Design and Construction Report

Highway 401 / Wilson Road Overpass Replacement (Contract A) Detail Design and Class Environmental Assessment (GWP 2146-20-00)

Ontario Ministry of Transportation

60653736

April 2024

Delivering a better world

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This Statement of Qualifications and Limitations is attached to and forms part of the Report and any use of the Report is subject to the terms hereof.

AECOM: 2015-04-13

HIGHWAY 401 / WILSON ROAD OVERPASS REPLACEMENT
CONTRACT A - GWP 2146-20-00
DETAIL DESIGN AND CLASS ENVIRONMENTAL ASSESSMENT STUDY
DESIGN AND CONSTRUCTION REPORT

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Ontario

AECOM

The Public Record

This Design and Construction Report has been prepared to document the recommended improvements, consultation undertaken, and potential environmental issues and mitigation measures associated with the Detail Design and Class Environmental Assessment (Group 'B') study for the replacement of the Highway 401 / Wilson Road overpass and all associated works.

The Design and Construction Report is available on the project website at hwy401wilsonbloorharmony.ca for a 30-day public and agency comment period starting **April 4, 2024**, and ending **May 3, 2024**.

To obtain additional information or provide comments please contact the Project Team:

- **Frank Mac, P.Eng.**
  MTO Project Manager
  Ministry of Transportation, Central
  Project Delivery Section
  4th floor, 159 Sir William Hearst Avenue
  Toronto, Ontario M3M 0B7
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  Email: projectteam@hwy401wilsonbloorharmony.ca

Information collected will be used in accordance with the Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments will become part of the public record. If you have any accessibility requirements in order to participate in this project, please contact one of the MTO Project Team members listed above.

A request may be made to the Ministry of the Environment, Conservation and Parks for an order requiring a higher level of study (i.e., requiring an individual/comprehensive EA approval before being able to proceed), or that conditions be imposed (e.g., require further studies), only on the grounds that the requested order may prevent, mitigate or remedy adverse impacts on constitutionally protected Aboriginal and treaty rights.

Requests on other grounds will not be considered. Requests should include the requester contact information and full name for the ministry.

Requests should specify what kind of order is being requested (request for additional conditions or a request for an individual/comprehensive environmental assessment), how an order may prevent, mitigate, or remedy those potential adverse impacts, and any information in support of the statements in the request. This will ensure that the ministry is able to efficiently begin reviewing the request.

The request should be sent in writing or by email to the following and copied to the Ministry of Transportation Project Engineer listed above and to:

- **Minister of the Environment, Conservation and Parks**
  777 Bay Street, 5th Floor
  Toronto, Ontario M7A 2J3
  Email: minister.mecp@ontario.ca

and

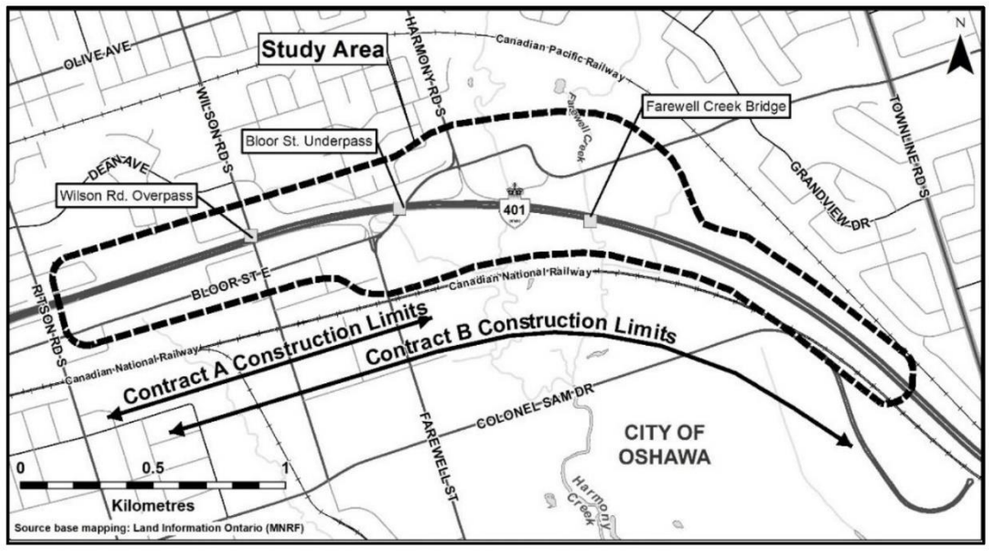
- **Director, Environmental Assessment Branch**
  Ministry of Environment, Conservation and Parks
  135 St. Clair Avenue West, 1st Floor
  Toronto, Ontario M4V 1P5
  Email: EABDirector@ontario.ca

Notice of Completion - Design and Construction Report
Highway 401 / Wilson Road Overpass Replacement (Contract A - GWP 2146-20-00)
Detail Design and Class Environmental Assessment Study

The Project

AECOM Canada Ltd. (AECOM) was retained by the Ontario Ministry of Transportation (MTO) to undertake a Detail Design and Class Environmental Assessment (EA) Study for two contracts located within the City of Oshawa in the Region of Durham. Contract A (GWP 2146-20-00) involves the replacement of the Highway 401 / Wilson Road overpass including the lowering of Wilson Road and improvements to the associated embankments, retaining walls, noise barriers, drainage, illumination and signage to facilitate the replacement. Contract B (GWP 2106-19-00), involves the reconstruction of the Highway 401 / Bloor Street / Harmony Road interchange, and will be the subject of a separate, future notice. The approximate construction limits for Contracts A and B are as illustrated in the accompanying figure.

Construction of Contract A is anticipated to start in the Fall of 2024. Construction staging and night time lane closures will be utilized to facilitate the proposed improvements and minimize impacts to area traffic and safety.



The Process

It was previously determined that both contracts would proceed as one Group B project in accordance with the *MTO Class EA for Provincial Transportation Facilities (amended 2000);* however, it has since been deemed necessary for the two contracts to follow a separate Class EA process and construction timeline.

A **Design and Construction Report (DCR)** has been prepared to document the Detail Design process for Contract A including the Recommended Plan, consultation process, potential environmental effects and associated mitigation as well as the technical findings of the study. The Contract B process will be documented in a separate DCR to be made available at a future date.

Comments

The DCR is available on the project website at hwy401wilsonbloorharmony.ca for a 30-day comment period starting April 4, 2024 until May 3, 2024. Comments can be submitted to the following members of the study team during the 30-day period:

Frank Mac, P. Eng., Project Manager
Ministry of Transportation
Central Region Project Delivery Section
159 Sir William Hearst, Building D, 4th Floor
Toronto, Ontario M3M 0B7
Tel: 416-235-5536
Email: projectteam@hwy401wilsonbloorharmony.ca

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Markham, Ontario, L3T 7W3
Tel: 905-418-1468
Email: projectteam@hwy401wilsonbloorharmony.ca

In addition, a request may be made to the Ministry of the Environment, Conservation and Parks for an order requiring a higher level of study (i.e., requiring a comprehensive EA approval before being able to proceed), or that conditions be imposed (e.g., require further studies), only on the grounds that the requested order may prevent, mitigate or remedy adverse impacts on constitutionally protected Aboriginal and Treaty Rights. Requests on other grounds will not be considered. Requests should include the requester contact information and full name for the ministry.

Requests should specify what kind of order is being requested (request for additional conditions or a request for a comprehensive environmental assessment), how an order may prevent, mitigate or remedy those potential adverse impacts, and any information in support of the statements in the request. This will ensure that the ministry is able to efficiently review the request. The request should be sent in writing or by email to the following and copied to the Ministry of Transportation Project Manager listed above and to:

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

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

This notice issued April 4, 2024.

Information collected will be used in accordance with the Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments will become part of the public record. If you have any accessibility requirements in order to participate in this project, please contact one of the Project Team members listed above.

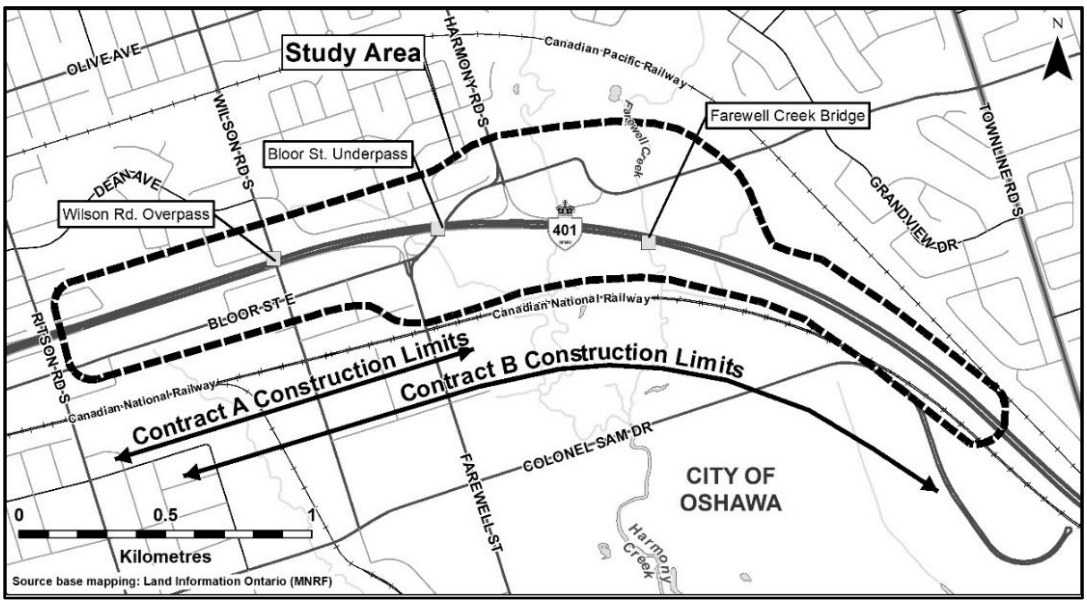
Executive Summary

AECOM Canada Ltd. (AECOM) was retained by the Ontario Ministry of Transportation (MTO) to undertake a Detail Design and Class Environmental Assessment (EA) Study for two contracts located within the City of Oshawa in the Region of Durham as follows:

- **Contract A** (GWP 2146-20-00) involves the replacement of the Highway 401 / Wilson Road overpass including the lowering of Wilson Road and improvements to the associated embankments, retaining walls, noise barriers, drainage, illumination, and signage to facilitate the replacement. The contract also includes localized widening of Highway 401 at the approaches to Wilson Road, as well as relocation of two Region of Durham feedermains which will be tunneled beneath Highway 401 west of Wilson Road.
- **Contract B** (GWP 2106-19-00) involves the reconstruction of the Highway 401 Bloor Street / Harmony Road interchange and includes the replacement of the Bloor Street Underpass and the Highway 401/Farewell Creek Bridge, a new structure over Highway 401 to accommodate the reconfigured Highway 401 eastbound off and on-ramps, as well as improvements to retaining walls, noise barriers, drainage, illumination, traffic signals and signage to accommodate the reconfiguration of the interchange.

The approximate construction limits for each contract are illustrated in **Figure ES-1**. **The focus of this report is Contract A.**

Figure ES-1: Contract A and B Construction Limits



This study followed the approved planning process for a Group 'B' Project in accordance with the *MTO Class EA for Provincial Transportation Facilities (amended 2000).* It was previously determined that both Contracts A and B would proceed as one Group B project; however, it has since been deemed necessary for the two contracts to follow a separate Class EA process and construction timeline. Construction for Contract A is anticipated to start in the Fall of 2024. Contract B is subject to a different timeline and will therefore follow a separate Class EA process. A separate DCR will be prepared at a future date for Contract B.

The Recommended Plan for the improvements was established through the Preliminary Design and EA Study (Group 'B') completed by the Ministry in 2015 for the segment of Highway 401 extending from Brock Road to Courtice Road and as documented in the *Highway 401 Rehabilitation and Long-Term Widening Needs from Brock Road to Courtice Road Transportation Environmental Study Report (AECOM, 2015).*

In accordance with the amended 2000 MTO Class EA a five-year review of the 2015 Transportation Environmental Study Report (TESR) was completed given that the TESR was filed in 2015 and construction has not commenced within five years of issue of the Notice of Submission for the TESR and since a DCR was also not submitted within that five-year period. The five-year review concluded that an Addendum to the original 2015 TESR was not required.

Consultation was an important part of this undertaking. Opportunity to provide input was made available to affected municipalities, the public, external agencies, key stakeholders, and Indigenous communities throughout the duration of the project. The consultation process included the distribution of a Notice of Study Commencement and the hosting of a project website for the duration of the study. The project team reviewed all comments received and provided responses where necessary. Additional discussions were scheduled, as required, to address specific stakeholder concerns.

Measures have been included to mitigate potential impacts and it is expected that this project will not result in significant adverse effects provided that the mitigation as identified is implemented during construction.

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1. Project Overview

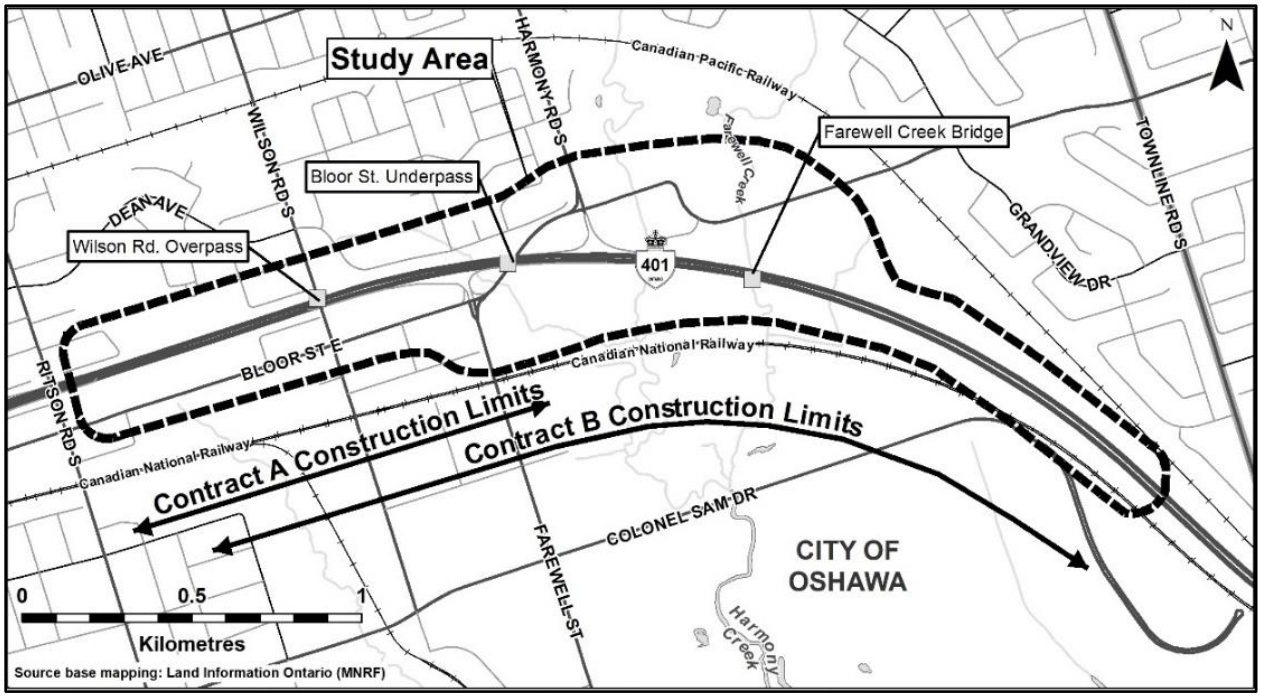
1.1 Study Overview and Location

AECOM Canada Ltd. (AECOM) was retained by the Ontario Ministry of Transportation (MTO) to undertake a Detail Design and Class Environmental Assessment (EA) Study for two contracts located within the City of Oshawa in the Region of Durham as follows:

- **Contract A** (GWP 2146-20-00) involves the replacement of the Highway 401 / Wilson Road overpass including the lowering of Wilson Road and improvements to the associated embankments, retaining walls, noise barriers, drainage, illumination, and signage to facilitate the replacement. The contract also includes localized widening of Highway 401 at the approaches to Wilson Road, as well as relocation of two Region of Durham feedermains which will be tunneled beneath Highway 401 west of Wilson Road.
- **Contract B** (GWP 2106-19-00) involves the reconstruction of the Highway 401 Bloor Street / Harmony Road interchange and includes the replacement of the Bloor Street Underpass and the Highway 401/Farewell Creek Bridge, a new structure over Highway 401 to accommodate the reconfigured Highway 401 eastbound off and on-ramps, as well as improvements to retaining walls, noise barriers, drainage, illumination, traffic signals and signage to accommodate the reconfiguration of the interchange.

The approximate construction limits for each contract are illustrated in **Figure 1**. It was previously determined that both Contracts A and B would proceed as one Group B project; however, it has since been deemed necessary for the two contracts to follow a separate Class EA process and construction timeline. The focus of this report is Contract A. This study is following the approved planning process for a Group 'B' in accordance with the *MTO Class EA for Provincial Transportation Facilities (amended 2000).* Construction is anticipated to start in the Fall of 2024. Contract B is subject to a different timeline and will therefore follow a separate Class EA process. A separate DCR will be prepared at a future date for Contract B.

Figure 1: Contract A and B Construction Limits



The Recommended Plan for the improvements was established through the Preliminary Design and EA Study (Group 'B') completed by the Ministry in 2015 for the segment of Highway 401 extending from Brock Road to Courtice Road and as documented in the *Highway 401 Rehabilitation and Long-Term Widening Needs from Brock Road to Courtice Road Transportation Environmental Study Report (AECOM, 2015).*

1.2 Objectives and Scope of Study

The objectives and scope of this study is to:

- Confirm existing conditions within the study area;
- Identify the improvements associated with the replacement of the Highway 401 / Wilson Road overpass including the lowering of Wilson Road and improvements to Highway 401, associated embankments, retaining walls, noise barriers, drainage, illumination, and signage to facilitate the replacement;
- Prepare the Detail Design of the planned improvements including a construction staging strategy;

- Identify potential impacts and develop mitigation measures to minimize or avoid potential environmental impacts;
- Define commitments to future work by the Contractor during construction; and
- Conduct consultation throughout the study with potentially interested and affected stakeholders regarding the project related activities noted above.

2. The Environmental Assessment Process

2.1 Federal Impact Assessment Act

The Impact Assessment Act (2019) establishes a federal environmental assessment process focused on major projects that have a greater potential to have significant adverse effects on areas within federal jurisdiction. The types of activities to which the Act applies ("designated projects") are identified in the regulations.

The proposed improvements associated with this project are not listed as a "designated project" under the Act and the work proposed is not taking place on Federal lands. Approval from the Impact Assessment Agency of Canada (IAAC) is therefore not required for this undertaking.

2.2 Ontario Environmental Assessment Act

The Ontario Environmental Assessment Act (OEAA) provides for the protection, conservation, and wise management of the environment in Ontario. The purpose of the OEAA is to help protect and conserve Ontario's environment by requiring that projects subject to the Act follow a planning process leading to environmentally sound decision-making. The term "environment" is broadly defined and includes the built, natural, socio-economic and cultural environments. The planning and design of Provincial infrastructure projects are required to comply with the OEAA.

The Class Environmental Assessment (Class EA) process is a planning process approved under the OEAA that provides a streamlined process that must be followed for projects or activities within a defined "class". Projects and activities that are defined within a "class" are generally ones that are recurring, carried out routinely and have predictable environmental effects that can usually be mitigated. The Ministry of Transportation's Class Environmental Assessment for Provincial Transportation Facilities (amended 2000) is an approved planning document under the OEAA that establishes the appropriate Class EA process to be completed for groups of projects and activities. Project groupings include the following:

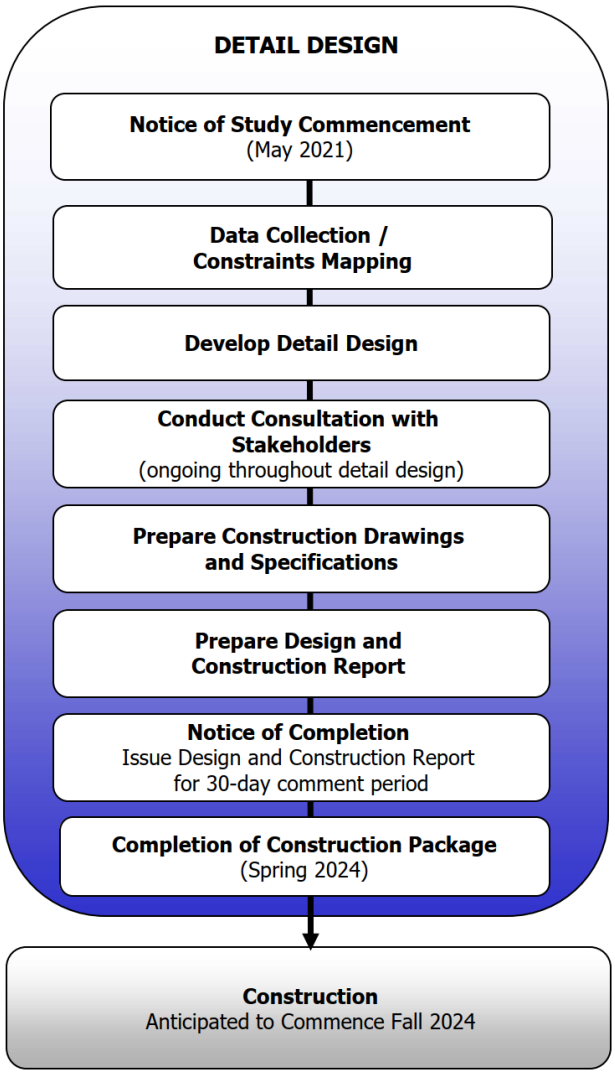
- Group "A" – Projects involving new facilities;
- Group "B" – Projects involving major improvements to existing provincial transportation facilities;
- Group "C" – Projects involving minor improvements to existing provincial transportation facilities; and

- Group “D” – Activities that involve operation, routine maintenance, administration, and miscellaneous work for provincial transportation facilities. These activities are approved under the Environmental Assessment Act subject to compliance with applicable environmental legislation other than the Environmental Assessment Act.

Projects that are identified in the Class EA can proceed to implementation without further approval under the Act provided that the approved Class EA planning process is followed.

The current undertaking is following the planning process for a Group ‘B’ project. The study process, as illustrated in **Figure 2**, provides opportunity for public and external agency input at key stages.

Figure 2: Study Process



2.3 Purpose of Design and Construction Report

A Design and Construction Report (DCR) is prepared near the end of the Detail Design process as per the MTO Class EA and focuses on final design and construction related items. It documents the detail design and Class EA process completed and includes the following:

- A description of the project and its purpose;
- An overview of the consultation undertaken;
- A description of the Recommended Plan and associated construction staging;
- Anticipated environmental effects and mitigation measures; and,
- Commitments to monitoring associated with the implementation of the project.

2.4 TESR Five-Year Review

2.4.1 Background

The Recommended Plan for the subject improvements was established through the Preliminary Design and EA Study (Group 'B') completed by the Ministry in 2015 for the segment of Highway 401 extending from Brock Road to Courtice Road and as documented in the *Highway 401 Rehabilitation and Long-Term Widening Needs from Brock Road to Courtice Road Transportation Environmental Study Report* (AECOM, 2015).

In accordance with the amended 2000 MTO Class EA, since the Transportation Environmental Study Report (TESR) was filed in 2015 and construction has not commenced within five years of the Notice of Submission for the TESR and since a DCR was also not submitted within that five-year period, the proponent must carry out a review of the not-constructed portions of the project before construction may begin.

Given the above, a five-year review of the 2015 TESR was completed to consider changes which may have taken place since the submission of the original TESR and whether an addendum to the 2015 TESR is warranted. As per section 6.4.3 of the *MTO Class Environmental Assessment for Provincial Transportation Facilities* document (amended 2000) changes may include new conditions in the study area, new government policies, new engineering standards or new technologies for mitigating measures. If it is determined that significant changes are identified from the Preliminary Design 2015 TESR then an Addendum to the TESR is to be prepared and made available for a 30-day public and agency comment period.

2.4.2 Five-Year TESR Review

As part of the five-year review of the 2015 TESR consideration was given to the following:

- Were there any changes to the original concept of the project as described in the 2015 TESR?
- Is it necessary to make significant changes to the commitments outlined in the 2015 TESR?
- Since submission of the original TESR have there been any significant changes including new conditions in the study area, new government policies, new engineering standards or new technologies for mitigating measures, or the identification of previous unknown information or concerns?

Changes to the Original Concept

The 2015 TESR recommended that the section of Highway 401 east of Highway 412 be widened from the existing 6 to 10 lanes to meet the long-term capacity and operational needs of the corridor. The study also recommended improvements including bridge widening or replacement, and reconfiguration of interchanges where necessary to facilitate the widening and operational improvements. The Bloor Street/Harmony Road interchange and Wilson Road Overpass are located within this section of Highway 401.

The current detail design being undertaken for Contract A (GWP 2146-20-00) involves the replacement of the Highway 401 / Wilson Road overpass including the lowering of Wilson Road and improvements to the associated embankments, retaining walls, noise barriers, drainage, illumination, and signage to facilitate the replacement. Contract A also includes localized widening of Highway 401 at the approaches to Wilson Road to accommodate staged replacement of the overpass. While the contract does not include the widening of Highway 401 from 6 to 10-lanes, the highway platform constructed for the staged replacement of the bridge will remain in place at the end of the contract and will accommodate future expansion to 10-lanes at a later date. This widened highway platform is consistent with the proposed widening identified in the 2015 TESR.

The replacement of the Wilson Road Overpass with a wider bridge requires a lowering of Wilson Road in order to provide sufficient vertical clearance beneath the bridge. This lowering of the road and associated modifications to the embankments and cross-section of Wilson Road require the acquisition of a number of residential properties along Wilson Road. In addition, the lowering of the road triggers the need to relocate various utilities and municipal servicing along Wilson Road, including two Region of Durham feedermains which will be tunneled beneath Highway 401 west of Wilson Road.

While the relocation of the Region of Durham feedermains was not specifically identified in the 2015 TESR, the lands required to relocate the watermains are located within the properties requiring full acquisition for the roadway reconstruction itself. These subject properties have since been acquired by the MTO, and the overall construction works and associated impacts are therefore not considered to have been significantly modified from the recommendations presented in the original 2015 TESR document.

Changes to Commitments in 2015 TESR

There have been no significant changes made to the commitments as outlined in the 2015 TESR. While the detail design has further refined the Recommended Plan for the subject location it has not significantly changed the improvements proposed. In addition, commitments made in the 2015 TESR for further localized study(s) to confirm existing conditions, identify the potential for impact and to make recommendations for appropriate mitigation have been addressed. Commitments to additional consultation were also completed during detail design to make certain that all interested parties continue to be kept informed regarding the works proposed and to provide continued opportunity for input.

Changes in Conditions

The existing conditions within the study area were subject to further review during the current detail design and Class EA process. Environmental studies were completed for the study area to provide an update regarding existing conditions and applicable legislation and to make recommendations for mitigation to effectively address the final detail design.

Conditions within the existing study area have not changed significantly since 2015. The subject study area continues to be an urbanized environment consisting of an existing MTO right-of-way and the affected Municipal right-of-way of Wilson Road. There have been no significant changes in government policies, engineering standards or mitigating technologies that would be substantially different from that as presented in the 2015 TESR.

Property necessary to accommodate the work associated with Contract A has been acquired. Environmental impacts overall are not expected to be significant and can be minimized through application of standard mitigation.

In addition, the MTO Detail Design and Group ‘B’ Class EA process provides for continued consultation with the public, municipalities, agencies, key stakeholders, and Indigenous Communities. Consultation has been ongoing with the City of Oshawa and Durham Region throughout the detail design process to co-ordinate the proposed works and relocation of the servicing infrastructure. In addition, a project website was

developed for the project to provide easy access to obtain information about the project and / or to reach the Project Team. This Design and Construction Report (DCR) has also been prepared to document the MTO detail design and Class EA process completed and will be made available for a 30-day comment period. As such, the engagement strategy associated with the current detail design phase has provided continued notification regarding the development of the design and additional opportunity for input to be provided in advance of construction.

Summary

In summary, the five-year TESR review has confirmed that there has not been a significant modification to the concept as presented in the original 2015 TESR, there were no significant changes made to the preceding 2015 TESR commitments, and there have not been a significant change in conditions in the study area. The environmental specialist studies as completed during detail design have provided an updated review of existing conditions within the study area and recommendations for mitigation have been made to address the current detail design and to reflect current legislation. Additionally, consultation associated with detail design has provided an update regarding the works proposed and continued opportunity for questions and comments throughout the process. As such, the five-year TESR review has determined that an Addendum to the original 2015 TESR is not required.

3. Consultation

3.1 Overview

Consultation is an integral part of the study process. At the project start a Communication and Consultation Plan was prepared to detail the planned engagement strategy and to demonstrate that the notification requirements of the MTO's Class EA process are being fulfilled. Throughout the course of the study, opportunities for input were provided at key project milestones including issue of the following two formal notices:

- Notice of Detail Design Commencement
- Notice of DCR Completion

A Project Contact List was developed at the project start and updated, as required, throughout the study. The purpose of this list was to ensure that potentially affected and interested stakeholders were kept informed regarding the project. The Project Contact List included Members of Parliament, regulatory agencies, municipalities, emergency service providers, transit authorities, interest groups, local businesses, and Indigenous communities as well as adjacent property owners, businesses and interested members of the public.

In developing the contact list consideration was given to the key contacts and comments received during the preliminary design study that preceded this project and as documented in the *Highway 401 Rehabilitation and Long-Term Widening Needs from Brock Road to Courtice Road Transportation Environmental Study Report* (AECOM, 2015).

3.2 Notice of Study Commencement

A cover letter and Notice of Study Commencement was issued the week of May 31, 2021 via direct mail to all those on the Project Contact List and supplemented with an email. The purpose was to announce the commencement of the Detail Design and Class EA process for both Contracts A and B. The notice was also published in English in the following newspapers:

- Turtle Island News – Wednesday, June 2, 2021 edition
- Ajax Pickering News Advertiser - Thursday, June 3, 2021 edition
- Oshawa Whitby Clarington This Week – Thursday, June 3, 2021 edition

A letter and copy of the notice was also sent to Indigenous Communities via direct mail and email the week of May 31, 2021. To reach local residents and businesses the notice was circulated as a brochure/flyer delivery via Canada Post Unaddressed Admail to residences and businesses within 0.5 kilometres of the Study Area (approximately 5,500 units). Impacted Property Owners were added to the Contact List and issued a letter with a copy of the notice.

3.3 Project Website

A project website, hwy401wilsonbloorharmony.ca was created on May 31, 2021, to disseminate information and engage with stakeholders regarding the work proposed. The website provided an overview of the study, project schedule, contact information for the Project Team, and included an electronic comment form to submit comments directly to the Project Team via email. The website was updated at key milestones throughout the duration of the project.

Please refer to **Appendix A** for copies of the notification materials.

3.4 Consultation with Indigenous Communities

The following Indigenous communities were engaged as part of the Project:

- Mississaugas of Scugog Island First Nation
- Alderville First Nation
- Curve Lake First Nation
- Chippewas of Rama (Mnjikaning) First Nation
- Williams Treaty Group
- Beausoleil (Chimnissing - Christian Island) First Nation
- Huron-Wendat Nation
- Kawartha Nishnawbe
- Hiawatha First Nation
- Chippewas of Georgina Island First Nation

Of the above noted communities contacted, a response was received from the Chippewas of Rama, Huron Wendat, and Curve Lake First Nations.

3.5 Consultation with External Agencies and Interest Groups

The Project Team consulted with appropriate federal and provincial ministries and agencies, municipalities, emergency services providers, interest groups, and school boards.

3.5.1 Municipalities

The subject project is located within the City of Oshawa and the upper tier municipality the Region of Durham. Key staff at the City and the Region were forwarded notifications regarding the project. In addition, the MTO hosted two virtual Municipal Meetings in addition to other informal discussions regarding the project.

The first meeting occurred at the start of the detail design project on April 14, 2021 and included key staff from the City of Oshawa and the Region of Durham. The purpose of this initial meeting was to introduce the project and to discuss a number of design issues to be addressed in the early stages of the project. An overview of the project was provided that included discussion of the study area, study background, recommended improvements, traffic staging, planned closures/detours, project schedule, utility and property impacts as well as the planned public engagement program for the project. Notable items of discussion included the Wilson Road cross-section requirements, property impacts, impacts to municipal servicing, design review requirements and potential cost sharing.

Following the first formal Municipal Meeting and as the project progressed, additional discussions with municipal staff were completed for various topics as required, such as road closures and detour requirements, the Wilson Road cross-section including provision of sidewalks, impacts to and relocation of the Region of Durham feedermains and sanitary sewers, and other design elements. A meeting was held with Region of Durham staff on November 3, 2023 to provide an update on the study as well as to discuss various design components and review requirements.

The MTO hosted a second formal Municipal Meeting on January 30, 2024 with the purpose of providing an update on the project. Representatives from the Region of Durham, Durham Region Transit, and the City of Oshawa were in attendance. Key items discussed included active transportation requirements, utility relocation plans along Wilson Road, municipal and transit contacts during construction, as well as the Bowmanville East GO service expansion by Metrolinx and the associated bridge work and various road/lane closures.

3.5.2 External Agencies and Interest Groups

The following government ministries, agencies and interest groups were consulted during the study:

- Environment Canada
- Nav Canada
- Transport Canada
- Canadian National Railway
- VIA Rail Canada
- Environment and Climate Change Canada
- Infrastructure Ontario
- Ministry of the Environment, Conservation and Parks (MECP)
- Ministry of Municipal Affairs and Housing
- Ministry of Agriculture, Food and Rural Affairs Land Use Policy and Stewardship
- Ministry of Citizenship and Multiculturalism Culture (MCM)
- Ontario Trails Council
- Ministry of Natural Resources and Forestry (MNRF)
- Metrolinx
- Conservation Ontario
- Ontario Power Generation
- National Hydrological Service
- Environment and Climate Change Canada
- Central Lake Ontario Conservation Authority
- Durham Region Cycling Coalition
- Oshawa Cycling Club
- Ontario Cycling Association
- CTC Source Protection Region
- Greater Oshawa Chamber of Commerce
- Clarington Board of Trade
- Canadian Wildlife Services
- Durham Region Field Naturalists
- Ontario Trucking Association

Key agency comments received during the study and the associated response provided by the Project Team are summarized below:

- **Ministry of the Environment, Conservation and Parks (MECP)**

  The MECP provided a letter outlining their standard Areas of Interest that they expect to be addressed. These included: Planning and Policy; Source Water Protection; Climate Change; air quality, dust and noise; ecosystem protection and restoration; species at risk; surface water; groundwater; excess materials management; contaminated soils; servicing, utilities, and facilities; mitigation and monitoring; consultation; and the Class EA process. The MECP requested that a copy of the Design and Construction Report be sent directly to their office for review. The agency also inquired if an Air Quality Impact Assessment (AQIA) was completed for this assignment.

  A response was provided to MECP November 8, 2021 clarifying that an air quality assessment was completed as part of the Preliminary Design phase for this assignment and therefore is not being completed as part of the current Detail Design scope of work. The review completed during Preliminary Design assessed the impacts of the increase in traffic volume and the widening of Highway 401 on local and regional air quality, by predicting contaminant concentrations at sensitive land uses adjacent to the highway for the existing, future no-build and future build scenarios. It was noted that the potential to impact air quality will be considered during the current Detail Design phase and appropriate mitigation included where necessary.

- **Central Lake Ontario Conservation Authority (CLOCA)**

  CLOCA advised that they have an interest with natural heritage and hazards impacts and that they are also a property owner within the adjacent study area of Contract B.

  An initial response was provided Nov. 8, 2021 acknowledging receipt of their comment and a formal response was forwarded November 8, 2021 that provided an update regarding the work proposed and the timelines for both Contracts A and B. It was also highlighted that development activities within regulated areas on lands owned by, and/or conducted by, a provincial or federal agency, are exempt from the regulatory approval process under Section 28 of the Conservation Authorities Act. CLOCA was advised that while MTO was providing information to keep them informed of the works

proposed, the MTO was not making a voluntary request for a formal CLOCA review of this project.

- **Ministry of Citizenship and Multiculturalism Culture (MCM)**

  MCM inquired as to whether the project would be subject to an archaeological assessment and / or be screened for built heritage resources / cultural heritage landscapes and requested copies of any previously completed and/or current studies.

  The MCM was advised via email November 8, 2021 that the MTO completed a Preliminary Design and EA Study (Group 'B') in 2015 for the segment of Highway 401 extending from Brock Road to Courtice Road which included the subject area of study. As part of that undertaking the Ministry completed a Built Heritage and Cultural Heritage Landscapes Assessment Report which concluded that there are no heritage features in the vicinity of the subject detail design area of study. The Wilson Road Bridge was also screened previously and confirmed that further assessment was not required. During the above noted preliminary design process a Stage 1 Archaeological Assessment was also completed and MCM was advised that a Stage 2 Archaeological Assessment was being completed during detail design. Copies of the Preliminary Design Built Heritage and Cultural Heritage Landscapes Assessment Report and the previous MCM acceptance letter for the Stage 1 Archaeological Assessment were provided to MCM. The Stage 2 Archaeological report for Contract A will also be sent to MCM to be entered into the Register.

- **NAV Canada**

  NAV Canada advised that they evaluated the proposal and have no objection to the project as submitted. For planning purposes, they suggested the Project Team review and adhere to Transport Canada's TP1247E, Land Use in the Vicinity of Aerodromes and ICAO EUR DOC 015, building restricted areas. Following a discussion with NAV Canada on Feb. 9, 2024 it was confirmed that it is up to the proponent to decide if a formal land use submission is warranted based on the nature of the project and proximity. Projects in proximity to an airport property (<1 kilometres) would complete a land use submission while an undertaking that was not in proximity (> 1 kilometres) may consider a submission for temporary or permanent infrastructure that is greater than 100 feet in height.

Given the distance of the subject project from an airport it was acknowledged that there would likely be no impact. No further correspondence with Nav Canada is required.

A response was also received from the following agencies acknowledging receipt of the project notification email and / or advising of the key agency contact: Durham Region Cycling Coalition, Infrastructure Ontario, Ministry of Municipal Affairs and Housing (MMAH), Wildlife Ontario, Durham Region Safe Cycling (DRCC), and Ontario Power Generation.

3.5.3 Elected Officials

The following elected officials were consulted during the study:

- Member of Parliament - Colin Carrie, MP-Oshawa
- Member of Provincial Parliament - Jennifer French, MPP-Oshawa

No comments were received during the process.

3.5.4 Emergency Services

The following emergency service providers were consulted during the study:

- Ontario Provincial Police
- City of Oshawa Fire Services
- Municipality of Clarington Emergency and Fire Services
- Durham Regional Police East Division
- Durham Regional Police Regional Headquarters
- Durham Region Paramedic Service

No correspondence was received from these groups during the process.

3.5.5 School Boards and Transportation Service Providers

The following school boards and transportation service providers were consulted during the study:

- Durham Catholic District School Board
- Durham District School Board
- Conseil Scolaire Viamonde
- Durham Student Transportation Services

Durham Student Transportation Services (DSTS) advised that they provide school bus transportation to students in Durham and that they will be impacted by the Wilson Street construction and identified key contacts to be added to the contact list. A meeting was subsequently held with this group on January 26, 2024 to discuss student transportation issues during construction. It was noted that full closure of the Wilson Road bridge is anticipated to start in early 2025 and last for approximately 15 to 16 months until mid/late 2026 and that there may also be short term closures associated with utility relocations in 2024. The DSTS noted that there is a secondary school south of Highway 401 and an elementary school (i.e., David Bouchard Public School at 460 Wilson Rd. S.) north of Highway 401 and that the closure of the Wilson Road Bridge during construction will impact students walking both north and south on Wilson Road. It was agreed that direction will be provided in the Tender Documents (i.e., OC Durham Student Transportation Services) for the contractor to provide advance notification to DSTS as follows:

- Prior to the start of construction.
- Minimum 5 business days advance notice of construction activities requiring short-duration closures of Wilson Road or existing sidewalks.
- Minimum 3 months advance notice of the full closure of Wilson Road anticipated to commence in Year 2 of the contract.

The potential to provide increased separation between the sidewalk and adjacent traffic was also discussed. The sidewalk width will also be expanded from 1.2 metres to 1.8 metres, and a boulevard placed between the sidewalk and traveled lanes. It was also confirmed that lighting under the Wilson Road bridge will continue to be provided post construction.

3.5.6 Public

Key public comments / concerns identified during the process included the following:

- Requests to be added to mailing list
- Questions regarding the study duration and construction timelines
- Questions regarding the Wilson Road bridge design and whether an exit would be provided to Wilson Road from Highway 401
- Concerns regarding potential property impacts on Wilson Road, Harmony Road, Bloor Street, Whitman Crescent, and Armada Court.
- Landscaping and vegetation removals
- Existing and proposed noise barriers
- Impacts to students using the Wilson Road bridge to walk to school
- Visual and noise impacts (Dean Avenue) associated with traffic once the project is completed.

4. Existing Conditions

All significant features within the study area were identified to determine areas of environmental concern/constraint, establish the potential for impact resulting from the works proposed and to identify areas where mitigation may be required to minimize impacts. The data collected was grouped into the following categories:

- Natural Environment;
- Socio-economic Environment;
- Cultural Environment; and
- Transportation Conditions.

This inventory was established through the collection of information from primary and secondary sources, field visits, drawing review, consultation with agencies and the public and completion of the following investigations and supporting documentation:

- Contract A Terrestrial Ecosystems Existing Conditions & Impact Assessment Report
- Contract A Noise Report
- Contract A Stage 2 Archaeological Assessment
- Contract A and B Designated Substance Survey
- Contract A Assessment of Past Uses
- Contract A Sampling Analysis Plan
- Contract A Soil Characterization Report
- Hydrogeological Assessment Memo

4.1 Natural Environment

A *Terrestrial Ecosystems Existing Conditions and Impact Assessment Report* (AECOM, March 2024) was prepared for the work associated with Contract A in accordance with the *Environmental Reference for Highway Design* (ERHD; MTO, 2013) and the Ontario Ministry of Transportation's Environmental Standards and Practices. A background review was completed, prior to field investigations, to obtain information on known natural heritage features and species records including Species at Risk (SAR) and Species of Conservation Concern (SOCC) within the Study Area. External agencies were also consulted to acquire background information.

Field investigations were completed on April 22, 2021, June 2 and 13, 2021, July 22-23, 2021, and May 4, 2023, in accordance with the ERHD (MTO, 2013) and were generally limited to within the MTO right-of-way (ROW) and public spaces. Additional localized field work (i.e. acoustic surveys) to determine the potential presence of SAR bat habitat were completed from June 2, 2021 to June 13, 2021.

Terrestrial Field investigations included delineation and classification of vegetation communities using the Southern Ontario Ecological Land Classification System (Lee et al., 1998), bird nest searches for any species to be affected by construction, a review of potential wildlife and associated habitat, including an assessment of wildlife habitats within the Project Limits, an assessment of wildlife habitats including Species at Risk (SAR) and Species of Conservation Concern (SOCC), delineation of wetland boundaries and other designated areas.

The following sub-sections detail the existing natural environmental features of the study area.

4.1.1 Physiography, Topography and Drainage

The Study Area falls within Ecoregion 6E (Lake Simcoe-Rideau) which is part of the Mixed wood Plains Ecozone, extending from Lake Huron in the west to the Ottawa River in the east, and includes most of the Lake Ontario shore and the Ontario portion of the St. Lawrence River Valley. The Simcoe-Rideau Ecoregion is underlain by Paleozoic dolomite and limestone, mainly of Ordovician and Silurian ages. The vegetation is relatively diverse. Hardwood forests dominated by sugar maple, American beech, white ash, eastern hemlock, and numerous other species are found where substrates are well developed on upland sites. Lowlands, including rich floodplain forests, contain green ash, silver maple, red maple, eastern white cedar, yellow birch, balsam fir, and black ash.

The surficial geology of Ecoregion 6E is gently undulating to rolling terrain of ice-laid materials deeply covering dolomite and limestone bedrock, although shallow substrates dominate in a few areas. Mineral materials represent more than 95% of substrates within this ecoregion (Crins et al., 2009).

4.1.2 Designated Natural Areas

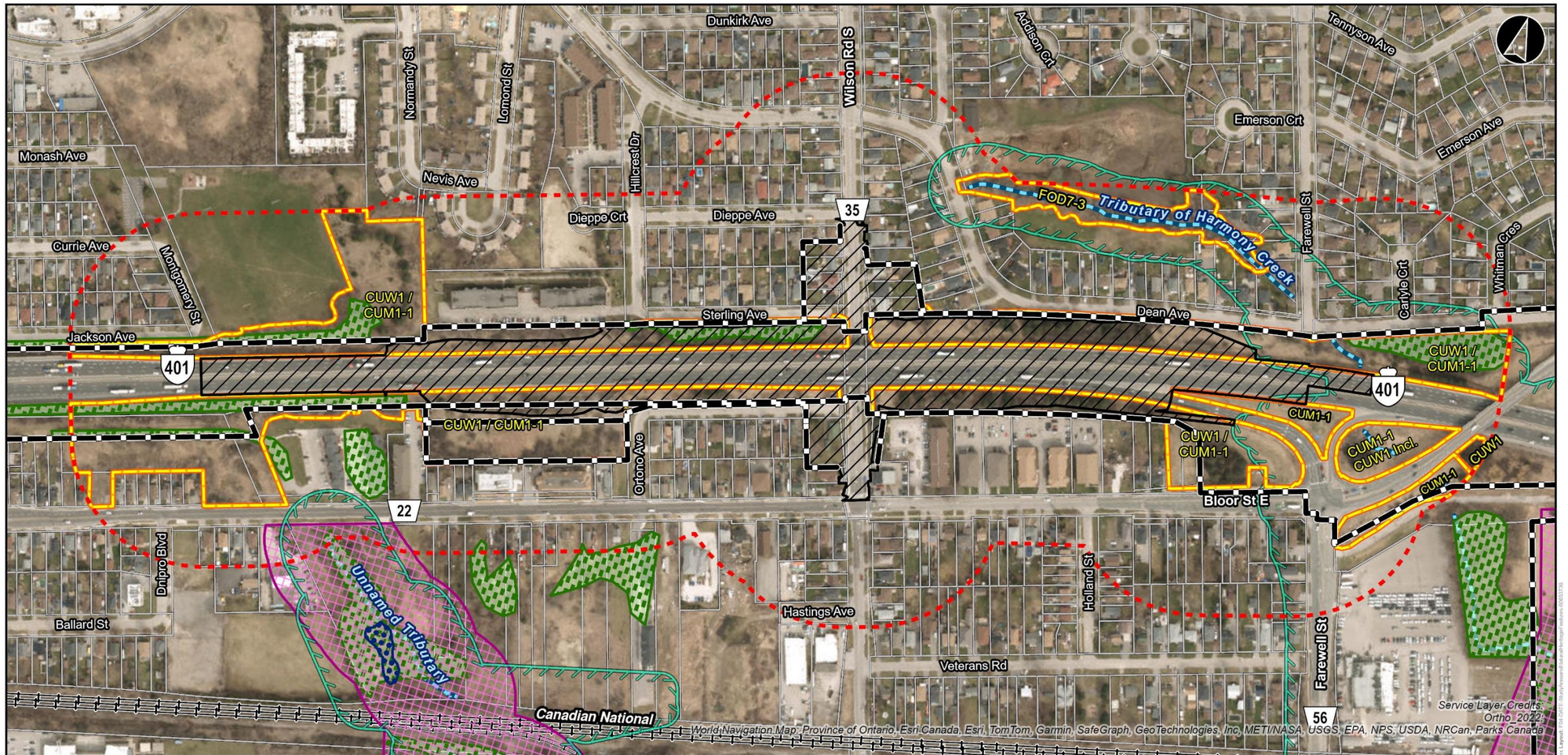
Natural features and areas identified for protection in the Provincial Policy Statement (PPS) and other legislation (e.g., Greenbelt Act, 2005) are collectively referred to as ‘Designated Natural Areas.’ These include but are not limited to Provincial Land Use and Environmental Planning areas (i.e., Oak Ridges Moraine, Niagara Escarpment,

Greenbelt), National and Provincial Parks, Environmentally Sensitive Areas, Areas of Natural and Scientific Interest (ANSI) etc. and may be identified by planning authorities (e.g., province, municipality, conservation authority).

As illustrated in **Figure 3**, there are no Provincially Significant Wetlands (PSW), Locally Significant Wetlands (LSW), unevaluated wetlands, ANSIs, Environmentally Significant Areas, Provincial Parks, Conservation Reserves or Significant Woodlands identified within the Study Area. Harmony Creek and Oshawa Creek are located within the Natural Heritage Study Area but will not be impacted by construction. A portion of the lands at the east end of the study area are located within the Central Lake Ontario Conservation Authority (CLOCA) Regulated Area.

The Study Area is designated as Urban Area in the Region of Durham Official Plan (2020) and as Residential, Open Space and Recreational in the City of Oshawa Official Plan (2023).

Figure 3: Existing Natural Heritage Features



LEGEND

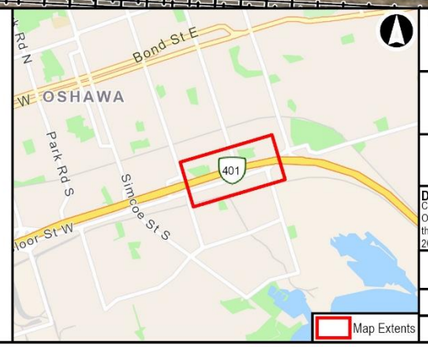
Project Components
- Natural Heritage Study Area (120 m)
- Construction Disturbance Area
- Existing MTO Right-of-way

Natural Heritage Features
- Unevaluated Wetland
- Wooded Area
- Central Lake Ontario Conservation Authority Regulation Limit (2019)

Greenbelt Plan by Designation
- Urban River Valley

Environmental Land Classifications
- Environmental Land Classification Limit

General Features
- Main Railway
- Spur Railway
- Minor Railway
- Watercourse
- Property Boundary



Highway 401 / Wilson Road Overpass Replacement Detail Design and Class Environmental Assessment Study Contract A (GWP 2146-20-00)

Study Area and Natural Heritage Features

0 50 100 200 M
WGS 1984 UTM Zone 17N

Data Sources:
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AECOM	Ontario
Apr, 2024	1:3,500
P:60653736	Rev:00

4.1.3 Vegetation and Vegetation Communities

Vegetation communities within the Study Area were delineated by AECOM ecologists on July 22 and 23, 2021. Vascular plant species lists were compiled for the MTO ROW and for each vegetation community within the Study Area where access was permitted. Where access was not permitted, all species that were visible from the ROW/edge of the community were recorded.

Vegetation communities within the Study Area were classified using the Southern Ontario Ecological Land Classification System (Lee et al., 1998). Vegetation community sensitivity was also determined based on the calculation of the Mean Coefficient of Conservatism, the Floristic Quality Index (FQI), and the Weediness index for the Study Area. These parameters are intended to be used together to assign an ecological community sensitivity ranking based on plant species composition, not the actual value of a particular community.

Figure 4 outlines the area of study included as part of the natural environment review as well as the anticipated area of impact identified as the Construction Disturbance Area. The Study Area is located in a highly urbanized area surrounding Highway 401 and a mix of residential and commercial properties. The Construction Disturbance Area (CDA) was limited to narrow, disturbed vegetation communities along the MTO ROW as well as periodically manicured/mowed areas. Four ELC vegetation communities, as illustrated in **Figure 4** and as defined in **Table 1**, were identified within the Study Area with generally low vegetation quality as the FQI values were below 19 and an overall abundance of non-native species were established that included, but not limited to: dog strangling vine, Manitoba maple, common buckthorn, garlic mustard, and Kentucky bluegrass. Given the urban location of the Study Area, vegetation communities were fragmented due to the presence of existing roads, buildings and manicured lawns within the Study Area. Small and mid-age trees and shrubs, including Austrian pine, hybrid crack willow, and Manitoba maple, were also scattered throughout the right-of-way.

A total of 82 plant species were recorded, of which 49 (60%) were native and 33 (40%) were non-native and/or invasive. The majority of the plant species recorded had a low to moderate sensitivity to disturbance. All of the identified vegetation communities within the Study Area were generally low vegetation quality as evidenced by the FQI being less than a score of 19. Wild parsnip was observed in the Dry-Fresh Old Field Meadow Type (CUM1-1) and is a noxious plant that may cause severe burns through skin contact (Ontario Invading Species Awareness Program, n.d.).

There were no SAR, SOCC or locally rare plants observed. Descriptions of vegetation communities, community sensitivity and floristic assessments are summarized in **Table 1**.

Table 1: Summary of Vegetation Communities Observed

Community	ELC Code	Vegetation or Ecosite Name	Community Description	Floristic Assessments
Forest Communities	**FOD7-3**	■ Fresh-Moist Willow Lowland Deciduous Forest	■ The canopy of this community was dominated by hybrid crack willow *(Salix X rubens);* other species observed included Manitoba maple (*Acer negundo*), green ash (*Fraxinus pennsylvanica*), and balsam poplar (*Populus balsamifera*). Species within the shrub layer included common buckthorn (*Rhamnus cathartica*), staghorn sumac (*Rhus typhina*), Manitoba maple, Tartarian honeysuckle (*Lonicera tatarica*), wild black currant *(Ribes americanum),* common blackberry *(Rubus allegheniensis)* and morrow's honeysuckle *(Lonicera morrowii)*. The ground cover was abundant garlic mustard (*Alliaria petiolata*), yellow avens (*Geum aleppicum*), large false solomon's seal *(Maianthemum racemosum),* Canada enchanter's nightshade (*Circaea canadensis*), tall goldenrod (*Solidago gigantea*), Canada goldenrod *(Solidago canadensis),* chicory *(Cichorium intybus),* Philadelphia fleabane *(Erigeron philadelphicus),* and smooth bedstraw *(Galium molugo).*	■ CC: 2.27 ■ CW: 1.50 ■ Non-native species (%): 45 ■ FQI: 7.54 ■ No SAR, SOCC or locally rare plants observed.
Cultural Communities	**CUW1**	■ Mineral Cultural Woodland Ecosite	■ Species observed in the canopy included the following: Manitoba maple, Scots pine *(Pinus sylvestris)*, Austrian pine *(Pinus nigra),* Norway maple *(Acer platanoides),* and green ash. The shrub layer consisted of common buckthorn, Tartarian honeysuckle, Manitoba maple, red currant (*Ribes rubrum*), American basswood (*Tilia americana*), and American hazelnut *(Corylus americana).* Common groundcover species included the following: yellow avens, garlic mustard, Canada enchanter's nightshade, thicket-creeper (*Parthenocissus vitacea*), riverbank grape (*Vitis riparia*) and common buckthorn seedlings.	■ CC: 2.90 ■ CW: 2.18 ■ Non-native species (%):41 ■ FQI: 9.17 ■ No SAR, SOCC or locally rare plants observed
Cultural Communities	**CUW1/ CUM1-1**	■ Mineral Cultural Woodland Ecosite with Dry-Fresh Old Field Meadow Type complex	■ Species observed in the canopy included the following: Manitoba maple, green ash, Austrian pine, black walnut (*Juglans nigra*), eastern white cedar *(Thuja occidentalis),* white pine *(Pinus strobus),* Norway maple, balsam poplar, and Norway spruce *(Picea abies).* The shrub layer consisted of common buckthorn, staghorn sumac, thicket-creeper, riverbank grape and European mountain-ash *(Sorbus aucuparia).* Common groundcover species included the following: common buckthorn seedlings, garlic mustard, dog-strangling vine (*Cynanchum rossicum*), smooth brome (*Bromus inermis*), Kentucky bluegrass (*Poa pratensis*), wild carrot *(Daucus carota),* common milkweed (*Asclepias syriaca*), orchard grass (*Dactylis glomerata*), and creeping bellflower *(Campanula rapunculoides).*	■ CC: 2.08 ■ CW: 2.46 ■ Non-native species (%):71 ■ FQI:7.49 ■ No SAR, SOCC or locally rare plants observed
Cultural Communities	**CUM1-1**	■ Dry-Fresh Old Field Meadow Type	■ This vegetation type was comprised of a combination of species that prefer disturbed sites and are relatively resilient. Species included smooth brome, Kentucky bluegrass, bird's-foot trefoil (*Lotus corniculatus*), wild parsnip *(Pastinaca sativa),* common milkweed, reed canary grass *(Phalaris arundinacea)*, thicket-creeper, ox-eye daisy (*Leucanthemum vulgare*), and common mullein *(Verbascum thapsus)*.	■ CC: 1.74 ■ CW:1.96 ■ Non-native species (%):64 ■ FQI:7.57 ■ No SAR, SOCC or locally rare plants observed

Invasive Plant Species

A total of 82 plant species were recorded, of which 49 (60%) were native and 33 (40%) were non-native and/or invasive. The majority of the plant species recorded had a low to moderate sensitivity to disturbance. Several invasive species were recorded during field investigations within the Study Area. Invasive species include plants that are introduced by human action outside their natural past or present distribution whose introduction or spread threatens the environment, the economy, or society, including human health (Government of Canada, 2004). If an invasive species is undetected and unregulated, it can become established in the environment, and spread uncontrollably across the landscape, causing ecological impacts as well as immeasurable impacts to the economy and social values (Invasive Species Centre, 2024).

Plant species are categorized from 1 to 4 as per the Invasive Exotic Species Ranking for Southern Ontario (Urban Forest Associates Inc., 2002) based on the potential invasiveness of non-native plants with Category 1 being the most invasive. Within the study area Eleven **Category 1** species (i.e. aggressive invasive exotic species that can dominate a site) were recorded that included Canada Thistle, Common Buckthorn, Common Reed, Purple Crown-vetch, Dog Strangling Vine, Garlic Mustard, Japanese Knotweed, Manitoba Maple, Morrow's Honeysuckle, Purple Loosestrife, and Tatarian Honeysuckle. Eight **Category 2** species (i.e. highly invasive but do not spread rapidly) were recorded that included Garden Bird's-foot Trefoil, Bittersweet Nightshade, Tufted Vetch, Kentucky Bluegrass, Norway Maple, Scots Pine, Smooth Bedstraw, and White Sweet-clover. Five **Category 3** species (i.e. moderately invasive but can become locally dominant) were recorded that included Bouncing-bet, Field Bindweed, Orchard Grass, Quackgrass, and Russian Olive. Eight **Category 4** species (i.e. do not pose a serious threat to natural areas and can often be tolerated) were recorded within the study area that included Catnip, Common St. John's-wort, Creeping Bellflower, Elecampane, European Mountain-ash, Leafy Spurge, Red Clover, and Smooth Brome.

Of the Category 1 species populations of common buckthorn, Manitoba maple and garlic mustard had established within the Fresh-Moist Willow Lowland Deciduous Forest (FOD7-3), Mineral Cultural Woodland Ecosite (CUW1) and Mineral Cultural Woodland Ecosite with Dry-Fresh Old Field Meadow Type complex (CUW1/CUM1-1) communities. Additionally, Tartarian honeysuckle had established within the shrub layers of the CUW1 and FOD7-3 communities. While established populations of common reed were not observed within ELC communities, dense patches of common reed were present within roadside ditches along the Study Area.

Several Category 2 species were also noted to have established within the Study Area. Norway maple was abundant in the canopies of the CUW1/CUM1-1 and CUW1

communities and Scots pine was abundant in the canopy of the CUW1 community. Smooth bedstraw was abundant throughout the FOD7-3 community. Kentucky bluegrass was prominent throughout the Study Area as this species is commonly used in lawn mixtures. Within ELC communities, Kentucky bluegrass was abundant within the CUW1/CUM1-1 and CUM1-1 communities.

Noxious/Hazardous Plants

Wild parsnip, a species that may cause severe burns through skin, was the only noxious plant recorded within the Contract A Study Area. It was found to be abundant in the Dry-Fresh Old Field Meadow Type (CUM1-1) located northeast of Farewell Street and Bloor Street East.

4.1.4 Wildlife and Wildlife Habitat (including Species At Risk)

The terrestrial ecosystem review determined that there was limited potential to support wildlife habitat within the MTO ROW due to fragmentation and high noise and traffic levels from the highway. The corridor was also found to act as a barrier to animal movement. Generally, mostly disturbance-tolerant species are expected to occur within the MTO ROW. Significant species or wildlife habitat would likely be present in the greater landscape where more naturalized communities occur. **Figure 3** outlines the area of study included as part of the natural environment review as well as the anticipated area of impact (identified as the Construction Disturbance Area).

Incidental Wildlife Observations

During field investigations, any evidence (e.g., observation, scat, tracks, calls, etc.) of wildlife and their associated habitat and habitat usages were documented. Wildlife incidentally observed during the field surveys on April 22, 2021, June 2, 2021, June 13, 2021, July 22-23, 2021 and May 4, 2023 included the American Crow, American Goldfinch, American Robin, Barn Swallow, Black-capped Chickadee, Blue Jay, Canada Goose, Cedar Waxwing, Chipping Sparrow, Common Grackle, Mourning Dove, Northern Cardinal, Red-tailed Hawk, Red-winged Blackbird, Rock Pigeon, Song Sparrow, Swamp Sparrow, Tree Swallow, Monarch, Mourning Cloak, and the White-tailed Deer.

The majority of the species observed were considered common and tolerant of urban disturbances, and many bird species observed are also protected under the Migratory Birds Convention Act (MBCA). Barn Swallow and Monarch were the only SOCC observed. Although the Study Area has been anthropogenically disturbed and fragmented, the vegetation communities present still provide potential nesting opportunities for migratory birds. Isolated trees, shrubs, vegetation communities and

anthropogenic structures (e.g., buildings and bridges) can also provide nesting habitat for migratory birds.

Migratory Birds

Bird nest searches were completed for the location and species of any bird nests on, under or in any structure affected by construction. No nests were observed on any structures along Highway 401 within the Study Area.

Following the commencement of this project, updates were made to regulation under the Migratory Birds Convention Act (MBCA) to provide year-round protection to the nests of 18 species (listed on Schedule 1) whose nests have been shown to be reused by the species or other MBCA protected species. If a nest of a Schedule 1 species is present within the limits of work, a permit to remove or relocate the nest under the MBCA will be required unless the nest is proven to be abandoned for the designated wait times provided under the new regulation. Based on the initial field visits it was determined that of the 18 species identified for protection in the amended MBCA, the potential exists for the nest of the Pileated Woodpecker to be present within the project study area. As such, Pileated Woodpecker nest cavity searches were completed on May 4, 2023 to determine the presence of Schedule 1 nests or nesting cavities. This included a search of woodland communities for potential nesting cavities as well as foraging and roosting cavities. No suitable nesting cavities or evidence of Pileated Woodpecker were observed.

Species At Risk Bats

Searches for suitable SAR Bat roost trees in woodland communities within the Study Area were completed on April 22, 2021. A total of 14 suitable maternity roost trees (i.e., snag/cavity trees) were identified in the Study Area. Most of the snag/cavity trees identified were White Ash and Manitoba Maple with cavities or loose bark. There was no open rock habitat present within the Study Area and no rock outcrops were identified during the field investigations. All snag/cavity trees were identified within the Mineral Cultural Woodland Ecosite with Dry-Fresh Old Field Meadow Type complex (CUW1/CUM1-1) communities. The 14 roost trees in the CUW1/CUM1-1 communities are not considered high-quality habitat as the snag density is approximately 1.55 snags/ha.

Following the completion of the above noted search for suitable roost trees it was determined that potential habitat for Species at Risk (SAR) bats may be present within the area of study that warranted additional targeted surveys. To confirm the presence of SAR bats, acoustic surveys were completed at 12 sites (4 within Contract A and 8 within Contract B) over the course of 10 nights from June 2, 2021 to June 13, 2021.

In total, there were 587 identified recorded bat passes, including calls from five Ontario bat species. This included two SAR, Little Brown Myotis and Tricoloured Bat. Both species are listed as Endangered in Ontario and are therefore afforded individual and habitat protection under the Endangered Species Act (ESA). There was one recorded pass of Little Brown Myotis and two recorded passes of Tricoloured Bat. Little Brown Myotis was recorded at station BAT-09 in the Mineral Cultural Woodland Ecosite with Dry-Fresh Old Field Meadow Type complex (CUW1/CUM1-1). The Tricoloured Bat was recorded at BAT-09 and BAT-10 in the CUW1/CUM1-1. The remaining passes were from common and abundant bat species, which are not listed at risk under the ESA. As such, these bats do not receive individual or habitat protection under the ESA. Additionally, there were 85 No ID recordings (i.e., records that classifiers could not confidently identify to a species or it was the result of background noises similar in frequency to bat calls).

4.1.5 Significant Wildlife Habitat

Significant Wildlife Habitat (SWH) is divided into four broad categories that include the following:

- Seasonal Concentration Areas;
- Rare Vegetation Communities or Specialized Habitats for Wildlife;
- Habitats of Species of Conservation Concern (SOCC) that include (as per the Natural Heritage Reference Manual (MNRF, 2010):
  - Species with Provincial S-rank assigned by the NHIC as S1 (critically imperiled), S2 (imperiled) or S3 (vulnerable);
  - Species listed as Special Concern under the ESA; and,
  - Species identified as nationally endangered or threatened by The Committee on the Status of Endangered Wildlife in Canada, which are not protected under the ESA.
- Animal Movement Corridors.

SOCC with records in the vicinity of the area of study included seven species of birds (i.e., Bald Eagle, Barn Swallow, Black Tern, Common Nighthawk, Eastern Wood-Pewee, Grasshopper Sparrow, and Wood Thrush), two reptiles (i.e., Northern Map Turtle & Snapping Turtle), and one insect (i.e., Monarch).

A habitat assessment was completed for SOCC to determine if suitable habitat is present within the Study Area based on vegetation communities observed during field investigations. SWH within the Study Area was limited as vegetation communities were

limited to narrow strips along roadsides and between residential and commercial properties. Vegetation communities within the CDA was completely limited to cultural communities along the highway and MTO ROW.

The presence of candidate SWH was identified for the Eastern Wood-pewee and Barn Swallow within the study area and confirmed SWH was identified for the Monarch.

The presence of Big Brown Bats and Silver-haired bats were confirmed through acoustic monitoring within the Mineral Cultural Woodland Ecosite with Dry-Fresh Old Field Meadow Type complex (CUW1/CUM1-1) communities. While acoustic monitoring does not provide abundance data, many passes of Big Brown Bat and Silver-haired Bat were recorded at each station every night. This indicates Big Brown Bat and Silver-haired Bat were using the CUW1/CUM1-1 communities as roost habitat however, the criteria for Bat Maternity Colonies SWH was not confirmed as the Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E (MNRF, 2015) does not identify CUW1 communities for Bat Maternity Colonies SWH.

4.1.6 Terrestrial Species at Risk

Background review records identified a total of 13 Species at Risk (SAR), as presented in **Table 2**, within or in the vicinity of the Study Area. Of these, the record of Northern Bobwhite has a last observation date that is greater than 130 years old. Given the observation date, the species was treated as historical as it is unlikely the species continues to persist within the Study Area.

Table 2: Species at Risk Records within Vicinity of Study Area

Taxa	Common Name	Scientific Name	S-Rank[1]	ESA Status[2]	COSEWIC[2]	Source of Record
Bird	Bank Swallow	*Riparia riparia*	S4B	THR	THR	OBBA
Bird	Bobolink	*Dolichonyx oryzivorus*	S4B	THR	THR	OBBA
Bird	Chimney Swift	*Chaetura pelagica*	S3B	THR	THR	OBBA
Bird	Eastern Meadowlark	*Sturnella magna*	S4B, S3N	THR	THR	OBBA
Bird	Least Bittern	*Xobychus exilis*	S4B	THR	THR	OBBA
Bird	Northern Bobwhite	*Colinus virginianus*	S1	END	END	NHIC
Bird	Piping Plover	*Charadrius melodus*	S1B	END	END	NHIC
Bird	Red-headed Woodpecker	*Melanerpes erythrocephalus*	S4B	END	END	OBBA
Mammal	Eastern Small-footed Myotis	*Myotis leibii*	S2S3	END	-	BCI
Mammal	Little Brown Myotis	*Myotis lucifugus*	S3	END	END	BCI
Mammal	Northern Myotis	*Myotis septentrionalis*	S3	END	END	BCI
Mammal	Tri-colored Bat	*Perimyotis subflavus*	S3?	END	END	BCI
Reptile	Blanding's Turtle	*Emydoidea blandingii*	S3	THR	END	ORAA

Of the above SAR identified during the background review, two provincial SAR (i.e. Little Brown Myotis & Tricoloured Bat) were confirmed on-site and one SAR (i.e. Chimney Swift) was identified as having a medium probability of occurring within the Study Area based on the presence of suitable habitat and confirmation of presence through field investigations and background review.

The following provincial SAR were confirmed on-site:

- **Little Brown Myotis:** This species is designated as Endangered under the ESA and was recorded on June 12, 2021 at station BAT-09. Only one pass of this species was recorded, indicating that it was likely not using the CUW1/CUM1-1 communities as roosting habitat based on the low number of calls as well as only being detected on one night of the monitoring period. Based on the very low number of calls, the data indicates that this species was a flyover and maybe roosting in forested habitat or in houses located in the larger Study Area or greater landscape and may either pass through or forage over the open meadow portions within the CUW1/CUM1-1 complex. Additionally, snag density within the CUW1/CUM1-1 was low and considered poor quality roost habitat. While Little Brown Myotis may use the area to forage, foraging habitat is not afforded protection under the ESA.

- **Tricoloured Bat:** This species is designated as Endangered under the ESA and was recorded on June 9, 2021 at station BAT-10 and on June 11, 2021 at station BAT-09. There was one pass of Tricoloured Bat recorded each night indicating that this species was likely not using the CUW1/CUM1-1 as roost habitat based on the low number of calls as well as only being detected on two nights of the monitoring period. Based on the very low number of calls, the data indicates that this species may be roosting in forested habitat located in the larger Study Area or greater landscape. Tricoloured Bat could possibly forage over the open meadow portions within the CUW1/CUM1-1 complex. Additionally, snag density within the CUW1/CUM1-1 was low and considered poor quality roost habitat. While Tricoloured Bat may use the area to forage, foraging habitat is not afforded protection under the ESA.

  A total of eight residential properties on Wilson Road associated with the property acquisition to accommodate the reconstruction and grade lowering of Wilson Road will be demolished in advance of construction. These are not considered to be suitable roosting structures for bat SAR given the intact condition of the buildings and the fact that these were still occupied by inhabitants (i.e., not abandoned and unkept dwellings). Additionally, while a

few flyover bat SAR calls were recorded in the overall Study Area, these were not in the vicinity of the houses proposed for demolition.

The following SAR was determined to have a **medium potential** to occur within the Study Area:

- **Chimney Swift** is designated as Threatened under the ESA. Candidate habitat for Chimney Swift was identified within the residential areas of the Study Area, where suitable nesting chimneys may be present. Of the aforementioned eight buildings to be demolished, seven were identified to contain chimneys via aerial imagery review using Google Earth. However, all observed chimneys appeared to be capped and/or did not meet the minimum size requirements for Chimney Swifts. Therefore, no candidate habitat was present in the CDA.

The remaining SAR as identified were determined to have a low potential to occur within the Study Area due to lack of suitable habitat.

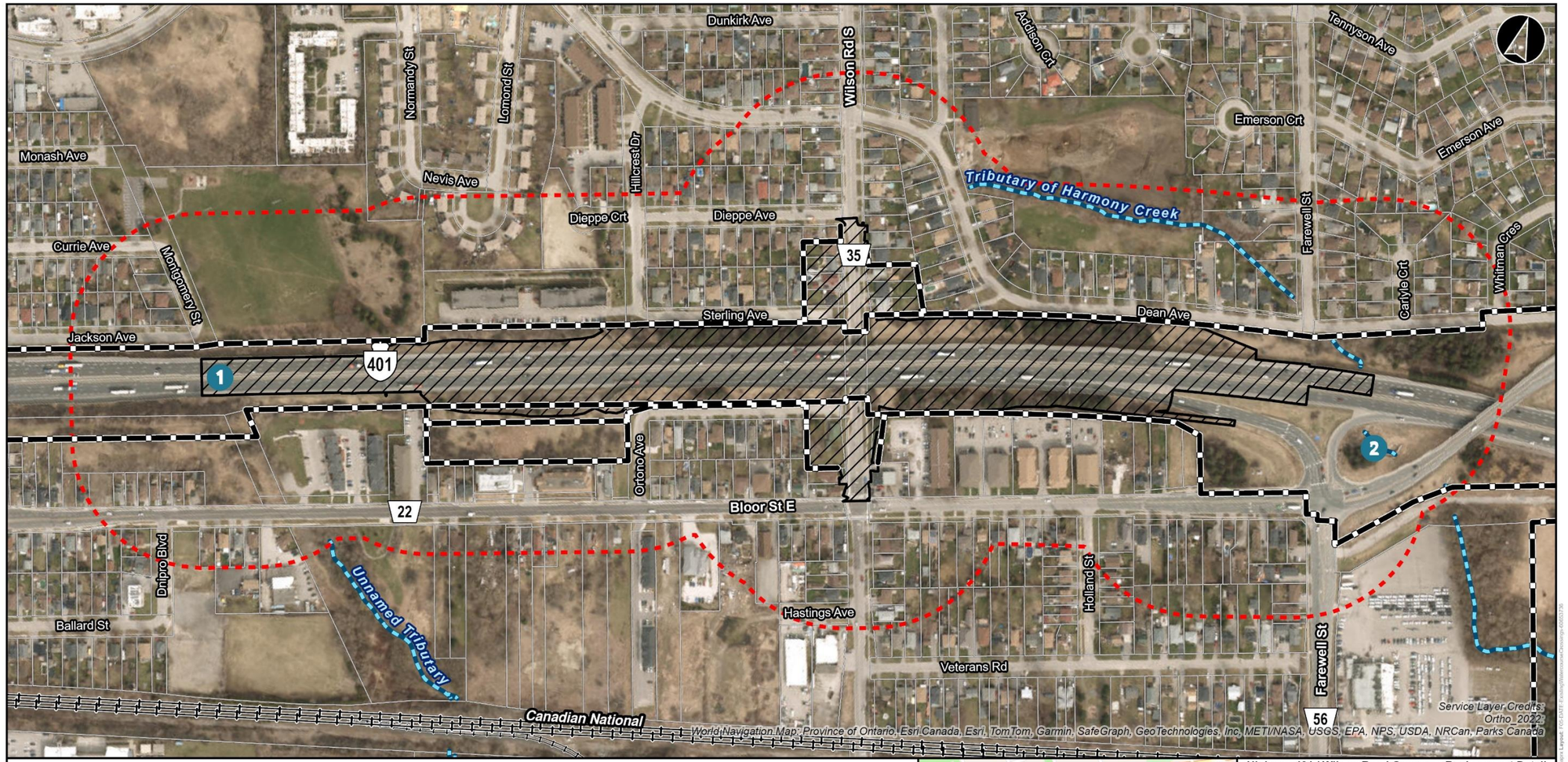
4.1.7 Fish and Fish Habitat

For Contract A no fisheries field work or reporting was initially required as the proposed work was expected to be greater than 30 metres from any nearby watercourse. However, based on the field review and the development of the detail design it was determined that the contract limits for Contract A are within 30 metres of two watercourse crossings. As illustrated in **Figure 4**, Crossing #1 (Unnamed Tributary of Lake Ontario) crosses under Highway 401 at the west end of the project limits just east of Ritson Road near Montgomery Street and Crossing #2 (Tributary of Harmony Creek) crosses Highway 401 at the eastern project limits near the Bloor Street underpass.

4.1.8 Waste and Contamination

A Contamination Overview Study (COS) was completed as part of the Preliminary Design and EA Study (Group ‘B’) undertaken by the Ministry in 2015 for the segment of Highway 401 extending from Brock Road to Courtice Road which included the subject Contract A study area. The assessment completed was documented in the *Highway 401 Improvements from Brock Road to Salem Road and Brock Street to Courtice Road Contamination Overview Study, G.W.P. 10-20011* (URS, Feb. 2013).

Figure 4: Existing Watercourse Crossings

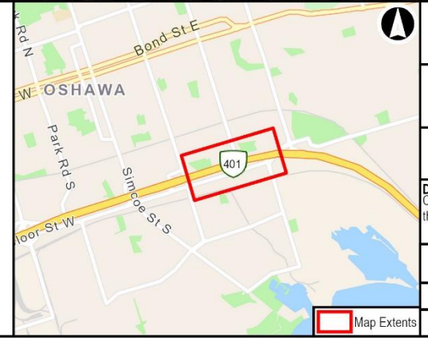


LEGEND

Project Components
- Natural Heritage Study Area (120 m)
- Existing MTO Right-of-way
- Construction Disturbance Area

Watercourse Crossing
- 1 Crossing #1 Unnamed Tributary
- 2 Crossing #2 Tributary of Harmony Creek

General Features
- Main Railway
- Spur Railway
- Minor Railway
- Watercourse
- Property Boundary
- Municipal Boundary



Highway 401 / Wilson Road Overpass Replacement Detail Design and Class Environmental Assessment Study Contract A (GWP 2146-20-00)

Existing Watercourse Crossings

0 50 100 200 M
WGS 1984 UTM Zone 17N

Data Sources:
Contains Information licensed under the Open Government License Ontario and the City of Oshawa. Project components created by AECOM.

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4.1.9 Excess Soil

Investigations were completed during Detail Design in accordance with the requirements of Ontario Regulation 406/19 including preparation of an Assessment of Past Uses; Sampling and Analysis Plan; and Soil Characterization Report.

4.1.10 Designated Substance Survey (DSS)

A Designated Substance Survey (DSS) was completed for all bridges and structural culverts included as part of both Contracts A and B on July 21st, July 23rd, and August 3rd, 2023. The purpose of the DSS was to identify the presence of any hazardous materials or designated substances that may be present at affected structures and provide recommendations for the safe removal of the substances prior to construction. The results of the survey were documented in a combined report for both Contracts A & B, the *Highway 401 / Wilson Road Overpass Replacement and Highway 401 / Bloor Street / Harmony Road Interchange Reconfiguration Designated Substance Survey (Contract A - GWP 2146-20-00) and (Contract B - GWP 2106-19-00) (January 2024).*

4.1.11 Groundwater

A hydrogeological assessment was undertaken to confirm existing groundwater conditions. Investigations determined that overburden soil in the study area consists of a fill layer of silty sand to sandy silt with some clay and trace gravel, underlain by silty sand till, silty clay, and/or clayey sand till deposits which is further underlain by shale bedrock at approximate depth of 19 metres from the existing surface.

MECP well records identified no existing private drinking water wells present within the study area, and that all well records relate to monitoring wells and test holes. It is expected that any monitoring wells within the study area will be decommissioned with the onset of construction in the area.

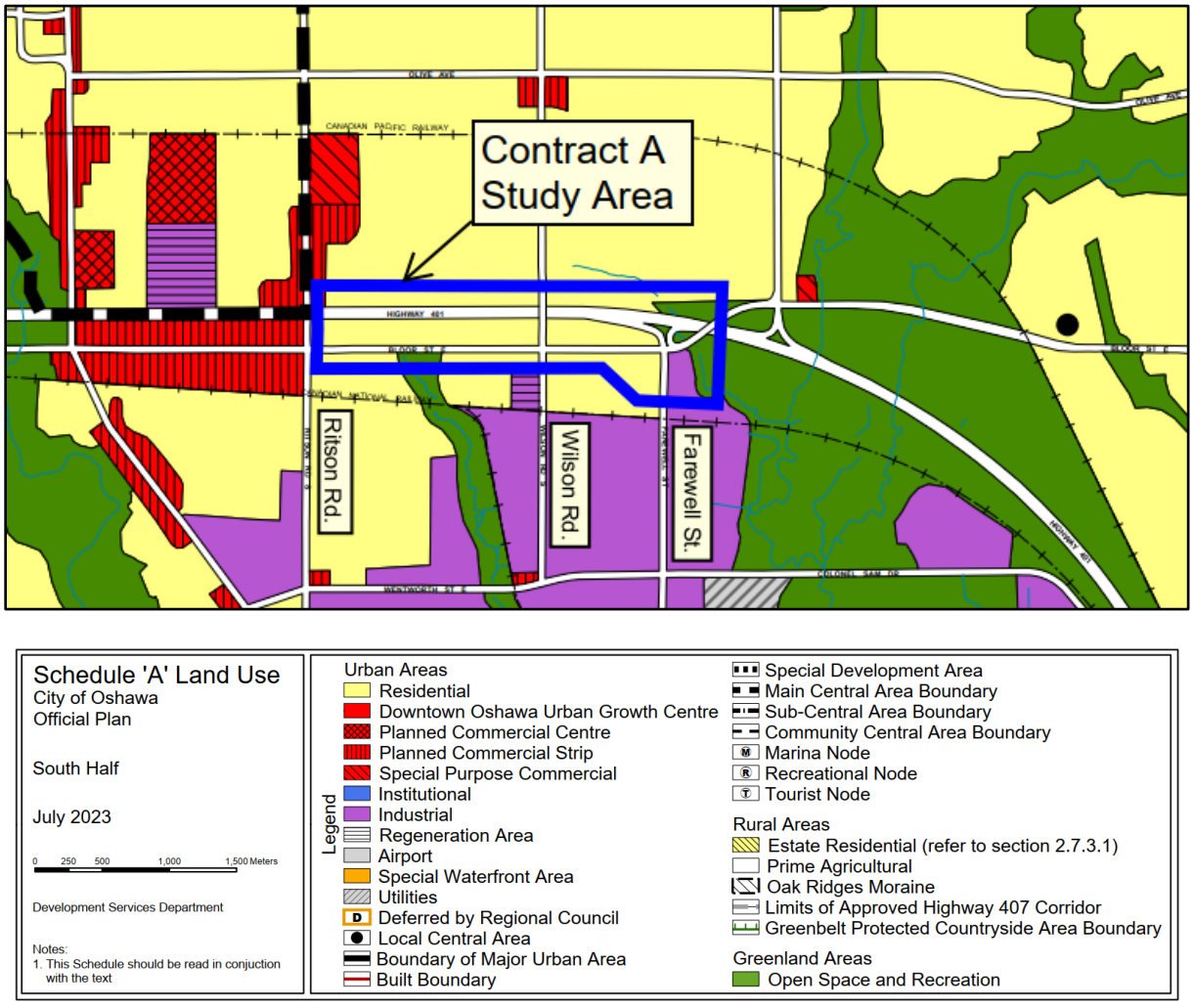
There are no municipal wells located within the study area. The study area and vicinity are municipally serviced and obtain potable water from a surface water source (i.e. Lake Ontario). The project study area is located within the Central Lake Ontario Conservation Authority, of the CTC Source Protection Region and is subject to the CTC Source Protection Plan. Sensitive areas identified as a Highly Vulnerable Aquifer (i.e. an aquifer that is vulnerable to contamination due to its location near the ground's surface or because of the type of materials that surrounds it) were identified within the study area.

4.2 Socio-Economic Environment

4.2.1 Land Use

The project is located within the City of Oshawa in the Region of Durham. The Study Area is primarily designated as Living Area in the Region of Durham Official Plan (2020) with an area of Open Space in proximity to Oshawa Creek. As illustrated in **Figure 5**, area land use within the project limits is primarily designated Residential in the City of Oshawa Official Plan from Ritson Road to Farewell Street with Open Space and Recreation lands located at the eastern limits of the project east of Farewell Street. An area designated as Planned Commercial Strip abuts Ritson Road north and south of Highway 401.

Figure 5: Excerpt of City of Oshawa Official Plan Schedule A Land Use



Source: City of Oshawa Official Plan Schedule A Land Use Plan

The Region of Durham Official Plan (May 2020) defines Living Areas as consisting of communities with boundaries and developed to incorporate the widest possible variety of housing types, sizes and tenure to provide living accommodations that address various socio-economic factors. They are to be developed in a compact form through higher densities and by intensifying and redeveloping existing areas, particularly along arterial roads.

The land uses designated in the City of Oshawa Official Plan (August 2023) are defined as follows:

- **Residential:** Areas designated as Residential are predominantly used for residential dwellings. Other land uses that may be permitted include community uses such as schools, places of worship, nursing homes, homes for the aged, day care centres and libraries, that by nature of their activity, scale and design, are compatible with residential uses; community gardens, allotment gardens, parks, open space and recreational uses having a community or neighbourhood level service area; Convenience Commercial Centres; limited office, retail and personal service uses; convenience stores; home occupation uses; bed and breakfast establishments and group homes.
- **Open Space and Recreation:** Areas designated as Open Space and Recreation generally include components of the Natural Heritage System, valley lands, conservation areas, marshes, scenic vistas, the Lake Ontario waterfront, parts of the Oak Ridges Moraine and other natural environments, and recreational resources including Regional and City level parks. Community and neighbourhood parks and minor open spaces are not necessarily designated as Open Space and Recreation but are subject to the policies.
- **Planned Commercial Strip:** This designation is one of several that comprise the commercial structure of the City. Areas designated as Planned Commercial Strip are encouraged to consolidate into nodes in accordance with good urban design principles and with common internal pedestrian and vehicular circulation, common ingress and egress for traffic and access to arterial roads only by collector roads or existing local roads wherever feasible. This designation permits commercial uses that, by nature of their function, require direct access or exposure afforded by frontage on an arterial road. In addition, limited office development and limited retail and personal service uses may be permitted provided that such uses are compatible with their surroundings and do not detrimentally affect the development and function of Central Areas and Corridors.

4.2.2 Navigation

The Canadian Navigable Waters Act (CNWA) includes a List of Scheduled Waterways within Canada that have been deemed navigable under the Act and that require regulatory approval from Transport Canada prior to the commencement of any work “in, on, over, under, through or across” these waterways. Alternatively, a non-scheduled water (i.e., not included on the Act’s schedule) may also still be considered navigable and therefore continues to be protected under the Act. A navigable water is one that the public has a right to use for travel or transport and can include a canal or any other body of water created or altered by construction.

As indicated, there are two watercourses within the project limits including Crossing #1, Unnamed Tributary of Lake Ontario, that crosses Highway 401 east of Ritson Road at the western limits of the project and Crossing #2, Tributary of Harmony Creek, that crosses Highway 401 at the eastern project limits. Neither watercourse is included on the current CNWA List of Scheduled Waters.

4.2.3 Noise

During Preliminary Design a Noise Study was prepared to assess traffic operation noise. A review was made of the 2015 Noise Study to determine if it was necessary to re-assess traffic operation noise as part of detail design.

A re-assessment of traffic noise is normally required if there are significant design changes to the interchange / roadway versus the design assessed during the Preliminary Design EA Study or if there are new Noise Sensitive Areas (NSAs) in the study area that were not previously present; and / or traffic volume projections (10-years post construction) are notably higher than those considered during Preliminary Design.

It was determined that there are no significant design changes or no new NSAs within the study area and that the 10-year post construction traffic volumes (based on extrapolating the Average Annual Daily Traffic (AADT) are similar than the numbers utilized in the 2015 study. It was also noted that the 2015 Noise Study was based on widening to an ultimate 10-lanes, and while the ultimate roadway platform for 10-lanes is being constructed as part of this project, Highway 401 will remain as 6-lanes.

As there have been minimal design changes and no changes to projected road volumes, it was determined that an update to the traffic noise analysis was not required. There are some existing noise walls on the Wilson Road Overpass that are 3 to 4 metres in height and will be replaced to 5 metre walls, as per MTO’s current standards.

Construction noise was assessed to evaluate the potential noise impacts of the construction work on nearby Noise Sensitive Areas (NSAs). The construction noise was documented in the *Highway 401 / Wilson Road Overpass Replacement (Contract A - GWP 2146-20-00) Noise Report (AECOM, Feb. 2024).* As per the MTO Environmental Guide for Noise (MTO 2006), NSAs typically include the following land uses, provided that an outdoor living area is associated with them:

- Private homes such as single-family residences (owned or rental);
- Townhouses (owned or rental);
- Multiple unit buildings, such as apartments; and
- Hospitals, nursing/retirement homes, etc.

The area surrounding the Project is comprised of a mixture of commercial and residential usages. The nearest NSAs within 500 metres of the construction areas were identified for construction noise analysis.

Noise predictions were conducted at receptor locations selected to represent the worst case construction noise exposures due to construction activities for each NSA. Locations further removed from the construction site will have lower noise exposures from Project-related construction activities.

4.3 Cultural Environment

4.3.1 Archaeological Resources

A Stage 1 Archaeological Assessment was completed as part of the Preliminary Design and EA Study (Group ‘B’) by the Ministry in 2015 for the segment of Highway 401 extending from Brock Road to Courtice Road which included the subject Contract A study area. The assessment was documented in the *Highway 401 Improvements from Brock Road to Courtice Road Preliminary Design and EA Study, Stage 1 Archaeological Assessment Report, G.W.P. 10-20011* (URS, Sept. 2013).

The assessment concluded that while most of the lands within the Highway 401 Right-of-Way (ROW) have been disturbed, a number of parcels immediately adjacent to the existing ROW and within the proposed area of impact of the Highway 401 improvements are not visibly disturbed. Therefore, these lands exhibit moderate to high potential for containing archaeological sites. The assessment concluded that should proposed improvements result in the encroachment upon previously undisturbed lands determined to have archaeological site potential, a Stage 2 archaeological assessment should be conducted.

AECOM completed a Stage 2 Archaeology Assessment for the Contract A study area and documented the results in the *Highway 401 / Wilson Road Overpass Replacement (Contract A – GWP 2146-20-00) Stage 2 Archaeological Assessment Report (AECOM, Feb. 2024).* The Stage 2 assessment did not identify any archaeological resources and concluded that the study area is considered clear of further archaeological concerns.

4.3.2 Built Heritage and Cultural Heritage Landscapes

A cultural heritage assessment was completed as part of the Preliminary Design and EA Study (Group 'B') completed by the Ministry in 2015 for the segment of Highway 401 extending from Brock Road to Courtice Road which included the subject Contract A and B study areas. The assessment was undertaken to identify all known and potential built heritage resources (BHRs) and cultural heritage landscapes (CHL) located within or adjacent to the area of potential impact. The assessment completed was documented in the *Highway 401 from Brock Road to Courtice Road Preliminary Design and EA Study, Built Heritage and Cultural Heritage Landscapes Assessment Report, G.W.P. 10-20011* (URS, April 2013).

The assessment concluded that there are no known or potential BHRs and CHLs in the vicinity of the subject detail design area of study. The Wilson Rd Overpass was also screened previously for potential cultural heritage value or interest (CHVI) and determined not to retain CHVI. No further cultural heritage assessment was required for the overpass.

4.4 Transportation and Other Infrastructure

4.4.1 Road Network

The section of Highway 401 through Oshawa was originally constructed through a series of construction contracts beginning in the 1940s, and further widened and rehabilitated under a number of contracts since that time. Highway 401 is a Controlled Access Highway (CAH) with a posted speed of 100 kilometres per hour and presently includes 6 through lanes within the Study Area. The highway is located on a tangent section within the study limits, with a horizontal curve beginning at the east limits of Contract A through the adjacent Bloor Street / Harmony Road interchange.

Wilson Road is a 2-lane collector road within the City of Oshawa which extends from Conlin Road in north Oshawa to approximately 1 kilometre south of Highway 401. Within the study limits, Wilson Road has a posted speed of 50 kilometres per hour. Wilson Road crosses beneath Highway 401 and intersects Bloor Street at a signalized intersection approximately 100 metres to the south, with a southbound left-turn lane to Bloor Street developed directly south of the existing bridge. Wilson Road has no direct

access to Highway 401, with access provided at the adjacent Bloor Street / Harmony Road and Ritson Road interchanges to the east and west, respectively. The eastbound off-ramp to the Bloor Street/Harmony Road interchange is located across the Wilson Road overpass.

Local roads within the immediate study area include Dieppe Avenue which intersects Wilson Road approximately 100 metres north of Highway 401, as well as Ortono Avenue and Sterling Avenue which terminate directly west of Wilson Road and are located immediately south and north of Highway 401, respectively.

4.4.2 Wilson Road Bridge

The existing Wilson Road overpass (Site No. 22-180) was constructed in 1952 and consists of a single span concrete rigid frame with 12.8 metres clear span, and approximate width of 38 metres. The bridge was originally constructed to accommodate a 4-lane cross-section of Highway 401. The overpass was subsequently widened to its existing configuration in 1977 to accommodate 6 through lanes of Highway 401 and an eastbound speed change lane. The bridge spans two existing lanes along Wilson Road and narrow shoulders on both sides of the road. Given the age and condition of the bridge, replacement of the overpass is required.

4.4.3 Utilities / Servicing

The following existing utilities are located within the project limits and require relocation:

- **Region of Durham Water:** There is an existing 750 millimetre feedermain and 1,200 millimetre feedermain beneath Wilson Road.
- **Enbridge Gas:** There is an existing 200 millimetre gas line located beneath the west sidewalk and a 300 millimetre gas line beneath the east sidewalk.
- **Oshawa Power Utility Company (OPUC):** An OPUC hydro line runs along the east side of Wilson Road and crosses over Highway 401.
- **Bell**: An existing Bell conduit is located on the west side of Wilson Road terminating north and south of Highway 401.
- **Rogers:** There are both above ground and underground Rogers cables along Wilson Road.
- **Region of Durham Sanitary Sewer:** There is an existing Region of Durham sanitary sewer on Wilson Road within the study area.
- **City of Oshawa**: Municipal streetlighting exists on Wilson Road within the project limits.

5. The Recommended Plan

5.1 Design Details

As indicated, this contract (GWP 2146-20-00) involves the replacement of the Highway 401 / Wilson Road overpass including the lowering of Wilson Road and improvements to the associated embankments, retaining walls, noise barriers, drainage, illumination and signage to facilitate the replacement.

The scope of work for this contract is generally outlined as follows:

- Lowering of Wilson Road by between 1.5 to 2.0 metres to meet vertical clearance requirements associated with the Wilson Road replacement structure;
- Widening of Highway 401 at the approaches to Wilson Road to accommodate staged replacement of the overpass structure and future widening of Highway 401 to an ultimate 10-lane cross-section;
- Reconstruction of the existing Highway 401 median to the ultimate 8.5 metre width including crown shift and replacement of existing median concrete barrier with standard Tall Wall barrier;
- Crossfall modifications along Highway 401 associated with the horizontal curve east of Wilson Road;
- Construction of 5 new high mast light poles in the median to replace the existing conventional illumination;
- Replacement of existing noise barriers along Highway 401;
- Extension of the existing southbound left-turn lane along Wilson Road from Bloor Street to Highway 401;
- Reconstruction of Wilson Road including sidewalks on both sides
- Modifications to existing turnarounds along adjacent local roads (Sterling Avenue and Ortono Avenue);
- Drainage improvements to accommodate lowering of Wilson Road and localized widening of Highway 401, including replacement of the Highway 401 median storm sewer, reconstructed storm sewers beneath Wilson Road and adjacent to the south side of Highway 401 between Wilson Road and Farewell Street;
- Relocation of two Region of Durham feedermains (750 millimetres and 1,200 millimetres diameter) beneath Highway 401 to the west side of the Wilson Road replacement structure; and,

- Replacement of the existing Wilson Road overpass, with a single span structure with B900 concrete box girders, 27.7 metre clear span, and approximate width of 58.8 metres. The lengthened span will accommodate widening provisions for Wilson Road, and the widened structure will accommodate 10-lanes along Highway 401 (5-lanes in either direction) along with the eastbound off-ramp speed change lane to the Bloor Street / Harmony Road interchange.

5.1.1 Durham Region Servicing Infrastructure Relocation

The replacement of the Wilson Road Overpass with a wider bridge requires a lowering of Wilson Road in order to provide sufficient vertical clearance beneath the bridge. This work and other construction activities trigger the need to relocate various utilities along Wilson Road, including two Region of Durham feedermains which will be tunneled beneath Highway 401 west of Wilson Road. The impacted infrastructure includes:

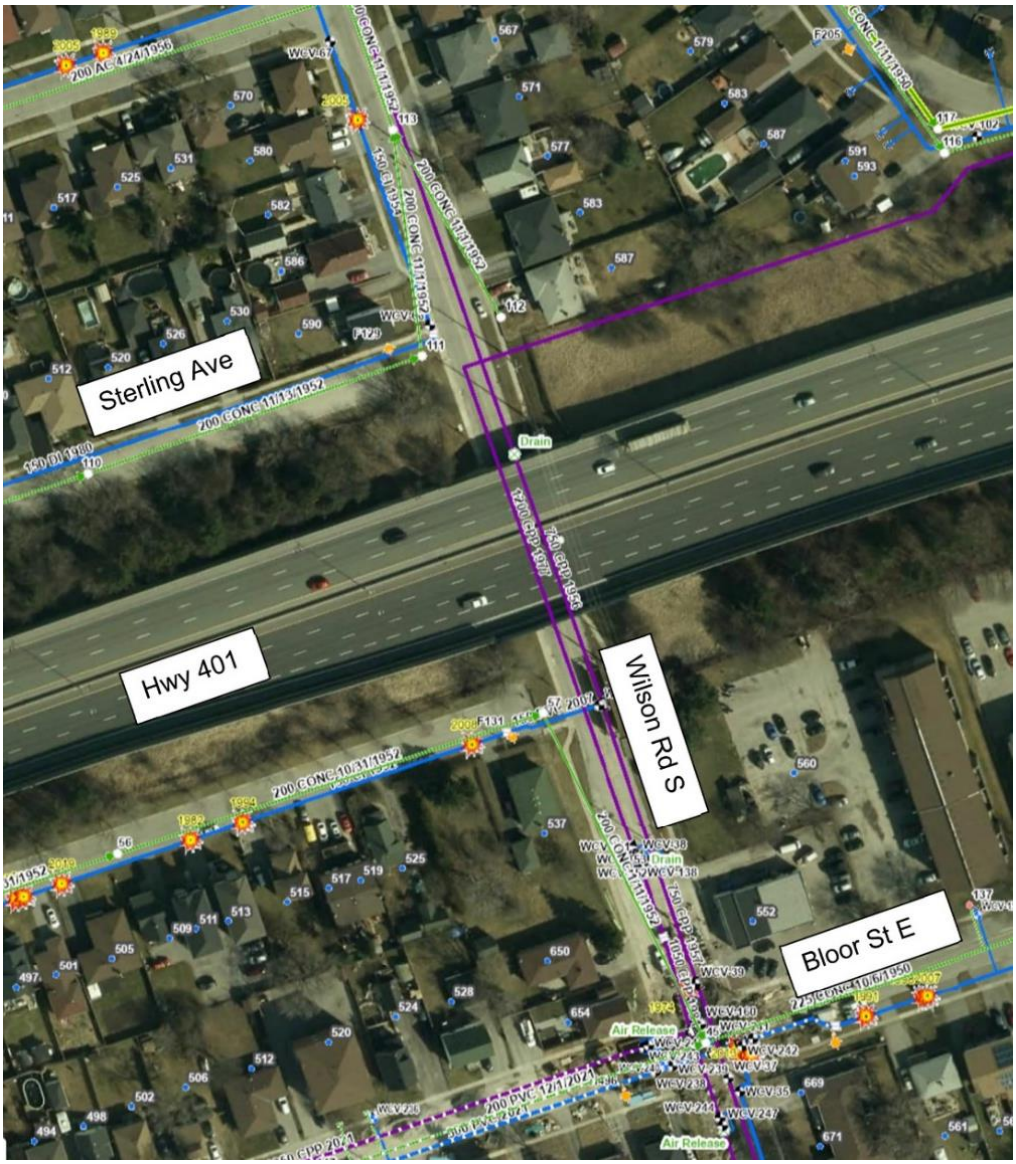
- An existing 1,200 millimetre diameter feedermain (FM);
- An existing 750 millimetre diameter feedermain (FM); and
- An existing large interconnection chamber on the existing 750 millimetre and 1200 millimetre on Wilson Road located on the south side of Highway 401 and north of Bloor Street.

Figure 6 illustrates the general location of the existing feedermains (purple), existing watermains (blue), and existing sanitary sewers (green) in the vicinity of the Wilson Road overpass. These feedermains are considered critical components of the Regions Zone 1 and 2 water supply system in Oshawa and Courtice, and the relocation work has therefore been designed so as to not take either feedermain out of service.

The Project Team worked closely with the Region of Durham to review the impacts and design requirements for the impacted infrastructure, and to undertake the design for the work. Numerous discussions were held with Region of Durham staff throughout the project specific to these relocations.

An assessment of potential alignment options for the relocation of the feedermain infrastructure was completed. The options were assessed based on a number of criteria that included the ability to implement the relocation with minimal interruption to the function of the existing feedermains, costs, public impacts (i.e., noise, traffic, pedestrian, cycling, & local business), property requirements, integration with the roadway and bridge work, and opportunity to improve redundancy.

Figure 6: Existing Municipal Servicing Infrastructure along Wilson Road



The Recommended Plan for the relocation generally includes realignment of the existing feedermains within a tunnel liner crossing beneath Highway 401, west of Wilson Road. The feedermains will be tunneled beneath Highway 401 via two sending / receiving shafts north and south of Highway 401, adjacent to the existing turnarounds at the east ends of Sterling Avenue and Ortono Avenue. The realigned feedermains will be connected to the existing feedermains along Wilson Road north and south of Highway 401 utilizing open cut trenching, and the existing feedermains will subsequently be decommissioned. Existing sanitary sewers along Wilson Road and adjacent to the feedermain will be relocated as required.

5.2 Construction Staging

The anticipated staging of this contract is expected to encompass three construction seasons as follows:

Year 1

- Relocate existing Regional watermains and sanitary sewer west of Wilson Road, including tunneling of the watermains beneath Highway 401;
- Vegetation clearing in accordance with migratory bird nesting season restrictions;

Year 2

Stage 1A

- Complete watermain replacement and connections between new feedermains west of Wilson Road and existing feedermains;
- Strengthen inside shoulders along Highway 401 to take traffic, shift traffic towards median and install temporary construction barrier (TCB) along Highway 401 outside shoulders;
- Close Wilson Road, install roadway protection along Highway 401 and remove outside portions of existing Wilson Road overpass;
- Replace storm sewer adjacent to south side of Highway 401 between Wilson Road and Farewell Street.
- Construct new bridge abutments, substructure and superstructure for north and south portions of replacement overpass;
- Commence lowering and re-construction of Wilson Road;
- Reconstruct existing Sterling Avenue and Ortono Avenue turnarounds;
- Highway 401 outside grading and paving works behind TCB;
- Replace existing noise barriers along Highway 401;
- Shift Highway 401 traffic to outside onto newly constructed roadway prior to Winter / Stage 1B configuration.

Over Winter / Stage 1B

- Wilson Road remains closed;
- Remove middle portion of existing Wilson Road overpass;

Year 3

Stage 2A

- Complete grading works for lowering of Wilson Road (Wilson Road remains closed);
- Commence construction of middle portion of replacement overpass;
- Replace existing median barrier with new Tall Wall and construct High Mast Light Poles along Highway 401 median;
- Grading and paving along Highway 401 including pavement rehabilitation and crossfall correction.

Stage 2B

- Re-open Wilson Road;
- Continue with construction of middle portion of replacement overpass;
- Continue replacement of existing median barrier with Tall Wall, construction of HMLP and re-construct median to final configuration;
- Final grading and paving works along Highway 401;
- Final paving along Wilson Road.

5.3 Property

The property required for the construction of the proposed works has been purchased by the MTO. The MTO is seeking Permission To Enter and Construct (PTEC) for the Contractor from affected property owners for the duration of the contract, to complete minor grading and driveway modifications on these properties.

5.4 Electrical

The existing conventional HPS lighting along the Highway 401 median will be removed and replaced with new LED high mast light poles (HMLP), that can accommodate lighting retrofits for the future widening of the highway to 10-lanes. Five HMLP will be constructed along the Highway 401 median as part of this contract, while the remaining HMLP extended to east of Farewell Creek will be constructed as part of a subsequent contract. Existing conventional HPS luminaires will be replaced with conventional LED luminaires on five existing median mounted light poles west of the most westerly HMLP.

The existing municipal wall mounted underpass luminaires within the Highway 401/Wilson Road overpass will be replaced in conjunction with replacement of

the structure. Existing municipal conventional lighting along Wilson Road will be relocated in conjunction with the lowering and reconstruction of Wilson Road. The new street lighting will consist of a combination of luminaires joint use on OPUC poles and independent light poles.

For the temporary staging, when the Highway 401 lanes are shifted to the outside of the corridor, temporary lighting will be provided along the north side of the WB lanes and south side of the EB lanes to maintain illumination when existing median lighting is removed from the work zone. The temporary lighting will remain in place until the new HMLP's are installed and operational.

5.5 Drainage Improvements

The re-construction including lowering of Wilson Road will require re-construction of the storm sewer system beneath the roadway. This sewer outlets to an MTO storm sewer located south of Highway 401 parallel to the eastbound lanes, which will be replaced to accommodate the revised grading and reconstruction of both Wilson Road and Highway 401. Modifications to the storm sewer system including catchbasins, manholes, leads and storm pipes will be completed as part of the contract, and will satisfy the MTO Highway Drainage Design Standard for Surface Drainage.

New or modified drainage ditches will be constructed along the outside lanes of Highway 401 as required to accommodate the reconstruction and widening of the approaches to the Wilson Road replacement overpass.

The existing median storm sewer system will be replaced within the limits of the contract. Existing median catchbasins will either be modified or fully replaced to accommodate the new median storm sewer, Highway 401 crossfall revisions and replacement of the existing concrete barrier with Tall Wall barrier.

6. Environmental Impacts, Mitigation Measures and Commitments

This section presents an overview of the potential temporary and permanent impacts to the natural, socio-economic and cultural environments, as well as transportation effects associated with the design and construction of the Recommended Plan. The environmental protection and mitigation measures proposed prior to, during and post construction to avoid or minimize the impacts including commitments to future work are also identified. A summary of mitigation, protection and future commitments is presented in **Table 7.**

6.1 Natural Environment

The proposed works will generally be confined to within the existing MTO Highway 401 right-of-way. Property acquisition is required from a number of properties along Wilson Road to construct the improvements, though these properties have since been obtained by the MTO. Impacts overall are therefore not expected to be significant and can be minimized through application of standard mitigation.

6.1.1 Erosion and Sediment Control

The excavation, placement, and grading of earth material has the potential to result in the release of sediment into roadside drainage and adjacent watercourses or waterbodies. Effective erosion and sedimentation control will be achieved throughout the project with stringent construction supervision, monitoring of the site, and maintenance of control works throughout their operational life.

Recommended Mitigation

The following Ontario Provincial Standard Specifications (OPSS) and Standard Special Provisions (SSP), will be applied to this project:

- OPSS 802 Construction Specification for Topsoil;
- OPSS 804 Construction Specification for Seed and Cover
- OPSS 805 Construction Specification for Temporary Erosion and Sediment Control Measures
- SSP 805F01 – Timing Constraints for Temporary Sediment Control Measures
- SSP 804F02 (Amendment to OPSS 804) - Timing Constraints for Temporary Erosion Control Measures

6.1.2 Vegetation and Designated Natural Areas

The Construction Disturbance Area (CDA) for the project includes the Highway 401 corridor from just east of Ritson Road to the Bloor Street East underpass, and north to south on Wilson Road South from Dieppe Avenue to Bloor Street East. The CDA is the outermost limit that will be impacted by construction activities.

Vegetation removal associated with this project is expected to be limited to within the MTO right-of-way. The dominant ELC community within the ROW was the Mineral Cultural Woodland Ecosite with Dry-Fresh Old Field Meadow Type complex (CUW1/ CUM1-1) which mostly consists of non-native vegetation characteristic of disturbed areas. As illustrated in **Table 3,** approximately 2.724 hectares of CUW1/CUM1-1 will be removed. Approximately 0.001 hectares (0.264%) of the Dry-Fresh Old Field Meadow Type (CUM1-1) will also be removed. A total of 3.085 hectares of vegetation communities (33.2% of all affected communities) are anticipated to be removed for the proposed works.

Table 3: Summary of Vegetation Community Impacts

ELC Vegetation Code	ELC Description	Sum of Total Area in Study Area	ELC Impacted by Permanent CDA	Permanent Impacted Area
CUW1/ CUM1-1	Mineral Cultural Woodland Ecosite / Dry - Moist Old Field Meadow Type Complex	9.018 hectares	2.723 hectares	30.185%
CUM1-1	Dry - Moist Old Field Meadow Type	0.265 hectares	0.001 hectares	0.264%
Total	-	9.283 hectares	2.724 hectares	29.329%

During construction there is the potential for the spread of invasive species during invasive species removals; however, mitigation will assist in keeping impacts to a minimum.

Overall, potential impacts to vegetation communities outside the existing MTO right-of-way and designated areas are anticipated to be negligible provided avoidance and mitigation measures are implemented during construction.

<u>Recommended Mitigation</u>

Implementation of the following mitigation including Ontario Provincial Standard Specifications (OPSS), Operational Constraints (OC) and other identified measures in the contract will assist in minimizing impacts to area vegetation:

- Refer to Landscaping Drawings for vegetation restoration.
- OC Control of Emerald Ash Borer Infestation and Management of Host Ash Trees

- OC Invasive Species Prevention
- OC Rehabilitation of Disturbed Areas
- OPSS-201: Construction Specification for the Clearing, Close Cut Clearing, Grubbing and Removal of Surface and Piled Boulders
- OPSS-801: Construction Specification for the Protection of Trees
- OPSS-804: Construction Specification for the Seed and Cover
- OPSS-805: Construction Specification for Temporary Erosion and Sediment Control
- OPSS-180: General Specification for the Management of Excess Materials
- Construction material shall be stored within an authorized location and any soil stockpiles shall be located within a suitable sediment fenced and protected location;
- The construction disturbance area shall be clearly delineated to define the working area and to prevent accidental intrusion into adjacent vegetation;
- Vegetation removal, grading and soil compaction should be kept to a minimum;
- Tree removal should be limited to the construction disturbance limits. Should additional laydown areas be required they should be located away from treed habitats.

6.1.3 Wildlife and Wildlife Habitat (Including Terrestrial SAR)

Vegetation removal is limited within the MTO ROW where breeding bird habitat is limited to trees, shrubs and dense ground cover; however, this still has the potential to disturb or displace birds or destroy their active nests including species protected under the MBCA if conducted during the breeding bird season of April 1 to August 31.

Although no nests of MBCA-protected species or Barn Swallow were identified on, under or in structures likely affected by construction activities, there is potential for future nesting. Structure replacement may also result in the disturbance or displacement of birds protected under the MBCA and destruction of their nests if conducted during the overall bird nesting period of April 1 to August 31.

Acoustic Surveys concluded that the Tricoloured Bat and Little Brown Myotis may use the area to forage; however, foraging habitat is not afforded protection under the ESA. These species do not roost within the subject wooded area (considered poor quality roost habitat) and these species are likely roosting in forested habitat located in the larger Study Area or greater landscape. A permit under the Endangered Species Act will not be required for the works proposed.

Disturbance or displacement of wildlife including SOCC may result from increased noise and human activity during construction. Wildlife within the surrounding area, although likely already adapted to and tolerant of existing anthropogenic sources of noise (i.e., adjacent roads) may be temporarily disturbed or displaced initially by increased noise emissions from construction activities, including use of heavy equipment; however, wildlife can become habituated to temporarily increased noise levels. Wildlife may enter the construction work area and become susceptible to accidental injury or mortality associated with construction machinery and equipment if not mitigated.

Based on the current design, habitat for Chimney Swift occur beyond the CDA and therefore are not anticipated to be impacted. None of the eight residential structures to be demolished have suitable chimneys for Chimney Swift.

Overall, the potential to adversely impact wildlife and wildlife habitat, including SAR, is anticipated to be negligible provided avoidance and mitigation measures are implemented during construction.

Recommended Mitigation

- To avoid impacts to migratory birds, vegetation removals shall be scheduled to avoid the breeding bird season (April 1 to August 31st).
- If vegetation removal must occur within the breeding bird season (April 1 to August 31st), active nest searches must be conducted prior to vegetation removal by a qualified biologist to ensure that no active nests of breeding migratory birds or bird SAR are destroyed, in order to prevent contravention of the MBCA or the ESA;
- If building demolitions cannot occur outside of the breeding bird season (April 1 to August 31), a nest sweep completed by a qualified biologist must be completed within 48 hours of demolition date to screen the building for any nesting MBCA birds.
- Bank Swallow - In order to prevent Bank Swallow from nesting in stockpiles of soil, overburden or other similar materials, all slopes created by stockpiling material in the Project Limits shall be maintained at 1:1 or flatter for the duration of the overall bird nesting period from April 1 to August 31. This would apply to any location of stockpiled material. While these species were not observed during site visits this is included as a preventative measure. While this species was not observed during site visits this mitigation is included as a preventative measure.
- If birds are observed nesting in, under or on the Highway 401/Wilson Road overpass prior to or during construction activities, construction work in the immediate area must stop until a qualified biologist should be consulted to and determines the appropriate steps taken to reduce impacts to wildlife and avoid a potential contravention of the MBCA.

The following Ontario Provincial Standard Specifications (OPSS), Special Provisions (SP), Non-standard Special Provisions (NSSP), Operational Constraints (OC) and other identified measures will assist in mitigating potential impacts to breeding birds and area wildlife, including SAR:

- OC Migratory Bird Protection
- OC Wildlife Protection
- OC Protection of Species at Risk

6.1.4 Fish and Fish Habitat

No in-water work is proposed as part of Contract A and work in proximity to Crossing #1 and #2 is limited to minor grading as follows:

- **West End of Contract / Crossing #1** – The construction limits will extend to Crossing #1 (Unnamed Tributary of Lake Ontario) adjacent to Montgomery Street; however, work will be limited to resurfacing of Highway 401 only with no work off the highway.
- **East End of Contract / Crossing #2** – The limits of construction will extend to Crossing #2 (Tributary of Harmony Creek), however, work adjacent to this crossing will generally be limited to paving along Highway 401.

Since the works proposed at both locations are expected to be minor (possibly grading, ditching, staging) it was confirmed through discussion with MTO that the work proposed would be categorized as Routine Works under Table 2 – 1: Routine MTO Works (per the Interim Environmental Guide for Fisheries, 2020), where:

- Work/undertaking/activity is within 30 metres of a waterbody and is a type of Routine MTO Works (Table 2-1); and,
- All appropriate mitigation measures outlined in OPSS.PROV 182 General Specifications for Environmental Protection for Construction in and around Waterbodies and on Waterbody Banks can be applied.

Given the above, no approvals are required for the work proposed. There is a low potential to impact fish and fish habitat provided standard measures for erosion and sediment control and for working in proximity to watercourses are implemented.

Recommended Mitigation

The following measures including Ontario Provincial Standard Specifications (OPSS) and Standard Special Provisions (SSP) will assist in minimizing potential impacts to fish and fish habitat:

- SSP 805F01 – Timing Constraints for Temporary Sediment Control Measures
- SSP 804F02 (Amendment to OPSS 804) - Timing Constraints for Temporary Erosion Control Measures
- OPSS 182 General Specification for Environmental Protection for Construction In and Around Waterbodies and on Waterbody Banks
- OPSS 802 Construction Specification for Topsoil
- OPSS 804 Construction Specification for Seed and Cover
- OPSS 805 Construction Specification for Temporary Erosion and Sediment Control Measure

6.1.5 Drainage and Hydrology

During construction there is the potential to impact surface water through the accidental spillage of harmful substances from refueling and/or equipment maintenance. Erosion can also occur and result in sediment entering the watercourse. Overall, it is anticipated that impacts to surface water and area drainage during construction will be minimal provided the standard measures for working in and around water are followed.

Recommended Mitigation

The following standard Ontario Provincial Standard Specifications (OPSS) will also apply to this project:

- OPSS 517 – Construction Specification for Dewatering
- OPSS 805 – Construction Specification for Temporary Erosion and Sediment Control Measures
- OPSS 804 – Construction Specification for Seed and Cover
- OPSS 180 – General Specification for the Management of Excess Materials
- OPSS 100 General Conditions of Contract, Section GC 7.13.02 Environmental Incident Management.

6.1.6 Groundwater

As part of this undertaking an assessment was completed to determine if groundwater dewatering activities will be required to facilitate construction, including determining if an Environmental Activity and Sector Registry (EASR) or Permit-To-Take-Water (PTTW) would be necessary to address groundwater dewatering activities. In general, water taking is expected at the following locations:

- Highway 401/Wilson Road Bridge Replacement;
- Feedermain adjacent to Wilson Road using tunnel boring and shafts; and
- Storm Sewer replacement along south side of Highway 401 from Wilson Road to Farewell Street

A comparison was made of the anticipated lowest excavation elevation and the maximum groundwater level so as to calculate anticipated groundwater dewatering rates. The assessment determined that the water taking volume associated with the necessary foundation and service construction dewatering is expected to exceed 400 m^3/day and therefore will require an MECP Category 3 Permit To Take Water. One overall Category 3 PTTW can be obtained for the project.

The current information is considered preliminary as the task of determining dewatering methods including the design and installation of the construction dewatering system is the responsibility of the future MTO Contractor. A detailed dewatering scheme will be developed by the Contractor based on their analysis of the site conditions and the project dewatering performance objectives for stable slopes and dry working conditions.

Recommended Mitigation

Application of the following standard measures will assist in minimizing impacts to groundwater:

- SP199F31 Environmental Exemptions and Permits
- O. Reg 63/16
- O. Reg 387/04
- OPSS 517 Construction Specification for Dewatering

6.2 Socio-Economic Environment

6.2.1 Land Use and Property

Property acquisition was required from a number of properties along Wilson Road to construct the improvements. Affected properties have since been acquired by the MTO. The MTO is also seeking Permission to Enter and Construct (PTEC) for affected private properties on Wilson Road to complete minor grading activities and driveway reconstruction.

Wilson Road will be fully closed to traffic between Bloor Street and Dieppe Avenue for a portion of the construction contract to facilitate re-construction and lowering of Wilson Road, relocation of the existing Region of Durham feedermains, and replacement of the existing Wilson Road overpass. While the roads are closed to through traffic, access to the private residential driveways along this stretch of Wilson Road will be maintained by the Contractor during construction. Should short duration disruption be required to any existing residential or business accesses, property owners will be advised in advance of the disruption regarding the scope and timelines of the work.

While Wilson Road is fully closed to traffic, pedestrian access will also be restricted beneath the Highway 401/Wilson Road overpass. Given that the David Bouchard Public School is located on Wilson Road approximately 0.40 kilometres north of Highway 401 students who walk to school from the south side of Highway 401 will be impacted by the closure of Wilson Road during construction.

Recommended Mitigation

The Contract Package will include advanced notification to Emergency Services, Municipalities, Durham Student Transportation Services and Durham Region Transit prior to construction as detailed in the following Tender Document items:

- Operational Constraint – Notice of Work – Agencies
- Operational Constraint – Durham Student Transportation Services

6.2.2 Navigation

Since no in-water work is proposed there is no potential to impact the navigation of a non-scheduled waterway and an approval is not required from Transport Canada. No further agency discussion or approval regarding navigation is required for Contract A.

6.2.3 Noise

Construction activities will include removals/demolition, bridge construction, road construction, watermain tunnel compound, and open cut utilities as well as potential piling operations. As such construction will include the operation of heavy equipment vehicles (i.e., backhoe, crane, dozer, semi-trucks, dump trucks, excavator, loader, etc.) as well as the use of construction equipment (i.e., air compressor, concrete saw, generator, jackhammer, etc.) and night work will be required.

The construction noise assessment concluded that construction noise levels due to the Project will range, depending on location and proximity to construction, between 59 and 109 dBA at the representative receptor locations. All locations are predicted to be above the 70 dBA night time basis of assessment, indicating that noise disturbance will be likely when construction is closest to the residences. The worst case impacts are at the locations adjacent to the watermain tunnel compounds and utility works. However, this assessment was based upon conservative assumptions, such as the construction equipment operating at the closest point of the construction areas to the NSAs without any shielding effects and therefore, actual noise levels will likely be lower than the predicted noise levels.

The highest noise levels will be due to select equipment (mounted impact hammer, pavement removal, jackhammer, and concrete saw) during the pavement removals and road construction. These activities are transient in nature and should not be in a single location for a long duration.

While construction noise is temporary in nature and will cease at the end of the construction activities; it can be a cause of disturbance to the surrounding noise sensitive areas.

Although Ontario does not have any applicable regulatory noise level limits for construction noise impacts on NSAs, construction noise disturbance and potential for complaints can be reduced with the implementation of best practices and other noise control measures.

Recommended Mitigation

The MTO Environmental Guide for Noise (MTO Guide 2006) requires that construction noise be controlled and mitigated. The responsibility of this is typically split between the construction contractor and contract administrator.

The following noise mitigation measures as identified in SP199F33 Construction Noise Constraints of the Contract Documents will apply to this project:

- The noise sensitive areas are defined as the contract limits.
- Equipment Maintenance - Equipment shall be maintained in an operating condition that prevents unnecessary noise, including but not limited to non-defective muffler systems, properly secured components, and the lubrication of moving parts.
- Equipment Operation - Idling of equipment shall be restricted to the minimum necessary to perform the specified work.
- Tunneling Compound - Use upgraded construction hoarding to protect adjacent properties for excessive noise levels.
- Pile Driving - shall be limited to times outside the following: From 7:00 p.m. (5:00 p.m. on Sundays) to 7:00 a.m. (9:00 a.m. on Sundays) and at all times on statutory holidays.

6.2.4 Climate Change

Climate change concerns relate to the increased concentration of greenhouse gases in the atmosphere which can result in increased temperatures worldwide ultimately resulting in extreme weather events. The current undertaking considered both the potential for the project to impact climate change and the potential impact that climate change may have on the project.

The current undertaking primarily involves the improvement/replacement of existing transportation infrastructure within the Highway 401 corridor and Wilson Road. The reconstruction will maintain an adequate level of service post construction and it is not expected that the emission of greenhouse gases will significantly increase over existing conditions. The project will not directly or indirectly contribute to or diminish the resilience of surrounding ecosystems to climate change. Minimal vegetation removal is required and is limited to within the existing corridor. The planned improvements also provide opportunity to improve existing active transportation at the subject location which may make the location more pedestrian friendly which can assist in potentially reducing vehicular greenhouse gas emissions.

Climate change has the potential to result in increased storm events that can lead to flooding. Completion of the proposed improvements provide opportunity to review and upgrade area stormwater infrastructure which will assist in making the area less vulnerable to climate change.

New or modified drainage ditches will be constructed along the outside lanes of Highway 401 as required to accommodate the reconstruction and widening of the approaches to the Wilson Road replacement overpass.

The existing median storm sewer system will be replaced within the limits of the contract. Existing median catchbasins will either be modified or fully replaced to accommodate the new median storm sewer, Highway 401 crossfall revisions and replacement of the existing concrete barrier with Tall Wall barrier. Recommended Mitigation

Provisions to minimize potential impacts to climate change during construction include standard best management practices as follows:

- Minimize impacts to existing vegetation and re-vegetate where possible.
- No unnecessary idling of vehicles.

6.2.5 Air Quality

Construction activities have the potential to generate dust and fumes which can negatively impact air quality. However, these impacts will be limited to the construction period and are not considered a recurring activity. Contract provisions will minimize impacts to adjacent properties during construction (e.g., dust control measures). It is therefore not expected that construction will result in significant impact to air quality.

Recommended Mitigation

Provisions to minimize potential air quality impacts during construction include the following best management practices:

- Application of standard best management practices during construction to maintain air quality including no unnecessary idling of vehicles.
- Covering stockpiles of soil and sand.
- Regular cleaning of construction sites and access roads to remove debris and dust caused by construction.
- OPSS 100 ‘General Conditions of Contract’, GC 7.07 Application of dust suppressants to control dust generated by construction activities (as required).
- SP199S56 Control of Emissions During Structural Work

6.2.6 Waste and Contamination

Excavated soil will be generated from the construction activities. While some of the excavated soil can be reused on site, a significant of amount of excess soil will need to be managed off site for beneficial reuse or disposal. It is not expected that designated substances or areas of contamination will be encountered during construction; however, instruction will be included in the Contract documents to address these items.

Recommended Mitigation

The following mitigation as included in the Tender Documents will be implemented to address Designated Substances, waste management and excess soil:

- SP ENVR0014 - AMENDMENT TO OPSS 180, NOVEMBER 2016 - Compliance With Ontario Regulation (O. Reg.) 406/19 for On Site and Excess Soil Management
- OPSS 180 Management of Excess Materials
- SP101F21 Occupational Health and Safety Act Compliance
- OC Control Measures During Removal of Concrete / Structure
- OC Management of Effluent from Concrete Cutting / Grinding

6.3 Cultural Environment

6.3.1 Archaeological Resources

The Stage 1 Archaeological Assessment completed during the preceding Preliminary Design phase that included the current study area and the subsequent Stage 2 Archaeological Assessment completed for the current undertaking found no archaeological potential within the area of study and concluded that no further archaeological assessment is required. The project study area is therefore considered to be cleared of archaeological concerns. The Ministry of Citizenship and Multiculturalism (MCM) provided a letter dated April 1, 2015 indicating acceptance of the Stage 1 report). The Stage 2 Archaeological report for Contract A will also be sent to MCM to be entered into the Register.

Recommended Mitigation

The contractor will be required to follow the direction as outlined in OPSS 100 General Conditions of Contract, Section GC 3.07.05:

- In the event that previously unknown or unassessed deeply buried archaeological resources are uncovered during construction, the contractor shall immediately notify the Contract Administrator. Work shall remain suspended within the subject area until otherwise directed by the Contract Administrator in writing, according to subsection GC 7.11, Suspension of Work. The CA will contact the MTO representative who will confirm the need to engage a licensed consultant archaeologist to carry out any archaeological field work, in compliance with Section 48 (1) of the Ontario Heritage Act.
- In the event that human remains are encountered during construction, the contractor shall immediately notify the Contract Administrator. Work shall remain suspended within the subject area until otherwise directed by the Contract Administrator in writing, according to subsection GC 7.11, Suspension of Work. The CA will contact the MTO representative who will notify the police, coroner and the Registrar of the Bereavement Authority of Ontario.

6.3.2 Built Heritage Resources

A Built Heritage and Cultural Heritage Landscapes Assessment Report (URS, April 2013) was prepared in support of the Preliminary Design and EA Study (Group ‘B’) completed in 2015 for the segment of Highway 401 extending from Brock Road to Courtice Road, which included the subject area of study. As part of that undertaking it was confirmed that there are no heritage features in the vicinity of the subject detailed design area of study. The Wilson Road Bridge was also screened previously and it was confirmed that no further assessment is required.

No mitigation is required to address the protection of cultural heritage resources for Contract A.

6.4 Transportation and Other Infrastructure

6.4.1 Utilities

Anticipated impacts to existing utilities within the project limits and the planned mitigation is summarized below:

- **Region of Durham Water:** the existing 750 millimetre and 1,200 millimetre feedermains beneath Wilson Road will be relocated away from the existing roadway beneath Highway 401. The feeder mains will be tunneled beneath Highway 401 west of the new bridge. This relocation will be completed as part of the overall construction contract.
- **Region of Durham Sanitary Sewer:** Modifications to existing Region of Durham sanitary sewer along Wilson Road will be required to accommodate the lowering and reconstruction of Wilson Road. These works will be included as part of the overall construction contract.
- **Enbridge Gas:** a 200 millimetre gas line beneath the west sidewalk and a 300 millimetre gas line beneath the east sidewalk will be relocated in advance of construction. The two lines will be relocated deeper beneath existing Wilson Road to accommodate the proposed road lowering. The gas lines will be relocated in advance of construction.
- **Oshawa Power Utility Company (OPUC):** an OPUC hydro line runs along the east side of Wilson Road and crosses over Highway 401. Multiple OPUC hydro poles including the lines over Highway 401 will be relocated to the east, in advance of construction.
- **Bell**: an existing Bell conduit located on the west side of Wilson Road terminates north and south of Highway 401. Minor adjustments to the Bell conduit are required to accommodate the lowering of Wilson Road. These works will be completed in advance of construction.
- **Rogers:** Both above ground and underground Rogers cables along Wilson Road will be impacted by construction activities and will be relocated in advance of construction.
- **City of Oshawa Streetlighting:** The existing municipal streetlighting on Wilson Road will be relocated as part of the MTO construction contract.

6.4.2 Lane Restrictions/Closures

During the period of construction, the following impacts to traffic are anticipated:

- The existing six lanes along Highway 401 will be maintained during peak periods, with night-time lane closures in both the eastbound and westbound directions;
- The eastbound off-ramp speed change lane to Bloor Street will be reduced during some stages of construction to begin east of the Wilson Road structure.
- Occasional night-time or weekend closures of the following ramps will be required, including:
  - Ramp Highway 401 W – Bloor Street E/W (eastbound off-ramp)
  - Ramp Bloor / Harmony Road N/E/W – Highway 401 W (westbound on-ramp)
  - Ramp Bloor Street E/W – Highway 401 E (eastbound on-ramp west of Ritson Road)
- A full closure of Wilson Road between Bloor Street and Dieppe Avenue is required, anticipated from early-2025 to mid-2026. Occasional night-time and weekend partial or full closures may be required during other periods. The signed detour route includes a combination of Bloor Street / Ritson Road / Olive Avenue.

Recommended Mitigation

In order to safely accommodate traffic and complete construction in a timely and efficient manner, construction staging will be implemented to facilitate the proposed improvements and keep impacts to traffic flow to a minimum. A signed detour route will be required during closure of Wilson Road with advance notification provided. Refer to Section 5.2 for additional information pertaining to the planned construction staging requirements.

6.5 Summary of Environmental Concerns, Mitigating Measures and Commitments

The proposed mitigation measures and commitments to future work to address specific concerns associated with the detail design are listed in **Table 5**.

Legend:
MTO – Ministry of Transportation
MNRF – Ministry of Natural Resources and Forestry
MECP – Ministry of the Environment and Climate Change
MCM – Ministry of Citizenship and Multiculturalism Culture (MCM)
MUN – City of Oshawa
CLOCA – Central Lake Ontario Conservation Authority

Table 4: Summary of Environmental Concerns, Mitigation Measures and Commitments

ID #	Environmental Element / Concern and Potential Impact	Concerned Agencies	ID#	Details/Mitigation Mitigation/Protection/Monitoring/Future Commitments
1.0	General	MTO / MECP / MNRF / CLOCA	1.01	OC General Environmental Protection OPSS 100 General Conditions of the Contract
2.0	Erosion & Sediment Control	MTO / MECP / MNRF / CLOCA	2.01	OPSS 802 – Construction Specification for Topsoil
			2.02	OPSS 804 - Construction Specification for Seed Cover
			2.03	OPSS 805 - Construction Specification for Temporary Erosion and Sediment Control Measures
			2.04	SSP 805F01 – Timing Constraints for Temporary Sediment Control Measures
			2.05	SSP 804F02 – Timing Constraints for Temporary Erosion Control Measures
3.0	Vegetation Communities & Designated Environmental Areas	MTO / MECP / MNRF / CLOCA / MUN	3.01	Refer to Landscaping drawings for vegetation restoration
			3.02	OC Control of Emerald Ash Borer Infestation and Management of Host Ash Trees
			3.03	OC Invasive Species Prevention
			3.04	OC Rehabilitation of Disturbed Areas
			3.05	OPSS-201: Construction Specification for the Clearing, Close Cut Clearing, Grubbing and Removal of Surface and Piled Boulders
			3.06	OPSS-801: Construction Specification for the Protection of Trees
			3.07	OPSS-804: Construction Specification for the Seed and Cover
			3.08	OPSS-805: Construction Specification for Temporary Erosion and Sediment Control
			3.09	OPSS-180: General Specification for the Management of Excess Materials
			3.10	■ Construction material shall be stored within an authorized location and any soil stockpiles shall be located within a suitable sediment fenced and protected location; ■ The construction disturbance area shall be clearly delineated to define the working area and to prevent accidental intrusion into adjacent vegetation; ■ Vegetation removal, grading and soil compaction should be kept to a minimum; ■ Tree removal should be limited to the construction disturbance limits. Should additional laydown areas be required they should be located away from treed habitats.
4.0	Wildlife, Terrestrial Species at Risk	MTO / MECP / MNRF / CLOCA	4.01	To avoid impacts to migratory birds vegetation removal, including clearing and grubbing, shall be scheduled to avoid the breeding bird season (April 1 to August 31st).
			4.02	If vegetation removal must occur within the breeding bird season (April 1 to August 31st), active nest searches must be conducted prior to vegetation removal by a qualified biologist within ‘simple habitats’ (e.g., manicured lawn) or if minor vegetation clearing is required, to ensure that no active nests of breeding migratory birds or bird SAR are destroyed, in order to prevent contravention of the MBCA or the ESA.
			4.03	If building demolitions cannot occur outside of the breeding bird season (April 1 to August 31), a nest sweep completed by a qualified biologist must be completed within 48 hours of demolition date to screen the building for any nesting MBCA birds.
			4.04	In order to prevent Bank Swallow from nesting in stockpiles of soil, overburden or other similar materials, all slopes created by stockpiling material in the Project Limits shall be maintained at 1:1 or flatter for the duration of the overall bird nesting period from April 1 to August 31. This would apply to any location of stockpiled material.
			4.05	If birds are observed nesting in, under or on the Highway 401/Wilson Road overpass (Site No. 22-180) prior to or during construction activities, construction work in the immediate area must stop until a qualified biologist should be consulted to and determines the appropriate steps taken to reduce impacts to wildlife and avoid a potential contravention of the MBCA.
			4.06	The Contractor shall avoid destroying nests of migratory birds.
			4.07	OC Migratory Bird Protection
			4.08	OC Wildlife Protection
			4.09	OC Protection of Species at Risk

ID #	Environmental Element / Concern and Potential Impact	Concerned Agencies	ID#	Details/Mitigation Mitigation/Protection/Monitoring/Future Commitments
5.0	Fish and Fish Habitat	MTO / DFO / MECP / MNRF / CLOCA	5.01	SSP 805F01 – Timing Constraints for Temporary Sediment Control Measures
			5.02	SSP 804F02 – Timing Constraints for Temporary Erosion Control Measures
			5.03	OPSS 182 General Specification for Environmental Protection for Construction In and Around Waterbodies and on Waterbody Banks
			5.04	OPSS 804 Construction Specification for Seed and Cover
			5.05	OPSS 805 Construction Specification for Temporary Erosion and Sediment Control Measure
6.0	Drainage/Hydrology & Surface Water	MTO / MECP / CLOCA	6.01	OPSS 517 – Construction Spec. for Dewatering
			6.02	OPSS 805 – Construction Specification for Temporary Erosion and Sediment Control Measures
			6.03	OPSS 804 – Construction Specification for Seed and Cover
			6.04	OPSS 180 – General Specification for the Management of Excess Materials
			6.05	OPSS 100 General Conditions of Contract, Section GC 7.13.02 Environmental Incident Management.
7.0	Groundwater	MTO / MECP	7.01	SP199F31 Environmental Exemptions and Permits
			7.02	OPSS 517 Construction Spec for Dewatering
			7.03	O. Reg 63/16
			7.04	O. Reg 387/04
8.0	Land Use and Property	MTO / MUN / EMS	8.01	Advance notification to be provided to appropriate representatives from Durham Region, City of Oshawa, and emergency services as outlined in OC Notice of Works – Agencies
			8.02	Advance notification to be provided to appropriate representatives from Durham Student Transportation Services as outlined in OC Durham Student Transportation Services
			8.03	Advance notification to be provided to appropriate representatives from Durham Region Transit as outlined in OC Durham Region Transit Notification
9.0	Noise	MTO / MECP / MUN	9.01	SP199F33 Construction Noise Constraints
			9.02	SP Structure Monitoring
			9.03	SP Vibration Monitoring
10.0	Climate Change	MTO / MECP / MUN	10.01	Minimize impacts to existing vegetation and re-vegetate where possible.
			10.02	No unnecessary idling of vehicles
11.0	Air Quality	MTO / MECP / MUN	11.01	Application of standard best management practices during construction to maintain air quality including no unnecessary idling of vehicles
			11.02	Covering stockpiles of soil, sand and aggregate
			11.03	Regular cleaning of construction sites and access roads to remove debris and dust caused by construction.
			11.04	Application of dust suppressants to control dust generated by constriction activities (as required).
			11.05	OPSS 100 ‘General Conditions of Contract’, GC 7.07 - Requirement to control dust so that it does not affect traffic, enter surface waters, or escape beyond the right-of-way to cause a nuisance to residents, business or utilities.
			11.06	SP199S56 Control of Emissions During Structural Work
12.0	Landscaping	MTO / MECP / CLOCA	12.01	SP Requirements for Planting
			12.02	OPSS 802 Construction Spec for Topsoil
			12.03	OPSS 803 Construction Spec for Seed
			12.04	OPSS 804 Construction Spec for Seed and Cover
			12.05	OPSS 805 Construction Spec for Temporary Erosion Control
13.0	Contamination & Waste Management	MTO / MECP / MUN	13.01	SP ENVR0014 - AMENDMENT TO OPSS 180, NOVEMBER 2016 - Compliance With Ontario Regulation (O. Reg.) 406/19 for On Site and Excess Soil Management
			13.02	SP101F21 Occupational Health and Safety Act Compliance
			13.03	OC Control Measures During Removal of Concrete / Structure
			13.04	OC Management of Effluent From Concrete Cutting / Grinding

ID #	Environmental Element / Concern and Potential Impact	Concerned Agencies	ID#	Details/Mitigation Mitigation/Protection/Monitoring/Future Commitments
14.0	Archaeological Resources	MTO / MCM	14.01	The contractor will be required to follow the direction as outlined in OPSS 100 General Conditions of Contract, Section GC 3.07.05: ■ In the event that previously unknown or unassessed deeply buried archaeological resources are uncovered during construction, the contractor shall immediately notify the Contract Administrator. Work shall remain suspended within the subject area until otherwise directed by the Contract Administrator in writing, according to subsection GC 7.11, Suspension of Work. The CA will contact the MTO representative who will confirm the need to engage a licensed consultant archaeologist to carry out any archaeological fieldwork, in compliance with Section 48 (1) of the Ontario Heritage Act. ■ In the event that human remains are encountered during construction, the contractor shall immediately notify the Contract Administrator. Work shall remain suspended within the subject area until otherwise directed by the Contract Administrator in writing, according to subsection GC 7.11, Suspension of Work. The CA will contact the MTO representative who will notify the police, coroner and the Registrar of the Bereavement Authority of Ontario.

7. Monitoring

7.1 Construction Monitoring

During the completion of the Detail Design, the contract drawings and specifications were developed to allow the project to be tendered for construction. There is a possibility that minor design modifications or refinements may be required as a result of recommendations made by the Contractor, which could result in environmental benefits or impacts that may not have been anticipated or identified in this document. Should this occur, the modifications are not anticipated to alter the basic intent of the undertaking. Pertinent changes resulting from significant design modifications/refinements will be discussed with MTO staff and appropriate external agencies prior to construction, as deemed necessary.

During construction, monitoring and on-site inspection should be undertaken to ensure that implementation of the mitigation measures and key design features comply with the DCR, permits and approvals, as applicable, and the contract documents, and to monitor the effectiveness of mitigation measures, including the need for additional measures or management, where needed.

Monitoring measures will include:

- The inspection of implemented mitigation measures to ensure that they are installed as per the specification and effective.
- Where mitigation measures are not in compliance, deficiencies will be noted in a monitoring log and recommendations for corrective actions will be provided to the Contract Administrator.
- Mitigation measures are maintained and any necessary repairs completed quickly; and
- Additional mitigation measures are provided, as required, for any unanticipated environmental concerns that may develop during construction.

7.2 Contract Administration

Contract Administration for this project will ensure effective translation of measures to protect environmental sensitivities. It is noted that environmental effects can be mitigated through implementation of Best Construction Management Practices, as provided in the OPSSs, and SSPs and NSSPs contained in the Contract Package, and implementation of the prescribed Construction Monitoring.

An Environmental Inspector will ensure that the environmental protection measures outlined in this report and in the subsequent contract document/specifications are carried out. In the event that issues arise, appropriate MTO and external agency representatives will be contacted to provide additional input and to address specific notification requirements as may be required under specific legislation.