be signed during the closure of the on-ramp to QEW Westbound.
- Mississauga Road, North and South Sheridan Way – Summer 2021 to Summer 2022
  - Mississauga Road will continue to be reduced to one lane in each direction. All intersection movements at Mississauga Road and South Sheridan Way will be maintained.

Future traffic restrictions will include:

- Temporary closure of Mississauga Crescent to Mississauga Road southbound traffic (northbound right-in right-out only);
- Premium Way Temporary Closures – Spring 2022;

- Dickson Road to Lynchmere Avenue;
- Stavebank Road to Dickson Road (short duration lane closures).
- QEW eastbound on-ramp from Mississauga Road will be closed – Summer to mid-Fall 2023;
- QEW eastbound access will be maintained via South Sheridan Way; and
- Nightly lane closures of the QEW and the on and off ramps at Mississauga Road.

Notice of traffic restrictions will be made available on the Project Website and circulated to all stakeholders who sign up to receive traffic information. Visit the Project Website: [qewcreditriver.ca](http://qewcreditriver.ca) to sign up for advance notice of these and other traffic restrictions and learn more about temporary traffic impacts.

### **3.2 Environmental Issues and Commitments**

This section presents information on the existing environmental conditions, potential impacts and the environmental mitigation measures and commitments that will be implemented to address impacts. These measures and commitments are summarized in **Table 3-3** and will be carried forward by EDCO for implementation during the construction phase of the Project.

In general, impacts associated with the work documented in DCR 3 are very limited as the work consists primarily of rehabilitation of the existing QEW Credit River Bridge, or restoration of areas disturbed by the Project. As a result, the below discussion is generalized to additional impact as a result of DCR 3. Additional information and EDCO's assessment of the environmental impacts and issues can be found in DCR 2, available on the Project Website.

Main impacts (both positive and negative) associated with works documented in this DCR include:

- Reduced impacts to sensitive bat species;
- Temporary construction impacts for the rehabilitation of the existing QEW Credit River Bridge; and
- Restoration of disturbed areas.

While impacts as a result of DCR 3 work are limited or will be largely positive, EDCO will ensure the environmental commitments identified in **Table 3-3** are met throughout the duration of the Project.

### **3.2.1 Air Quality**

Overall, construction activities from the Project are expected to be typical of any highway construction Project. Prior to undertaking any construction activities with a potential to generate air quality impacts the Environmental Manager and the Construction Manager are to work to ensure that sufficient BMPs are employed to reduce and or eliminate the potential for negative air quality impacts from the Project. Additionally, BMPs may be employed in response to elevated emissions from the Project as observed on site (e.g. visible dust levels, odours, etc.) or in response to complaints received via the complaint process.

**Table 3-3** identifies mitigation measures to be employed with regard to air quality and includes commitments to monitor construction and assess the effectiveness of those measures.

### **3.2.2 Archaeology**

As detailed in previous reports including DCR 1 and DCR 2, Credit River has been used for thousands of years by Indigenous People and subsequently European Settlers. The QEW Credit River Improvement Project area has been extensively assessed for archaeological potential, with work progressing in some locations to Stage 4 mitigation of development impacts.

Works documented in this DCR are not anticipated to impact any areas with archaeological potential and will stay clear of no-go areas, areas of environmental sensitivity, and those areas with special access restrictions for equipment for activities as identified in an Access Management Plan prepared for this Project. To facilitate construction, exclusion/no-go areas/special activities areas have been identified on Issued for Construction design drawings to provide clear direction to construction personnel. These limitations and constructions are included as part of the environmental training program to be completed by EDCO.

The rehabilitation works on the existing Credit River Bridge will involve placement of rock material at the base of the piers to prevent scour and erosion. No excavation of the riverbed is planned for the rehabilitation works. During construction activities, the following will be applied with respect to work within the Credit River:

- If the river bottom is to be impacted by development, EDCO shall delineate these areas and sediments in those specific areas be removed with a gradall (or equivalent) smooth edged bucket first and set on shore for screening for possible archaeological/cultural materials, with an archaeologist and Indigenous monitor in attendance, and that any cultural materials that are

found in this process, be retained according to the Standards and Guidelines for Consulting Archaeologists in Ontario (MTC 2011). Following Stage 2 land-based protocol for screening of archaeological/cultural materials;

- If there is no planned impact to the river bottom, then, no further marine archaeological assessment is required for the Study Area; and,
- Compliance legislation must be adhered to in the event of discovery of deeply buried cultural material or features.

### **3.2.3 Cultural Heritage**

Within the Project Limits, the following cultural heritage resources have been identified through previous review and cultural heritage analysis: existing QEW Credit River Bridge (MTO Site No. 24-203); the Queen Elizabeth Way (QEW); Mineola Neighbourhood; and, Rice Residence at 1564 Mississauga Road. Refer to DCR 2 (January 2021) for details on each of these cultural heritage resources.

Based on EDCO's design for rehabilitation of the Existing QEW / Credit River Bridge, an update to the Heritage Impact Assessment (HIA) is not required. EDCO will consult with the MHSTCI to review the final design elements of the rehabilitation design and confirm the construction and monitoring approach.

In addition, a Heritage Attribute Monitoring Plan has been developed to guide the design and construction for the rehabilitation of the QEW Bridge to best retain and protect heritage elements of the existing bridge. EDCO has hired a specialist with proven experience in the repair of historic concrete to monitor construction activities related to rehabilitation of the existing QEW Credit River Bridge.

### **3.2.4 Fisheries**

Watercourses identified within the Project Limits consist of the Credit River, an Unnamed Tributary of the Credit River, Stavebank Creek, Kenollie Creek, and Mary Fix Creek. All watercourses within the Project Limits are part of the Credit River watershed and generally considered to support a warmwater fishery. Refer to DCR 2 for existing conditions of each watercourse.

As mentioned in **Section 3.1.3**, the refinement to C6 design results in shorter culvert, which involves the installation of a CSP (corrugated steel pipe) culvert at the upstream end to meet TNPI requirements. EDCO's design refinements incorporate natural channel designs and takes into consideration drainage, fluvial and fisheries elements to minimize impacts to fish and fish habitat. EDCO consulted with the Fisheries and

Oceans Canada (DFO) on the design to update the letter of advice issued for the proposed culvert works.

With regard to the 1200 mm Stormwater Sewer and Outfall to the Credit River, work associated with construction of the new outfall will remain above the 2-year water level (75.10m) and is therefore not 'in-water work' and will result in no impacts to fish or fish habitat.

### **3.2.4.1 Fisheries Act Approvals**

EDCO will adhere to the measures to avoid and mitigate potential for prohibited effects to fish and fish habitat specified in environmental approvals for the Project issued by DFO and which includes Letter of Advice (LOA) 18-HCAA-01146 (June 8, 2020) and 18-HCAA-01146 (July 9, 2021). The measures identified in the LOAs are listed in **Table 3-3**.

### **3.2.5 Fluvial Geomorphology**

A fluvial geomorphological assessment with channel designs were completed for Stavebank Creek (C6) and Kenollie Creek (C7) culvert replacement and extension designs. The results of the study are documented in the Fluvial Geomorphological Assessment and Design Report (Appendix G of the *Culverts C6 and C7 – Hydraulic Design Report, Stavebank Creek and Kenollie Creek Culvert Crossings, July 16, 2021 QEWCR-SU-CDS1-DNG-RPT-001-R1*). Refinements to the designs for Culvert C6 and C7 included considerations for and refinement of the natural channel designs. These drawings for C6 and C7 are presented in **Appendix B**.

A fluvial geomorphological assessment of the Credit River was completed to identify the impacts to sediment transport or entrainment potential (erosion and deposition of material) for the works associated with the Credit River crossings of the QEW. The result is that there will be no significant impact. Rock material will be placed at the piers as noted in the General Arrangement drawing for the Credit River Bridge to protect the piers and foundations from potential scour and erosion. A fluvial assessment of the 1200 mm Storm sewer and Outfall design refinement was not required as the outlet will not alter the flows within the river and the design includes installation of flow dissipation features at the outlet.

### **3.2.6 Groundwater**

Soil and groundwater investigations were completed in 2017 and 2019 by the MTO. A Permit to Take Water (PTTW) has been acquired for the Project.

Water taking activities are to be undertaken during construction per the Ontario's Water Taking Regulation (O. Reg. 387/04 made under the Ontario Water Resources Act, as amended by O. Reg. 64/16, March 29, 2016), and the new EASR regulation (O. Reg. 63/16 – Registration under Part II.2 of the Act – Water Taking and the Water Taking User Guide for Environmental Activity and Sector Registry MECP, August 2017), respectively.

### **3.2.7 Noise and Vibration**

Construction noise impacts are considered to be temporary in nature, and largely unavoidable. In addition, the timing of construction activities is such that they vary by activity and location within the site as the construction progresses and thus noise levels from construction activities will also vary. Although for some periods and types of work, construction noise may be noticeable, with adequate controls, impacts can be minimized. As a result, it is not anticipated that receptors will be exposed to constant construction noise for the duration of the construction contract.

The potential environmental noise impacts resulting from construction of the proposed undertaking were assessed and measures to minimize disturbance to nearby homes will be implemented as described in **Table 3-3**.

It is important to note that impacts to existing noise levels as a result of the Project have been assessed previously and that this DCR 3 is capturing impacts associated with the work described in this DCR. As documented in previous EA reports for the Project, many residents in close proximity to the Credit River Valley will see an improvement in sound levels as a result of the Project. Please refer to the TESR (June 2013), DCR 1 (June 2020) and DCR 2 (January 2021) for additional details.

The Project Website will remain active throughout the duration of the Project to provide regular updates; provide notification to those residents or individuals requesting to be notified of weekend/night works and, regularly update City Councillors and staff of night/weekend work.

An exemption to the City of Mississauga Noise By-Law 360-79 was obtained April 22, 2021 for this project for works between May 3, 2021 and July 1, 2025. The exemption covers works resulting in amplified sound from 11:00pm to 6:00am (Monday to Friday) and all hours on weekends.

### **3.2.8 Surface Water**

As mentioned in **Section 3.1.5**, design refinements at C6 and the existing drainage pattern (the 1200 mm stormwater sewer is out letting to the Credit River) will not result

in any environmental impacts beyond the magnitude and extent identified in the Environmental Approvals for the Project.

Further to information in **Section 3.2.4**, EDCO's design refinements at C6 incorporate natural channel designs and takes into consideration drainage, fluvial and fisheries elements to minimize impacts to fish and fish habitat.

As for the outfall to the Credit River, the change in design is considered insignificant as:

- The outfall is maintaining existing drainage pattern for the 1200 mm stormwater sewer;
- The outfall location is approximately 5 m east of the existing outfall location;
- The outfall, which is being designed to take emergency overflow from the dry pond and external drainage west of the pond, will result in maximum 0.4 m<sup>3</sup>/sec increase in peak flows during 5-year to 100-year storm events at the outfall location and no increase during 2-year events;
- Drainage and impervious areas contributing to the Credit River were both decreased resulting in no impact on water quality and water quantity. Total peak flows to the Credit River will be less than the existing condition; and
- The outfall elevation (78.93 m) will be higher than 100-year water level (77m) and erosion protection will be extended to the 2-year water level (75.10m).

As detailed in **Table 3-3**, during in-water works for the Project, EDCO will adhere to the mitigation measures to protect waterbodies, animal species and vegetation due to increased siltation, changes in stream channel structure and water clarity, increase in stream temperatures and input of pollutants from roadside drainage.

### **3.2.9 Terrestrial Ecosystem**

The existing conditions within the Project Limits were documented in the TESR (June 2013), DCR 1 (June 2020) and DCR 2 (January 2021). It is noted that within the Project Limits there are: portions of the Credit River Marshes Wetland Complex Provincially Significant Wetland (PSW); a species at risk (SAR) afforded protection under the provincial *Endangered Species Act* (ESA), including a Butternut (*Juglans cinerea*); sensitive habitat for SAR bats within wooded areas; and, invasive species.

As mentioned in **Section 3.1.3.1**, EDCO has developed a design for landscaping and ecological restoration to protect existing ecological and environmental values. The design is informed by updated field investigations and an assessment of impacts from the Project. The goal of the design is to offset the impacts of construction and related

activities on existing natural heritage features, functions, and systems while supporting new viable natural communities and linking existing ecologically significant areas for use by wildlife. As such, works covered in this DCR will result in minor impacts to the terrestrial ecosystem.

### **3.2.10 Waste and Contamination**

The studies completed by the MTO during preliminary and detail design phases of the Project identified areas of samples exceeding Ontario Regulation 153/04 for soil and groundwater quality standards. EDCO's approach to waste and contamination management and earth movement, including management of contaminated soil and groundwater will be in accordance with all applicable regulation and standards and will fulfill the commitments to additional work and mitigation measures detailed in **Table 3-3**.

Designated Substances Surveys were completed for the existing Credit River Bridge as part of the overall study. Based on the results a site-specific Designated Substance Abatement, Management and Disposal Plan (DSAMDP) was developed by EDCO to establish procedures and methodology to be used during the abatement of designated substances prior to and during construction on each structure.

For the existing QEW / Credit River Bridge, there is the potential to encounter Arsenic, Asbestos-Containing Materials (ACM), Lead and Silica.

- Arsenic is anticipated to be found in wood posts for steel beam guide rails located at approach slabs and timber plank deck surface on the service bridge below the QEW Credit River Bridge deck.
- ACM is inferred to be encountered in waterproofing membrane on the bridge deck.
- Lead-containing materials are assumed to be presented in the paint-covered parts of the structure elements, lighting elements, and epoxy coatings.
- Silica is expected in the majority of the structure (concrete, asphalt, masonry aggregates)

During construction EDCO will adhere to the mitigation measures and the corresponding regulatory and guideline procedures in DSAMDP. The DSAMDP applies to demolitions, material disposal. Where required, EDCO will obtain necessary approvals and clearances related to designated substances. Details related to the Mississauga Road Overpass were documented in DCR #2 (January 2021). The DSAMDP for that structure will be implemented accordingly.



### **3.2.11 Permits, Licenses and Approvals**

#### **3.2.11.1 Canadian Navigable Waters Act**

In 2019 the act governing navigation changed, and pre-existing exemptions and memorandums of understanding (MOU) between the MTO and Transport Canada were changed. Under the new Act, the proposed works for the new Credit River Bridge are considered to be major works on non-schedule waters and therefore approval under the Canadian Navigable Waters Act (CNWA) is required. EDCO obtained the approval under the CNWA for the construction of the new Twin Bridge over the Credit River.

In order to undertake the rehabilitation works on the existing QEW/Credit River Bridge EDCO has consulted with Transport Canada and will obtain a separate approval under the CNWA for these works. To minimize potential impacts to navigation, EDCO will adhere to the terms and conditions of the Canadian Navigable Waters Act (CNWA) approval of the work. There is the potential to temporarily impact navigation within the Credit River for the placement of rock material at the base of the existing piers. Construction staging for the rehabilitations are expected to allow navigation under the existing structure.

#### **3.2.11.2 Licence to Collect Fish Permit**

To facilitate fish removals and relocations from isolated work areas prior to dewatering activities, EDCO has received the Licence to Collect Fish for Scientific Purposes for 2021. An application to renew the licence will be submitted yearly during construction.

#### **3.2.11.3 Wildlife Handling Permit**

In the event that wildlife is encountered during construction, and there is a need to relocate them to an area outside of the active construction work area, a wildlife handling permit is required. EDCO will seek an annual licence to handle and relocate wildlife. EDCO wildlife and SAR specialists will perform wildlife relocations and document the activities in accordance with the terms of the licence issued by the MNDMNRF.

### **3.3 Summary of Environmental Effects, Proposed Mitigation, Commitments to Further Work**

**Table 3-3** outlines the environmental effects, proposed mitigation measures and commitments to further work, carried forward from previous environmental assessments for this Project and refined during detail design where necessary. The summary is comprehensive, capturing all environmental commitments for the Project and will be carried forward through construction of the Project.

**Table 3-3: Environmental Concerns, Mitigation and Commitments**

ID	Issues / Concerns / Potential Effects	Concerned Agency	Mitigation / Protection / Monitoring / Commitments
1.01	Potential Impact to fish and fish habitat (General)	MTO MNDMNRF MECP DFO	<ul style="list-style-type: none"> <li>▪ EDCO will adhere to the Letter of Advice (18-HCA-01146, July 9, 2021)</li> <li>▪ EDCO will adhere to the permissible in-water construction timing windows for watercourses and apply the following during construction to protect fish and fish habitat during construction activities: <ul style="list-style-type: none"> <li>–When possible, schedule work to avoid wet and rainy periods that may increase erosion and sedimentation and inspect in accordance with requirements of the Surface Water Monitoring &amp; Mitigation Plan, Spill Management Plan, and Site-Specific Erosion and Sedimentation Control Plan.</li> <li>–Contain all in-water works using site isolation as per Ontario Provincial Standard Specification (OPSS) 182 – General Specification for Environmental Protection for Construction in Waterbodies and on Watercourse Banks, designed and installed according to relevant Contract Specifications to delineate temporary in-water work zones to allow work in the dry and maintain clean flow downstream/around the work zone at all times.</li> <li>–A fish relocation will occur prior to and/or during the de-watering activities, depending on the depth of water in the isolated work area. Fish will be collected using methods approved under the Licence to Collect Fish for Scientific Purposes and they will be identified to species (where possible), enumerated and relocated downstream, beyond the construction work area. In the event that the temporary barriers fail, additional fish rescues shall be conducted to remove all fish from the work area prior to resuming construction. All collections and sampling will be performed in compliance with the Best Management Practices (BMPs) identified in the Fisheries Policy Section Technical Bulletin. EDCO has received the Licence to Collect Fish for Scientific Purposes from MNDMNRF Aurora District. An application to renew the licence will be submitted yearly during construction.</li> <li>–Minimize duration of in-water work and conduct instream work during periods of low flow when possible to further reduce the risk to fish and their habitat and to allow work in water to be contained.</li> <li>–When temporary flow control must be undertaken for the work it shall be per OPSS 517 – Construction Specification for Dewatering.</li> <li>–All exposed soils or disturbed areas that drain into a waterbody will be treated with seed and cover according to OPSS 804 – Construction Specification for Seed and Cover, as soon as possible after exposure or upon completion of the work in or around the waterbody or on the waterbody bank.</li> <li>–Monitor construction activities in and around watercourses and ensure all related mitigation measures are properly installed, maintained, and are functioning effectively.</li> </ul> </li> </ul>
1.02	Potential Impacts to fish and fish habitat within the Credit River	MTO MNDMNRF MECP DFO	<ul style="list-style-type: none"> <li>▪ Due to the presence of resident warmwater fish species and migratory coldwater fish species, any required in-water works will only be permitted between July 1st to August 15th (July 1st to August 31st in 2020) and December 15th to January 31st. Once containment measures are installed at Credit River, work may occur within the watercourse and along the banks outside of the permitted in-water timing window.</li> </ul>
1.03	Potential Impacts to fish and fish habitat within Kenollie Creek, Stavebank Creek, Unnamed tributary of the Credit River, and Mary Fix Creek	MTO MNDMNRF MECP DFO	<ul style="list-style-type: none"> <li>▪ Due to the presence of a warmwater fish community, any required in-water works will only be permitted between July 1st and March 31st, except for works in Stavebank Creek, which does not require an in-water works timing window.</li> </ul>
1.04	Dewatering activities during construction	MTO MECP	<p>In order to avoid and/or minimize impacts associated with de-watering activities the following mitigation measures will be implemented:</p> <ul style="list-style-type: none"> <li>▪ Intakes of pumps and hoses for de-watering of in-water work areas will be screened to avoid impingement and/or entrainment of fish (as per OPSS 182 and in accordance with the DFO code of practice);</li> <li>▪ Dewatering operations will be managed to prevent erosion or the release of sediment-laden water to a waterbody (as per OPSS.PROV 805);</li> <li>▪ EDCO will maintain an appropriate depth and flow (i.e., base flow and seasonal flow of water) for the protection of fish and fish habitat;</li> <li>▪ EDCO will avoid changing flow or water level;</li> <li>▪ EDCO will operate machinery on land, or from barges or on ice;</li> <li>▪ EDCO will dispose and stabilize all dredged material above the high-water mark of nearby waterbodies to prevent entry in the water; and</li> </ul>

ID	Issues / Concerns / Potential Effects	Concerned Agency	Mitigation / Protection / Monitoring / Commitments
			<ul style="list-style-type: none"> <li>▪ Dewatering will be done gradually to reduce the potential for stranding fish.</li> </ul>
1.05	Erosion and Sediment Control	MTO MECP CVC	<ul style="list-style-type: none"> <li>▪ The following erosion and sediment control measures will be implemented: <ul style="list-style-type: none"> <li>– Use of effective erosion control measures including topsoil and seed, silt fence barriers, and erosion control blankets as per OPSS.PROV 804.</li> <li>– Design and implement erosion and sediment controls to contain/isolate the construction zone, manage site drainage/runoff and prevent erosion of exposed soils and migration of sediment into waterbodies at all stages of the Project using details outlined in OPSS.PROV 805. Erosion and sediment control measures will be maintained until all disturbed ground has been permanently stabilized, suspended sediment has resettled to the bed of the waterbody or settling basin and runoff water is clear.</li> <li>– Minimize vegetation removal where possible and proper clearing and grubbing techniques will be utilized. All retained vegetation will be delineated and protected. Removal of vegetation shall be in accordance with OPSS 182 and clearing shall be completed in accordance with the specifications outlined in OPSS 201 – Construction Specification for Clearing, Close Cut Clearing, Grubbing and Removal of Surface and Piled Boulders.</li> <li>– Site isolation/containment measures (i.e. cofferdams) will be implemented to isolate areas where in-water work is required. Site isolation will be implemented as per OPSS 182 and designed according to relevant Contract Specifications.</li> <li>– Rock protection to be used in construction within the river shall be clean (washed) and free of fine materials and debris prior to placement. Placement of rock protection shall be in a controlled manner to minimize sedimentation.</li> <li>– Measures will be implemented for containing and stabilizing waste material (e.g., dredging spoils, construction waste and materials, commercial logging waste, uprooted or cut aquatic plants, accumulated debris) above the High Water Mark (HWM) of nearby waterbodies to prevent re-entry.</li> <li>– All stockpiled materials, including but not limited to excavated overburden and topsoil, excess materials, construction debris and containers will be stored and stabilized in a manner that prevents them from entering any waterbody.</li> <li>– Regular inspection and maintenance of erosion and sediment control measures and structures during the course of construction.</li> <li>– Repair erosion and sediment control measures and structures if damage occurs.</li> <li>– Remove non-biodegradable erosion and sediment control materials once site is stabilized.</li> </ul> </li> </ul>
1.06	Operation of Machinery	MTO MECP	<ul style="list-style-type: none"> <li>▪ EDCO will ensure that machinery arrives on site in a clean condition and is maintained free of fluid leaks for the duration of construction. EDCO shall also ensure that: <ul style="list-style-type: none"> <li>– Whenever possible, heavy machinery access will be limited to areas within the existing ROW and along the banks of the Credit River, Stavebank Creek, Kenollie Creek and Mary Fix Creek above the normal high-water mark. The watercourses will not be crossed (i.e. forded) or treated as machinery staging at any time.</li> <li>– Whenever possible, machinery will be operated on land above the high-water mark in a manner that minimizes disturbance to the banks and bed of the waterbody.</li> <li>– Washing and servicing machinery shall not occur within 30 metre of any watercourse or wetland features to the extent possible and to prevent any deleterious substances from entering the water.</li> <li>– Where equipment can easily be moved, refueling shall not occur within 30 metre of wetland or watercourse feature.</li> <li>– Should re-fuelling occur within 30 metre of a watercourse or wetland (i.e., during construction of the new bridge over the Credit River), the Spill Management Plan shall be followed and, a 2-person refueling process will be followed; specified re-fuelling areas shall be delineated; extra spill response kits shall be available; and, secondary containment system (such as a spill tray /absorbent pad/ containment bladder, etc.) will be employed.</li> <li>– Spill kits are available onsite and drip pans are to be placed under all non-mobile machinery.</li> <li>– The Clean Equipment Protocol for Industry (Halloran, Anderson, Hayley and Tassie, Danielle, 2013). Applicable OPSS for Equipment Use includes OPSS 182 will be followed.</li> </ul> </li> </ul>

ID	Issues / Concerns / Potential Effects	Concerned Agency	Mitigation / Protection / Monitoring / Commitments
1.07	Contaminant and Emergency Spill Response	MTO MECP	<ul style="list-style-type: none"> <li>For the proposed activities within the QEW/Credit River study area including bridge construction, rehabilitation works, and culvert replacements and extensions, EDCO has developed a Spill Management Plan that will be implemented immediately in the event of a sediment release or spill of a deleterious substance as well as keep emergency spill kits on site (and in heavy machinery) in case of emergency. EDCO shall also ensure that: <ul style="list-style-type: none"> <li>Materials such as paint, primers, rust solvents, degreasers, grout, poured concrete or other chemicals do not enter the watercourse.</li> <li>Building material used in a watercourse has been handled and treated in a manner to prevent the release or leaching of substances into the water that may be deleterious to fish.</li> </ul> </li> <li>Mitigation/Protection/Monitoring shall ensure the following: <ul style="list-style-type: none"> <li>All spills shall be reported to the Ministry of Environment, Conservation and Parks (MECP) Spills Action Centre (1-800-268-6060) as well as to DFO and MNDMNRF Aurora District if there is potential for significant impacts to fisheries and/or wildlife resources.</li> </ul> </li> </ul>
2.01	Disturbance of Soils During Construction Activities	MTO MNDMNRF	<ul style="list-style-type: none"> <li>In addition to implementing measures as per Ontario Provincial Standard Specification OPSS.PROV 805: <ul style="list-style-type: none"> <li>Minimize vegetation removal, where possible, and limit removal to within the construction footprint.</li> <li>Maintain vegetation of embankments for as long as possible prior to disturbance.</li> <li>Seed and cover exposed soils as soon as possible.</li> <li>Routinely inspect sediment and erosion control structures, including after storms, and repair as required.</li> </ul> </li> </ul>
2.02	Vegetation Protection	MTO MNDMNRF CVC	<ul style="list-style-type: none"> <li>For both terrestrial and riparian area, clearly delineate ROW vegetation clearing zones and vegetation retention zones both on the construction drawings and in the field prior to clearing and grading. Equipment, materials, and other construction activities will not be permitted in these zones.</li> <li>Those communities that provide bat SAR habitat shall be identified as Sensitive bat SAR Habitat. These areas shall be protected as per OPSS-801: Construction Specification for the Protection of Trees and shall be clearly delineated in the field. These areas shall be considered no-go zones, where storage, staging and access are not permitted at any time.</li> <li>Forest communities (FODM4, FODM5, FODM2) that exist within and adjacent to the work area shall be clearly delineated in the field and no access beyond the limits of work shall be permitted as they are potential habitat for bat SAR.</li> <li>Vegetation removals are minimized to the extent required for the construction activities in planned early works areas.</li> <li>Vegetation removals shall be undertaken in accordance with all identified timing windows for the protection of wildlife.</li> <li>Fencing will be installed along work limits to protect riparian vegetation from encroachment and is detailed in the Erosion and Sediment Control Plan.</li> <li>Routine inspections by the environmental inspector will ensure that installed fencing will be maintained for continued protection of these areas.</li> <li>Site specific environmental training of contractors will ensure all workers on site are aware of sensitive areas and that no work is permitted past the fencing.</li> <li>Clearing and grubbing methods will follow OPSS 201 as detailed in the Clearing and Grubbing Plan.</li> <li>Weather conditions will be monitored, and site controls reviewed and enhanced as needed.</li> </ul>
2.03	Vegetation Clearing	MTO MNDMNRF CVC	<ul style="list-style-type: none"> <li>In order to avoid and/or minimize impacts to terrestrial vegetation, mitigation measures include the following: <ul style="list-style-type: none"> <li>Trees and shrubs removed as part of the Project shall be replaced with native species where possible.</li> <li>Trees and shrubs to be retained shall be pruned if damaged by construction activities and replaced if killed by construction activities.</li> <li>Areas of herbaceous vegetation disturbed during construction shall be seeded with an appropriate seed mix per the Landscape Plan and OPSS 804 – Construction Specification for Seed and Cover.</li> <li>Areas shall be restored with vegetation/landscaping per the Landscape Plan.</li> <li>EDCO shall use tree felling and grubbing procedures that minimize the risk of impacts on adjacent lands and vegetation and wildlife.</li> <li>Clearing, close cut clearing, grubbing, and removal of surface and piled boulders shall adhere to all federal and provincial regulations as well as the MTO requirements concerning vegetation and wildlife protection.</li> <li>Clearly delineate ROW vegetation clearing zones and vegetation retention zones both on the construction drawings and in the field prior to clearing and grading. Equipment, materials, and other construction activities will not be permitted in these zones.</li> </ul> </li> </ul>

ID	Issues / Concerns / Potential Effects	Concerned Agency	Mitigation / Protection / Monitoring / Commitments
2.04	Avoid and/or minimize impacts to riparian vegetation	MTO MNDMNRF CVC	<ul style="list-style-type: none"> <li>▪ When practical, prune or top the vegetation instead of grubbing/uprooting.</li> <li>▪ Minimize the removal of natural woody debris, rocks, sand, or other materials from the banks, the shoreline, or the bed of the waterbody below the normal high-water mark (HWM). If material is removed from the waterbody, set it aside and return it to the original location once construction activities are completed.</li> <li>▪ If replacement rock reinforcement/armouring is required to stabilize eroding or exposed areas, ensure that appropriately sized, clean rock is used; and that rock is installed at a similar slope to maintain a uniform bank/shoreline and natural stream/shoreline alignment.</li> </ul>
2.05	Invasive Species Control During Construction	MTO MNDMNRF MECP CVC	<ul style="list-style-type: none"> <li>▪ Emerald Ash Borer <ul style="list-style-type: none"> <li>– Cleared ash trees will be chipped and used as mulch on site. <ul style="list-style-type: none"> <li>○ Should it be decided that wood materials need to be moved off-site a Movement Certificate will be acquired and the applicable Municipalities will be contacted to advise on specific restrictions.</li> </ul> </li> <li>– Further to these measures Fraxinus spp. will not be included among the species used in restoration of natural areas.</li> </ul> </li> <li>▪ Asian Long-horned beetle (ALHB) <ul style="list-style-type: none"> <li>– Should there be any confirmed observations of the ALHB they will be reported to the CFIA at 647-790-1012 and reported to the CA.</li> <li>– Following a confirmed sighting EDCO will inspect the interior and exterior of any vehicle or machinery on site for any duration of time, for presence of the beetle to prevent spread outside of the area.</li> <li>– Any host species material sourced for restoration plantings will be inspected for any signs of infestation prior to being brought to site.</li> </ul> </li> <li>▪ Phragmites and other invasive and noxious vegetation species: <ul style="list-style-type: none"> <li>– Excavation will be completed first as a separate operation and managed separately.</li> <li>– Excavation of the invasive and noxious vegetation will be completed such that the plant material, root mass, and underlying impacted soil are removed to a depth of 0.25 m below the root mass.</li> <li>– EDCO will ensure that Invasive and Noxious Vegetation and underlying soil and root mass being transported to a waste disposal site from the Project area is fully contained within the vehicle(s) being used to transport it such that it cannot escape during transport. <ul style="list-style-type: none"> <li>○ Soil from areas impacted by invasive and/or noxious vegetation will not be stockpiled on site for reuse.</li> <li>○ The plant material and associated soils will be disposed of at an approved waste disposal site licensed to accept non-hazardous soil industrial waste.</li> <li>○ The facility for disposal will be updated when identified.</li> </ul> </li> <li>– EDCO is responsible for ensuring that the phragmites has not re-established at locations shown on the removal drawings prior to completion of work. <ul style="list-style-type: none"> <li>○ If re-establishment occurs, EDCO will excavate and remove from site any phragmites within locations of Invasive and Noxious Vegetation shown in the removal drawings prior to completion of work.</li> </ul> </li> <li>– Follow the BMPs set forth in the Clean Equipment Protocol for Industry (Halloran et al., 2013).</li> <li>– At no time will the excavated soil and vegetation be stockpiled or disposed of on site.</li> <li>– During removals transportation of noxious vegetation will be in vehicles which ensure materials are fully contained so no soil or root fragment is deposited along the route.</li> <li>– Equipment brought onto site will be cleaned prior to arriving to site and inspected upon arrival for any potential contaminants. No debris, earth clods or invasive and noxious material should be attached to the inside or outside surfaces of construction vehicles arriving on or leaving site or between contaminated and clean areas.</li> <li>– The BMPs set forth in the Clean Equipment Protocol for Industry (Halloran et al., 2013), shall be adhered to where feasible.</li> </ul> </li> </ul>
2.06	Impacts to Migratory Birds	MTO MNDMNRF	<ul style="list-style-type: none"> <li>▪ Migratory birds are protected under the MBCA from harm and harassment during nesting. Mitigation measures to be employed by EDCO with respect to migratory birds include:</li> </ul>

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			<ul style="list-style-type: none"> <li>–To prevent nesting of birds during construction, EDCO will establish preventative measures within the Project Limits.</li> <li>–EDCO will adjust the preventative measures as needed during construction and maintain the integrity/function of the preventative measures until no longer needed or until Project completion.</li> <li>–If adjustments to the preventative measures are required to facilitate construction staging operations, the adjustments will be effective in preventing nesting of migratory birds.</li> <li>–EDCO will document and report all preventative measures, to be available to the Contracting Authority upon request.</li> <li>–All clearing and grubbing activities must take place outside of the breeding window of April 1 to August 31.</li> <li>–Clearing and grubbing within the breeding bird period risks contravention of the MBCA. If necessary, simple habitats such as a few individual trees or maintained parklands, may be cleared following nest sweeps conducted by an Avian Specialist. Even with nest sweeps there is a risk of affecting a nesting protected species. Therefore, nest sweeps will only be undertaken as a last resort. Nest sweeps are valid for a 3-day period, depending on season and vegetation, and then a new sweep will be required.</li> <li>–If an active nest is discovered in the work area or adjacent limits, the nest must be protected, works which may lead to a contravention of the act will be halted and the Avian Specialist consulted to identify required next steps.</li> <li>▪ Given the confirmation of cliff swallow nests on the Credit River Bridge, the EDCO Avian Specialist has prescribed the following additional mitigation measures: <ul style="list-style-type: none"> <li>–Portions of the bridge which require work during the Breeding Bird Window (April 1 – August 31), will have preventative measures installed to prevent nesting (e.g. netting or similar approaches such as those recommended in Best Management Practices for excluding Barn Swallows and Chimney Swifts from Buildings and Structures (MNDMNRF, 2017)).</li> <li>–Preventative measures will be installed in advance of April 1 of any year works will proceed.</li> <li>–Should the removal of any nests be required, this will be conducted in advance of April 1 of any year works will proceed.</li> <li>–The preventative measures will be monitored for effectiveness on a regular basis by the Environmental Inspector.</li> </ul> </li> </ul>
2.07	Species at Risk – Bank Swallow	MTO MNDMNRF MECP	<ul style="list-style-type: none"> <li>▪ If work within stockpiles or slopes is required during the breeding bird season, a slope reduction plan should be used to deter nesting by Bank Swallows, which may include the following: <ul style="list-style-type: none"> <li>–Sloping off stockpiles (using a bulldozer excavator etc.).</li> <li>–Contouring slope faces.</li> <li>–Piling materials on the face (exclusion).</li> </ul> </li> <li>▪ Slope reduction measures should continue throughout the breeding bird season (April 1 – August 31) of any year.</li> </ul>
2.08	Species at Risk – Bats	MTO MNDMNRF MECP	<ul style="list-style-type: none"> <li>▪ In order to avoid and/or minimize impacts to bat SAR and their habitats, mitigation measures include the following: <ul style="list-style-type: none"> <li>–Those communities that provide bat SAR habitat shall be identified as Sensitive Bat SAR Habitat. These areas shall be protected as per OPSS-801: Construction Specification for the Protection of Trees and shall be clearly delineated in the field. These areas shall be considered no-go zones, where storage, staging and access are not permitted at any time.</li> <li>–Forest communities (FODM4, FODM5, FODM2) that exist within and adjacent to the work area shall be clearly delineated in the field and no access beyond the limits of work shall be permitted as they are potential habitat for bat SAR.</li> <li>–No clearing and grubbing in potential bat SAR habitats (FODM2, FODM4, FODM5, FODM7) will be undertaken between April 1 – September 30.</li> <li>–During vegetation removals within the bat SAR habitat (i.e., those areas approved by the LOA), an Environmental Inspector and/or SAR Specialist will be present to ensure that mitigation measures prescribed in the LOA are adhered to. These also include that appropriate clearing methods are undertaken (felling of trees away from adjacent habitat) and that works do not progress outside of the approved footprint.</li> <li>–During construction, all works within proximity to the habitat for bats are being limited to daylight hours between April 1 and September 30. Where this is not feasible, lighting will be minimized adjacent to these areas and angled into the construction zone to avoid impacts to bats which may be using the area.</li> <li>–Standard practices to minimize construction noise and vibration are being implemented. Construction activities shall be in compliance with the Construction Noise and Vibration Plan.</li> </ul> </li> </ul>

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			–Any lighting associated with the construction phase will be the minimum necessary to ensure security and safety and should be directed away from natural areas when possible.
2.09	Species at Risk – Snapping Turtle	MTO MNDMNRF MECP	<ul style="list-style-type: none"> <li>In order to avoid impacts to Snapping Turtles, the following measures are being implemented: <ul style="list-style-type: none"> <li>–Maintenance of erosion control measures and exclusionary fencing prescribed for the Project to prevent sedimentation and to prevent individuals from entering the work area.</li> <li>–Daily inspections during nesting periods to ensure any turtles who are able to find a way onto the Project Lands are quickly identified and relocated before they establish a ‘nest’.</li> </ul> </li> </ul>
2.10	Species at Risk – Butternut	MTO MNDMNRF MECP	<ul style="list-style-type: none"> <li>The limits of disturbance to accommodate clearing and grubbing, and rehabilitation of the existing bridge have been minimized to the extent possible and the location of the tree marked within the no-go area.</li> <li>Tree protection fencing will be installed to avoid encroachment into the buffer limit for this tree to allow rehabilitation works on the south side of the existing bridge.</li> </ul>
3.01	Impacts to Existing Land Use within the Project Limits	N/A	<ul style="list-style-type: none"> <li>No impacts are expected; therefore, no specific mitigation measures are required.</li> </ul>
4.01	Operational Noise	MTO MECP City of Mississauga	<ul style="list-style-type: none"> <li>Use transparent material for the noise barrier walls on the Credit River Bridge is supported since it will permit views of the Credit River from the bridge deck to be retained.</li> <li>The noise barrier wall system will be attached to new or replacement components of the existing QEW Credit River Bridge and avoid use of the historic concrete structure for support.</li> <li>Noise barrier locations <ul style="list-style-type: none"> <li>–Along the north side of QEW from east of Mississauga Road to the new Credit River Bridge and then from the bridge to the west of Hurontario Street (near Lynchmere Avenue).</li> <li>–Along the south side of the QEW from Mississauga Road to the existing Credit River Bridge; and reinstatement of existing noise barrier (due to construction impacts) east of the Credit River in two locations (one approximately 50 metres and the other approximately 100 metres).</li> <li>–Along South Sheridan Way starting at Indian Grove for approximately 250 metres.</li> <li>–Transparent noise barrier panels (with integrated bird protection stripes) on the north and south side of the westbound and eastbound Credit River Bridges, respectively, matching to the ground mounted noise barriers.</li> </ul> </li> <li>Replace double expansion joints on the existing bridge. Expansion joints will be converted to single joint when the bridge deck will be replaced. The new Credit River [Bridge] will have reduced number of single expansion joints.</li> </ul>
4.02	Construction Noise	MTO MECP City of Mississauga	<ul style="list-style-type: none"> <li>MTO has a standing agreement with the City of Mississauga that night and weekend work within the MTO right-of-way (ROW) are exempt from the Noise By-Law. Despite the agreement with the City, where possible, construction activities will be limited to the time periods allowed by the Noise By-Law, except where covered by a Noise By-Law exemption</li> <li>EDCO to adhere to the Noise By-Law exemption approved by the City of Mississauga April 22, 2021 for works occurring: <ul style="list-style-type: none"> <li>May 3, 2021 to July 1, 2025 (Monday to Friday)</li> <li>From 11:00 pm to 6:00 am</li> <li>All hours on Weekends</li> </ul> </li> </ul>
4.03	Construction Noise and Vibration	MTO MECP City of Mississauga	<ul style="list-style-type: none"> <li>All equipment should be properly maintained to limit noise emissions. As such, all construction equipment must be operated with effective muffling devices that are in good working order.</li> <li>Route trucks away from residential areas where possible.</li> <li>Stage material removals and deliveries during daytime where possible.</li> <li>Idling of equipment shall be restricted to the minimum necessary to perform the specified work.</li> <li>Construct during the daytime where possible.</li> <li>Minimize the dropping height of any spoils / equipment.</li> </ul>



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			<ul style="list-style-type: none"><li>▪ Avoid the banging or other high impact noises such as dump truck tail gates.</li><li>▪ High noise generating equipment activities:</li><li>▪ Construction operations such as hoe ramming and saw cutting will be clearly audible at times. To the greatest extent possible, EDCO will not operate such high noise generating equipment during night-time hours as restricted in the applicable noise by-law.</li><li>▪ If possible, EDCO should minimize the concurrent use of high noise generating equipment.</li></ul>
5.01	Air Quality – Construction Dust	MTO MECP City of Mississauga	<ul style="list-style-type: none"><li>▪ Scheduling and Staging:<ul style="list-style-type: none"><li>– Optimizing construction sequence: The sequence of construction will be specified with consideration for scheduling and implementing dust reduction BMPs.</li><li>– Install/employ BMPs early: Erosion and dust potential will be reduced by employing BMPs as soon as practical and always before soil is exposed. Early installation/deployment may require site access or traffic control considerations.</li><li>– Site access management: The sites will be accessible from a limited number of points. Frequently used access roads will be graveled to minimize the tracking of material off site. Enforcing reduced vehicle speeds on unpaved roads.</li><li>– Minimize effects from unfavourable winds:</li><li>– Minimize exposed soils: Dust producing activities will be reduced or avoided during times of forecasted high winds.</li></ul></li><li>▪ Dust Suppression and Wind Control<ul style="list-style-type: none"><li>– Dust suppression: Application of water increases soil/material cohesion. Rate of water application must be at least equal to the rate of evaporation and infiltration. Note that care must be taken to prevent mud tracking and runoff if this is done. Watering will be avoided when freezing occurs, especially on haul roads or where safety is a concern. Where water is used the Water Management and Monitoring Plan will be consulted and followed.</li><li>– Chemical stabilization: Approved chemical dust suppressants (e.g. calcium chloride) will be applied in lieu of water to increase soil/material cohesion. Chemical stabilization will be used alongside wet suppression or during periods when wet suppression is not feasible (i.e. during winter months).</li><li>– Enhanced dust suppression: Dust suppression activities will be increased (i.e. additional road watering) during periods where there is an increased likelihood for dust generation. These periods where enhanced dust suppression is required include: Elevated Winds (&gt;5 m/s); High Temperatures; Low Relative Humidity; and High UV Conditions (UV index &gt; 6). Action Levels (Section 6) will be consulted for decision making related to implementation of additional mitigation measures.</li><li>– Physical coverings: Plastic sheeting or tarps will be used to secure loads, or on slopes of limited size to prevent dust. It is relatively easy to install/employ.</li><li>– Wind breaks: Site activities will employ the use of natural and or artificial wind breaks to reduce dust generation from highly erodible surfaces.</li></ul></li><li>▪ Stockpile Management<ul style="list-style-type: none"><li>– Avoidance or minimization of stockpiles: The need for stockpiles will be reduced or eliminated by implementing just-in-time delivery approaches (e.g. for aggregates sources offsite), or by reducing the size of stockpiles.</li><li>– Location of stockpile: Stockpiles will be located away from prevailing downwind site boundaries (i.e. at western and eastern boundaries of the Project Limits) and in designated areas with wind breaks and as far away from receptors as possible.</li><li>– Wet and enhanced suppression: Application of water or chemical dust suppressants will be applied to increase soil/material cohesion. Chemical stabilization will be used alongside wet suppression or during periods when wet suppression is not feasible (i.e. during winter months). Where water is used, the Water Management and Monitoring Plan will be consulted and followed.</li><li>– Shape and size of stockpiles: Stockpiles will be shaped and oriented to minimize erosion. Stockpiles will be aligned with the longitudinal axis parallel to the prevailing westerly winds, limited to below any wind breaks and maintained as flat as possible (i.e. flat shallow stockpiles aligned east to west in length). Stockpiles numbers will be kept to a minimum (i.e. one larger stockpile is preferable to several smaller stockpiles).</li><li>– Covers on piles: Where feasible stockpiles will be covered with durable materials such as tarpaulins or plastic.</li><li>– Barriers and shelter: Where feasible stockpiles would be to take advantage of natural terrain features that may act as wind breaks. Distances between the stockpile and windbreaks will be maintained at no more than twice the height of the pile.</li></ul></li></ul>

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			<ul style="list-style-type: none"> <li>▪ Material Handling and General Maintenance: <ul style="list-style-type: none"> <li>– Maintaining site access points: Site access points will be maintained at the point of the intersection of a paved public roadway. Mud and dirt deposits accumulating on paved interior roads will be removed with sufficient frequency, but not less frequently than once per workday, to prevent carryout and track out onto paved public roads. Wheel washing and empty cargo hold washing will be employed for all trucks prior to leaving the site.</li> <li>– Site Maintenance: Methods and equipment to immediately clean-up accidental spillages of dusty or potentially dusty materials will be readily available. If necessary, use audible and visual alarm systems. A vacuum truck will be used to clean up spills of cement powder and similar dusty materials. The site will be cleared of unused or waste demolition/construction material as soon as possible.</li> <li>– Wet and Enhanced Suppression: Application of water spray or chemical dust suppressants spray will be applied to materials being transferred or work surfaces to increase soil/material cohesion. Chemical stabilization will be used alongside wet suppression or during periods when wet suppression is not feasible (i.e. during winter months).</li> <li>– Minimize drop heights: When loading materials onto vehicles, maintaining stockpiles and during earthworks, drop heights will be kept to a minimum and enclosed whenever possible. The distance between material transfer points will also be minimized.</li> <li>– Minimize Travel Distances: When working with excavation operations, minimize the travel distance between the work area and storage pile or truck to reduce fugitive dust related to excavation operations.</li> <li>– Covering Loads: The entire surface area of hauled bulk materials will be covered with an anchored tarp, plastic or other material whether the cargo container is empty or full. Alternatively, completely enclosed trucks can be used.</li> <li>– Concrete Saw-cutting &amp; Scarifying: Concrete structure work will be terminated during periods of high wind. For all other periods, work will be conducted to include the use of low dust generating technologies such as vacuum abrasive blasting, temporary barrier walls or enclosures, and vacuuming of surfaces to remove dust and debris.</li> <li>– Minimize Material Handling Operations: The number of material handling operations will be kept to a minimum by ensuring that dusty material is not moved or handled unnecessarily. Process speeds will be minimized in order to reduce fugitive dust emissions.</li> </ul> </li> <li>▪ Road Surface Management <ul style="list-style-type: none"> <li>– Vehicle Restrictions: Vehicle restrictions limit the amount and type (e.g., restriction of roads to certain vehicle types or vehicles under a certain weight) of traffic present on unpaved roads or lowers the mean vehicle speed of vehicles travelling on the road.</li> <li>– Speed Limits: Traffic within the Project Limit boundaries will follow reduced speed limits. Travel on unpaved access and/or haul roads will be at reduced speeds and limited to a maximum of 16-24 km/hr. Travel on unmade surfaces will be maintained at a maximum of 10 km/hr.</li> <li>– Covering Unpaved Road Surfaces: Unpaved road surface will be covered with material that has low silt content (i.e., less than 5%) to a depth of three or more inches. Examples include gravel, slag, re-crushed/recycled asphalt and road carpets. Gravel will be used in areas where paving, chemical stabilization or frequent watering is not feasible. These roads will be covered with gravel on a regular basis.</li> <li>– Maintain Roads: The edges of roads and footpaths will be cleaned regularly, using brooms and damping as necessary (street sweeping). Weekly scraping of roads with a grader may be undertaken to clear off dirt and debris.</li> </ul> </li> </ul>
5.02	Air Quality – Reducing Exhaust from Construction Equipment and Vehicle Exhaust	MTO MECP City of Mississauga	<p>The following BMPs should be implemented to reduce the potential impact from construction equipment and vehicle exhaust within the Project Limits and at neighbouring sensitive and critical receptors:</p> <ul style="list-style-type: none"> <li>▪ Construction equipment and vehicles are to comply with Canada engine emissions standards and diesel fuel shall comply with the maximum sulphur content allowed.</li> <li>▪ All construction equipment and vehicles should be visually inspected before use, properly maintained and repaired to minimize exhaust emissions.</li> <li>▪ Implement an anti-idling policy to limit idling to a maximum of three minutes when possible.</li> <li>▪ Combustion equipment use should be limited if possible or replaced with the alternative-fueled or electric equipment, where feasible.</li> <li>▪ On-site diesel generators should be used as a backup power supply only. Alternative power options such as solar panel to supply electricity on-site should be considered, where feasible.</li> </ul>

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			<ul style="list-style-type: none"> <li>Where possible, ensure engine exhausts are oriented upwards.</li> <li>Increase separation distances between sensitive and critical receptors such as schools, residences, park or health care facilities and any vehicle exhausts.</li> <li>Minimize the number of vehicles and engines operating on site at any one time.</li> <li>When possible, limit operation of vehicles to times where winds are blowing away from closest sensitive and critical receptors.</li> </ul>
5.03	Air Quality – Reducing Odorous Compound Emissions	MTO MECP City of Mississauga	<ul style="list-style-type: none"> <li>BMPs for reducing odorous compound emissions from the Project include:</li> <li>Paints and solvent containers must be securely closed and properly stored to reduce the release of VOCs, air contaminants and odour.</li> <li>Equipment refueling should utilize containers that minimize vapour escape.</li> <li>If a hot mix asphalt plant will be present on-site, best practices to minimize air emissions should be implemented. These best practices are listed and provided in greater detail in the “Environmental Practices Guide, Ontario Hot Mix Asphalt Plants, Fifth Edition”, Ontario Hot Mix Producers Association, 2015.</li> <li>Wastewater is a source of odorous compounds. Discharging wastewater from construction activities into the municipal sewer must comply with applicable regulatory requirements.</li> <li>On-site portable toilet facilities must be well maintained, and the waste material shall be removed on a regular basis to minimize odorous gas release.</li> </ul>
5.04	Air Quality – Nuisance Odours	MTO MECP City of Mississauga	<p>Where excavations encounter objectionable odours on site, EDCO will implement measures to minimize odour emissions to ambient air, including:</p> <ul style="list-style-type: none"> <li>A controlled excavation methodology that minimizes the open area of the excavation face to the extent feasible;</li> <li>Covering stockpiles of excess soil, as required;</li> <li>Applying a spray applied fixative or sealant to exposed site soil; and/or</li> <li>Temporary backfilling.</li> </ul> <p>In the event that nuisance odours are being generated at the excavation face or the excavation limits, odour suppressant foam or an equivalent method of odour control will be applied. In addition, if unusually high odour levels (i.e. odours detected beyond typical working distances from the stockpile or excavation surface) occur during excavation, sorting or transportation operations or adverse weather conditions, which cannot be mitigated as described above, then operations should cease, and appropriate control measures implemented prior to the resumption of work.</p> <p>Action Levels (Section 6) will be consulted for decision making related to implementation of additional mitigation measures related to objectionable odours.</p>
6.01	Encounter of Undiscovered Archaeological Materials or Human Remains	MTO MHSTCI	<p>At any time during construction the following general measures will be applicable. In the event that archaeological material or human remains are discovered during construction, EDCO parties will stop work and notify the Environmental Inspector. In addition, the following will apply:</p> <ul style="list-style-type: none"> <li>In the event that human remains are encountered during construction, EDCO shall contact the CA, the Ontario Provincial Police, the Ministry of Transportation Archaeologist at 416-235-5489, the Ministry of Heritage, Sport, Tourism and Culture Industries at 416-314-7146; and the Registrar of the Ministry of Government Services Cemeteries Regulations Unit at 416-326-8404.</li> <li>In the event that potential archaeological resources are discovered during construction, they may be a new archaeological site and therefore subject to section 48 (1) of the Ontario Heritage Act. The person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with section 48 (1) of the Ontario Heritage Act. EDCO shall also contact the Ministry of Transportation Archaeologist at 416-235-5489 and the Ministry of Heritage, Sport, Tourism and Culture Industries at 416-314-7132.</li> </ul>
6.02	Disturbance of the Credit River Bottom	MHSTCI MTO	<ul style="list-style-type: none"> <li>If the river bottom is to be impacted by development, EDCO shall delineate these areas and sediments in those specific areas be removed with a gradall (or equivalent) smooth edged bucket first and set on shore for screening for possible archaeological/cultural materials, with an archaeologist and Indigenous monitor in attendance, and that any cultural materials that are found in this process, be retained according to</li> </ul>

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			the Standards and Guidelines for Consulting Archaeologists in Ontario (MTC 2011). Following Stage 2 land-based protocol for screening of archaeological/cultural materials
7.01	Built Heritage – Rehabilitation of Existing QEW Credit River Bridge	MTO MHSTCI	<ul style="list-style-type: none"><li>▪ EDCO's rehabilitation design of the Existing Credit River Bridge shall take the following into consideration:<ul style="list-style-type: none"><li>– For concrete repairs, an appropriate concrete mix should be developed based on core sampling analyses, as specified design specifications for the bridge.</li><li>– The key heritage attributes to be protected will be incorporated in the rehabilitation design and taking into consideration that some elements will be reconstructed (i.e. deck and cross beams).</li><li>– Soil shall not be piled up against the heritage bridge and materials, equipment and vehicles will be stored elsewhere on the site.</li><li>– Where practical, fencing or other means of shielding shall be used to establish protection measures when work is being completed near the existing structure.</li><li>– Protect the embankments to the extent possible and undertake minimal intervention if erosion control.</li><li>– EDCOs specialist with proven experience in the repair of historic concrete to monitor construction.</li></ul></li><li>▪ General Rehabilitation design considerations:<ul style="list-style-type: none"><li>– The original structural design of the bridge will be retained, such that the main structural function of Spandrels, arches and piers will be retained; and the replacement floor beams will be concrete and continue to be supported by the arch columns (spandrel columns).</li><li>– The visual qualities of the new concrete in terms of colour and texture should be compatible with the historic concrete where possible.</li><li>– The visual detailing of the connection between the floor beams and the arch columns (spandrel columns) will be retained, where possible.</li><li>– Existing “ER” light standards will be retrofitted as part of the bridge rehabilitation with new LED lights installed. The ER light poles will be installed in line with the centre of each pier of the existing QEW eastbound bridge to match existing conditions. The poles will be installed on the outside of the noise wall.</li><li>– Match forms, material and detailing of the 1960s parapet walls to the extent possible based on a review of the documentary records including drawings from the 1960 widening and with current safety standards. New barrier walls were sympathetically designed considering existing plans from the 1960 bridge widening and 1980 upgrades to meet existing bridge code requirements.</li><li>– Design to a height that retains as much of the view that is technically feasible based on current safety standards from the bridge deck of the Credit River valley.</li></ul></li><li>▪ To mitigate visual impacts, the new noise barrier walls are to be designed with consideration of the following:<ul style="list-style-type: none"><li>– The use of a transparent material for the noise barrier walls is supported since it will permit views of the Credit River from the bridge deck to be retained.</li><li>– Given that the noise barriers are transparent, they will not obscure views of the “ER” light standards. Note the lower section of the light standards will be behind the noise barrier when looking from the highway side.</li><li>– The noise barrier wall system will be attached to new or replacement components of the existing QEW Credit River Bridge and avoid use of the historic concrete structure for support.</li></ul></li><li>▪ In addition, to protect the structure from future graffiti the following will be implemented:<ul style="list-style-type: none"><li>– Graffiti is to be removed from the existing bridge.</li><li>– Anti-graffiti coating will be applied to the abutments and wingwalls and to the lower 3 metres of the arches and piers. Coatings to be tested on concrete that will be removed to test the impact.</li><li>– Graffiti removals and anti-graffiti coating will be subject to review by a heritage professional.</li></ul></li></ul>

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7.02	Built Heritage (General)	MTO MHSTCI	<ul style="list-style-type: none"> <li>▪ EDCO's qualified Cultural Heritage specialist with experience in historic structures, notably historic concrete construction and linear corridor Projects will be involved during the design phase. <ul style="list-style-type: none"> <li>– “ER” light standards will be salvaged, and the lights will be replaced with LED lighting. The “ER” lights will be placed on the north side of the new bridge and the south side of the existing bridge.</li> <li>– The ER light poles will be installed in line with each pier of the existing QEW eastbound bridge to match existing conditions. Placement of the light poles on the north side of the new bridge will be parallel to those on the south side of the existing bridge.</li> <li>– Design the new noise barrier walls to be considerate of the following to minimize visual impacts: <ul style="list-style-type: none"> <li>• The use of a transparent material for the noise barrier walls to permit views of the Credit River from the bridge deck to be retained.</li> <li>• Given that the noise barriers are transparent, they will not obscure views of the “ER” light standards. Note the lower section of the light standards are to be placed behind the noise barrier when looking from the highway side.</li> <li>• Care should be taken to ensure the alignment of the posts of the noise barrier wall do not obscure the base of the light standards. Noise barrier post should be position so that light standards are centred on a panel between two posts.</li> </ul> </li> <li>– Ensure that all commemoration commitments are addressed.</li> <li>– Embankments are to be protected to the extent possible and undertake minimal intervention if erosion control is recommended.</li> </ul> </li> <li>▪ Adhere to the Heritage Impact Assessment (HIA) prepared for the existing bridge by MTO.</li> </ul>
8.01	Groundwater and Soil Contamination	MTO MECP	<ul style="list-style-type: none"> <li>▪ The following measures will be implemented to monitor for the presence of impacted soils/groundwater and to ensure proper management if encountered include: <ul style="list-style-type: none"> <li>– Requirements to manage soil in accordance with applicable regulations and guidelines, including “Management of Excess Soil – A Guide for Best Management Practices”, Ontario Ministry of the Environment, 2014.</li> <li>– Requirements for Qualified Persons (as defined by Ontario Regulation 153/04) to be onsite during work within areas identified as being potentially subject to soil impacts.</li> <li>– Sampling and analysis of soil and groundwater prior to ultimate reuse and/or disposal.</li> <li>– Requirements to manage all wastes, including any contaminated soil and/or groundwater in accordance with applicable regulations and Ontario Provincial Standard Specification 180.</li> <li>– Disposal of any contaminated earth at an MECP-approved waste facility.</li> <li>– Discharging all dewatering in compliance with requirements stipulated in the PTTW and all supporting documentation. The detailed requirements will be determined through the PTTW process.</li> </ul> </li> </ul>
8.02	Management of Effluent from Concrete Surface Work	MECP	<ul style="list-style-type: none"> <li>▪ The following pertains to management of wastewater, sludge, sand, rubble, and effluent resulting from concrete surface work, including concrete cleaning by dry abrasive and/or wet methods, concrete cutting/grinding, and electrochemical chloride extraction procedures. Also, this includes the establishment of a Portable Sewage Works where necessary to comply with requirements Management of Effluent from Concrete Surface Work specified here for certain liquid and sludge excess materials treatment and handling.</li> <li>▪ Conditions on Management of Wastewater: <ul style="list-style-type: none"> <li>– All wastewater resulting from concrete surface work shall not be allowed to soak into or otherwise come in contact with the soil, surface or groundwater, or otherwise enter untreated into the natural environment. The effluent must be isolated, fully captured, contained, and fully collected for treatment by a Sewer Vac Truck. All wastewater shall be managed by one of the following methods: <ul style="list-style-type: none"> <li>• Direct treatment of the wastewater via a Portable Sewage Works for ultimate discharge to a sanitary sewer or sewage treatment plant;</li> <li>• Managing the wastewater entirely as a subject waste.</li> </ul> </li> <li>– Representative composite samples from the entire collection of effluent shall be taken and analyzed by an independent accredited laboratory. Wastewater entering the Portable Sewage Works shall be sampled at the beginning of the treatment process and analyzed for pH and Total Suspended Solids.</li> </ul> </li> </ul>

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			<ul style="list-style-type: none"> <li>– Have a contingency plan in place for dealing with any unexpected emergencies or release of wastewater on site. Monitor the work to allow for prompt identification of problems. Have spill cleanup materials present on site of the type and quantity appropriate to deal with any unexpected release of wastewater.</li> <li>▪ Conditions on Management of Effluent: <ul style="list-style-type: none"> <li>– Treated effluent exiting from the Portable Sewage Works shall be discharged directly to a sanitary sewer or sewage treatment plant. Notify the Contracting Authority of the manner (i.e. sanitary sewer or sewage treatment plant), and exact location of intended effluent discharge.</li> <li>– If effluent is discharged, EDCO shall: <ul style="list-style-type: none"> <li>• Comply with the conditions of the MECP Certificate of Approval or Environmental Compliance Approval for a Portable Sewage Works;</li> <li>• Comply with any conditions imposed by the owner of the property to which effluent from the sewage works is directed and control the effluent to avoid causing scours or washout.</li> </ul> </li> <li>– Effluent shall be managed by discharge to a sanitary sewer or sewage treatment plant and shall comply with any conditions imposed by the owner and operator of the sanitary sewer or sewage treatment plant to which effluent is directed.</li> <li>– Ensure that the following conditions are also met for all effluent discharge: <ul style="list-style-type: none"> <li>• Representative composite samples of final effluent shall be taken upon exiting the treatment works and prior to dilution with, or modification by, extraneous flows unrelated to the Portable Sewage Works, and analyzed by an independent accredited analytical laboratory for pH and Total Suspended Solids.</li> <li>• Effluent flow information shall be collected and recorded to include:</li> <li>• Flow rate at the time sampling is undertaken; and</li> <li>• Total volume of effluent discharged per 24-hour period of hydro-demolition/cleaning or per operation if less than 24 hours.</li> <li>• A record shall be kept documenting all routine maintenance procedures, actions taken to correct treatment processing upsets and any other relevant information relating to achievement of effluent compliance, which shall be made available to the Contracting Authority upon request.</li> </ul> </li> </ul> </li> <li>▪ Discharge to a Sanitary Sewer or Sewage Treatment Plant: <ul style="list-style-type: none"> <li>– If effluent is to be discharged to a sanitary sewer or sewage treatment plant, then written permission from the local municipality or owner shall be obtained by EDCO prior to the commencement of concrete cleaning/hydro-demolition work, to be made available to the Contracting Authority upon request.</li> <li>– If effluent is hauled off to an off-site sanitary sewer or sewage treatment plant, then a copy of the carrier's MECP Certificate of Approval or Environmental Compliance Approval for a Waste Management System shall be available to the Contracting Authority upon request. The Certificate/Approval shall be valid for the entire period that the equipment is utilized and/or the waste class of the material is managed.</li> </ul> </li> <li>▪ EDCO shall install debris containment systems to prevent debris or materials from entering the river below the work area.</li> </ul>
8.03	Designated Substances encountered during rehabilitation works on QEW Credit River Bridge	MTO MOL	<ul style="list-style-type: none"> <li>▪ Any work with the potential to disturb asbestos-containing materials (ACM) shall be carried out in accordance with O. Reg. 278/05, as amended: Designated Substances – Asbestos on Construction Projects and in Buildings and Repair Operations. Asbestos-containing waste must be handled in accordance with R.R.O. 1990, Regulation 347 General – Waste Management (O. Reg. 347).</li> <li>▪ All work related to the removal of arsenic-containing material shall be undertaken in accordance with O. Reg. 490/09 made under the Occupation Health and Safety Act. All arsenic containing materials shall be disposed of in accordance with OPSS 180 and O. Reg. 347.</li> <li>▪ All activities that may disturb paints suspected of containing lead shall comply with the applicable OSHA legislation. All lead containing waste shall be disposed of in accordance with OPSS 180 and O. Reg. 347.</li> <li>▪ All construction activities shall be conducted in accordance with the Guideline: Silica on Construction Projects, published by the Occupational Health and Safety Branch of the Ministry of Labour, dated April 2011.</li> </ul>
9.01	Traffic Management During Construction	MTO City of Mississauga	<ul style="list-style-type: none"> <li>▪ During construction Advanced Notification/Warning/Detour Route TC-64 signs will be installed to provide notification to the travelling public of lane reductions, closures or detour routes.</li> </ul>

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		Peel Region Emergency Services	<ul style="list-style-type: none"><li>▪ In addition to public notification via roadside signage, the City of Mississauga, Region of Peel and emergency services will be provided notice in writing prior to a major change to the existing traffic flow conditions.</li></ul>
10.01	Impacts to Navigation (Credit River)	MTO Transport Canada	<ul style="list-style-type: none"><li>▪ Adhere to the terms and conditions of the Canadian Navigable Waters Act (CNWA) approval of the work for NPP File No. 2020-402032 &amp; NPP File No. 2021-405224, which may include the following:<ul style="list-style-type: none"><li>– Installation of signage advising of temporary access restrictions through the Project Limits</li><li>– Installation of yellow flashing lights to identify in-water hazards during periods of low visibility</li><li>– Opportunities for a portage around the work site during full waterway closures, where practical and safe to do so.</li></ul></li></ul>

### **3.4 Environmental Management System**

EDCO has developed a comprehensive Environmental Management System (EMS) to direct Project works to ensure conformance with environmental requirements and obligations outlined in the Projects Environmental Assessment, the permits and approvals for the Project, and the Project Agreement.

The EMS provides processes for continual improvement in environmental performance and is supported by a number of Environmental Management Plans which outline environmental protection measures and monitoring programs, including:

- Protection of birds, bats and bat habitat during vegetation clearing and exclusionary measures to prevent birds nesting on the existing structure;
- Protection of Butternut species throughout the work and other no-go areas;
- Employing archaeological monitors during works on the existing QEW;
- Monitoring the work to ensure no damage to heritage attributes of the existing bridge;
- Air, noise and vibration monitoring and mitigation measures;
- Monitoring and sampling surface water and groundwater quality within the Project Limits to ensure no impacts; and
- Management of excess and contaminated materials.



## 4 Monitoring

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### 4.1 Prior to Construction

In completing the detail design and EA process and acquiring remaining permit and approvals, the design drawings and specifications will be refined and finalized. Design modifications or refinements may be required during the design process, which could result in environmental benefits or impacts not anticipated or identified in this document. Such changes will be discussed with appropriate stakeholders prior to construction, if necessary.

### 4.2 During Construction

Monitoring programs are being implemented by EDCO during construction to:

- Assess compliance with design details, environmental commitments and conditions of the PLAAs for the Project; and
- Monitor the effectiveness of mitigation measures and identify the need for additional measures, corrective actions, or adaptive management where necessary.

The EDCO team includes dedicated resources who are responsible for environmental and construction inspections during construction. These personnel and all personnel who are working or accessing the construction site are required to complete the necessary training. This includes but not be limited to Environmental Health and Safety (EHS) and Environmental Awareness. EDCO's environmental awareness training has provided a pre-site orientation of the sensitive environmental conditions on-site, protocols for encounters with wildlife including SAR and best management practices to be implemented during construction as specified under the various environmental management plans for the work.