

Design and Construction Report (DCR)

Highway 400/Simcoe Road 88 Interchange Town of Bradford West Gwillimbury, County of Simcoe (G.W.P. 2331-16-00)

Detail Design and Class Environmental Assessment for
Provincial Transportation Facilities (2000), Group 'B' Project

Ontario Ministry of Transportation

Project Delivery, York West/Simcoe
Transportation Infrastructure Management Division

Prepared for:

Ministry of Transportation
Project Delivery, York West/ Simcoe
Transportation Infrastructure
Management Division

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Prepared by:

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December 2023



**HIGHWAY 400 / SIMCOE ROAD 88 INTERCHANGE
TOWN OF BRADFORD WEST GWILLIMBURY, COUNTY OF SIMCOE
DETAIL DESIGN CLASS ENVIRONMENTAL ASSESSMENT (GROUP 'B')
G.W.P. 2331-16-00
DESIGN AND CONSTRUCTION REPORT**

Prepared for the Ministry of Transportation by Stantec Consulting Ltd.

Prepared by:



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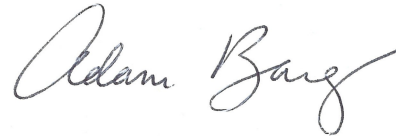
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Ontario Ministry of Transportation
Highway 400 / Simcoe Road 88 Interchange

DESIGN AND CONSTRUCTION REPORT

G.W.P. 2331-16-00

The Design and Construction Report (DCR) documents the detail design and associated environmental protection measures associated with the reconstruction of the Highway 400/Simcoe Road 88 Interchange, including the replacement of the Highway 400 underpass at Simcoe Road 88 and associated improvements on Highway 400.

The DCR is available for a 30-day public comment period beginning **December 14, 2023 and ending on January 15, 2024** at the following locations:

- Town of Bradford West Gwillimbury website:
<https://www.townofbwg.com/en/index.aspx>
- Town of Bradford West Gwillimbury public library

Interested persons may provide written comments to the following project team members by **January 15, 2024**:

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

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

and

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

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

Ce document hautement spécialisé n'est disponible qu'en anglais en vertu du règlement 411/97, qui en exempte l'application de la Loi sur les services en français. Pour de l'aide en français, veuillez communiquer avec le ministère des Transports, Bureau des services en français au (905) 704-2045 ou (905) 704-2046.



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Executive Summary

The Ontario Ministry of Transportation (MTO) retained Stantec Consulting Ltd. (Stantec) to complete the Detail Design and Class Environmental Assessment (EA) study for the reconstruction of the Highway 400 / Simcoe Road 88 Interchange, including the replacement of the Highway 400 underpass at Simcoe Road 88 and associated improvements on Highway 400.

This Design and Construction Report (DCR) documents detail design and has been completed in accordance with the MTO *Class Environmental Assessment for Provincial Transportation Facilities (2000)* (Class EA) approved process for Group 'B' projects as classified at the time of project initiation.

The purpose of this project is to replace the existing Highway 400 / Simcoe Road 88 Underpass due to structural deficiencies, and to reconfigure the interchange to accommodate the widening of Highway 400 to 10 lanes with a southbound auxiliary lane for the heavy (east to south) traffic movement from the future Highway 400 / Bradford Bypass Interchange to the north.

The Recommended Plan includes the following improvements:

- Replacement of the Highway 400 underpass (Site 30X-0309/B0) at Simcoe Road 88 to accommodate widening of Highway 400 to an ultimate 10-lane cross section with a southbound auxiliary lane
- Widening of Simcoe Road 88 from two to four lanes and the addition of a raised island median between the new ramp terminals
- Reconstruction of the Highway 400 / Simcoe Road 88 Interchange to a Parclo A4 configuration
- Widening the platform of Highway 400 to accommodate the ultimate 10-lane cross section in the vicinity of the Simcoe Road 88 interchange
- A portion of the southbound auxiliary lane for the Bradford Bypass East to South (E-S) on-ramp will also be constructed. In the interim, Highway 400 traffic will be positioned in the ultimate outside lanes in the northbound and southbound directions. Temporary concrete barrier will be left-in-place to block off the additional paved area in the median
- Reconstruction of the existing commuter parking lot, including an access to / from Simcoe Road 88



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- Realigning a portion of McKinstry Road further east to accommodate the new East to North (E-N) ramp at the interchange with a new intersection on Simcoe Road 88 opposite the Esso / Husky Travel Centre entrance

The Notice of Study Commencement was issued on May 23, 2019 and included notification to external agencies, elected officials, municipal staff, Indigenous communities, and stakeholder groups. Letters were sent to provide information about the project and to obtain information relevant to the project regarding their interests.

The Notice of Study Commencement Ontario Government Notice (OGN) was attached to the letters, along with a comment form seeking input. Comments received were responded to, and communication has been summarized in this report. Affected property owners were sent a letter on May 27, 2019 and were engaged for fieldwork coordination and throughout the property acquisition process to keep them informed regarding project status.

Regular correspondence and coordination meetings occurred with the Town of Bradford West Gwillimbury and Simcoe County to discuss design standards, utility relocation requirements, McKinstry Road realignment, and construction staging / detour routes.

The majority of the proposed improvements within the study area can be completed without significant adverse effects to the existing natural, socio-economic, and cultural environments and mitigation measures have been provided where applicable. Some permanent terrestrial environmental impacts are anticipated as a result of the increased right-of-way (ROW) footprint, including the removal of 30 trees (25 trees of which were identified as potential bat species at risk SAR). Tree removal will not occur between April 1 to September 30 of any given year. Advanced clearing of non-SAR bat habitat for the project is planned to commence in early December 2023 and be completed by the end of January 2024. The 25 trees will not be removed until approval from MECP has been received.

Direct fish habitat was identified in proximity to two centreline culverts to be replaced on Highway 400 south of Simcoe Road 88. Direct fish habitat was also identified in a Simcoe Road 88 water crossing east of the interchange, although no in-water work is proposed to occur at that culvert. Indirect fish habitat was identified in proximity to three other tributaries (two centreline culverts, and one interchange non-structural culvert) in the study area. A Request for Review (RfR) will be submitted to the Department of Fisheries and Oceans Canada (DFO) for review prior to construction.

Two stormwater management (SWM) ponds will be constructed on the east side of Highway 400 to address drainage within the MTO right-of-way (ROW).



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Based on an assessment of the Site and the conditions in the surrounding environment, including proximity to surface water features and hydrogeological conditions, it is anticipated that excavation dewatering will be required during construction. Stantec anticipates that dewatering may be completed at rates of greater than 50,000 L/day and less than 400,000 L/day, and therefore an Environmental Activity and Sector Registry (EASR) registration with the Ministry of Environment, Conservation and Parks (MECP) is required. If additional dewatering is required, construction methods must be altered to remain below the permitted rate, or construction must be stopped until conditions change or a Permit to Take Water (PTTW) can be obtained. Depending on conditions encountered, the Contractor may need to:

- Employ additional mitigation measures to reduce flow into the excavation
- Reduce the size of the excavation
- Delay construction activity following a large precipitation event
- Cease dewatering activities and apply for a PTTW

Property acquisition for the study area has been completed to accommodate the new interchange configuration, widening on Highway 400 and the new alignment of Simcoe Road 88 and McKinstry Road.

Archaeological investigations were conducted in 2023 for areas requiring a Stage 2 archaeological assessment. The Stage 1-2 Archaeological Assessment report (PIF P394-0109-2023) will be submitted to the Ministry of Citizenship and Multiculturalism (MCM) prior to construction to review the results presented and to accept the report into the *Ontario Public Register of Archaeological Reports*.

The proposed Simcoe Road 88 bridge will be built north of the existing bridge to avoid long-term impacts to traffic during construction. Short-duration closures will be required for tie-ins to the new alignment. Ramp closures will be staggered to mitigate traffic impacts. A one-night full closure of Highway 400 is required for the demolition of the existing bridge structure. Temporary closure requirements have been identified in this report.

The DCR has been made available for a 30-day public comment period from **December 14, 2023 to January 15, 2024** on the Town of Bradford West Gwillimbury website, with a hard copy made available for public review at the Town of Bradford West Gwillimbury Public Library. The Notice of DCR Completion was published in the *King Weekly Sentinel* newspaper on December 14, 2023.



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1.0 Overview

1.1 Summary Description of the Undertaking

The Ontario Ministry of Transportation (MTO) retained Stantec Consulting Ltd. (Stantec) to complete the Detail Design and Class Environmental Assessment (EA) study for the reconstruction of the Highway 400 / Simcoe Road 88 Interchange, including the replacement of the Highway 400 bridge at Simcoe Road 88 (G.W.P. 2331-16-00). The Study Area is illustrated in bolded linework along Highway 400 and Simcoe Road 88, within the Town of Bradford West Gwillimbury (see **Figure 1**).

MTO completed a Preliminary Design Study outlined in the *Highway 400 Planning and Preliminary Design Study from the South Canal Bridge to 1.0 km South of Highway 89 Transportation Environmental Study Report (TESR), November 2003*. The project components discussed in this report are within the study area for the 2003 TESR.

The Detail Design for the Highway 400 Improvements at Simcoe Road 88 was completed as a Group 'B' project under MTO's *Class EA for Provincial Transportation Facilities* (2000). This Design and Construction Report (DCR) documents the decision-making process leading to the design and strategy for the interchange improvements and replacement of the Highway 400 underpass at Simcoe Road 88, including construction staging and traffic management plans.



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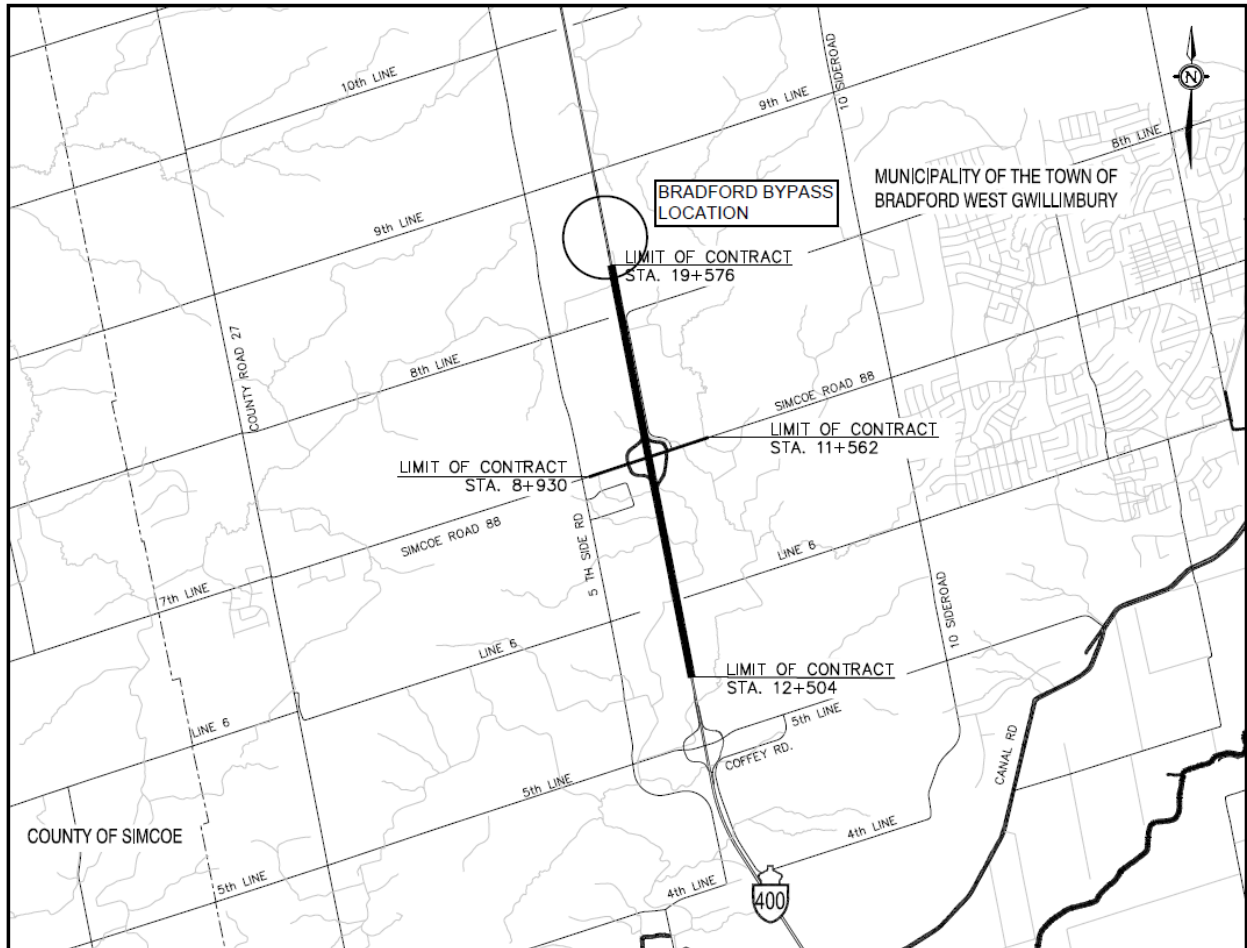


Figure 1: Study Area Location



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1.2 Purpose of the Design and Construction Report

This Detail Design project involves the preparation of a contract document and includes the submission of a DCR summarizing the Detail Design process, potential impacts, and proposed mitigation measures.

The DCR is intended to document the following:

- Description of the project
- Summary of the Class EA process followed
- Description of significant transportation engineering and environmental issues and how they were addressed
- Description of the Recommended Plan
- Summary of stakeholder and public consultation and Indigenous community engagement
- Project approvals that must be obtained prior to construction
- Description of potential environmental effects and recommended mitigation measures that will be incorporated into the contract documents

1.2.1 Environmental Assessment Process

1.2.1.1 Ontario Environmental Assessment Act

The *Ontario Environmental Assessment Act* (OEAA) governs the conduct of planning studies in the province of Ontario. The purpose of this Act is the betterment of the people of the whole or any part of Ontario by providing for the protection, conservation and wise management of the environment in Ontario. R.S.O. 1990, c. E.18, s. 2. The Act mandates clear terms of reference and ongoing consultation with all relevant parties and establishes a 'Class Environmental Assessment' process to streamline the planning for certain types of projects.

1.2.1.2 Class Environmental Assessment for Provincial Transportation Facilities

MTO's *Class Environmental Assessment for Provincial Transportation Facilities* (Class EA) was approved under the OEAA in 1997 and was amended in 2000. The Class EA document defines groups of projects and activities, and the environmental assessment processes that the MTO has committed to follow for these projects. Provided this process is followed, projects and activities included under the Class EA do not require



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formal review or approval under the OEAA. There is an opportunity at any time during the MTO Class EA process for interested persons to provide comments and review outstanding issues.

The projects and activities in the Class EA are classified into four groups (A, B, C and D). This project followed the approved process for Group 'B' projects as classified at the time of project initiation. Group 'B' projects include highway improvements that provide a significant increase in traffic capacity or cause a significant widening of the "footprint" beyond the roadbed of an existing highway.

Replacement and / or improvements to an existing interchange, such as those at Highway 400 / Simcoe Road 88, fall under the scope of a Group 'B' project.

2.0 Consultation Process

This section of the report documents the Agency, Municipal, Indigenous communities, and public consultation that has taken place. Consultation for this project included:

- Notice of Study Commencement
- Consultation with regulatory agencies
- Indigenous community engagement and consultation
- Communication with the general public and businesses in the study area
- Communication with adjacent property owners where work proposed is likely to have an impact on their property
- Notice of Completion of DCR

2.1 Public Notices

The Notice of Study Commencement was published in the *Bradford West Gwillimbury Topic* newspaper and sent directly to contacts on the project mailing list. The Notice of Completion of DCR was published in the *King Weekly Sentinel* newspaper and sent to the mailing list. Stakeholder input has been incorporated into the project and recommendations as appropriate.

The Notice of Completion indicates that in addition to sending comments to members of the project team, 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



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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:

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

and

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

2.2 Mailing List

At the outset of this project, a mailing list was developed to include the following external agencies, stakeholder groups, Indigenous communities, and utilities:

Municipalities: County of Simcoe; Town of Bradford West Gwillimbury (BWG)

Elected Officials: Hon. Caroline Mulroney, MPP York Simcoe, Scot Davidson, MP York-Simcoe

Provincial Agencies: Infrastructure Ontario (IO); Ministry of Municipal Affairs and Housing (MMAH); Ontario Ministry of Agriculture and Food, and Rural Affairs (OMAFRA); Ministry of the Environment, Conservation and Parks (MECP); Ministry of



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Natural Resources and Forestry (MNRF); Ministry of Citizenship and Multiculturalism (MCM)

Stakeholder Groups / Interest Groups: Ontario Federation of Agriculture; Ontario Cycling Association; Simcoe County Federation of Agriculture, Metrolinx/Go Transit Lake Simcoe Region Conservation Authority (LSRCA); Nottawasaga Valley Conservation Authority

School Boards / School Transportation: Simcoe Muskoka District Catholic School Board; Simcoe County Student Transportation Consortium; Simcoe District School Board; Ainley Group

Emergency Services: OPP – Nottawasaga and Aurora Detachments, South Simcoe Police; County of Simcoe Commander, Paramedic Operations and Departmental Support; Central Ambulance Communications Centre; Bradford West Gwillimbury Fire Department; County of Simcoe Emergency Planning

Letters along with the Notice of Study Commencement were mailed / emailed to external agencies, elected officials, municipal staff, Indigenous communities, and stakeholder groups on May 23, 2019. A copy of the Notice of Study Commencement was sent as a letter on May 27, 2019 to property owners near the Highway 400 / Simcoe Road 88 interchange.

The mailing list is included in **Appendix B**.

2.3 External Agencies and Municipalities

Study commencement letters and a copy of the Notice of Study Commencement were mailed/emailed to all agencies and municipalities noted above in Section 2.2. on May 23, 2019.

A municipal kick-off meeting was held March 13, 2019 to provide an overview of the project, proposed timing, and an opportunity to introduce the project team to participants.

The meeting was attended by representatives from the Town of BWG, County of Simcoe, South Simcoe Police, Town of Bradford West Gwillimbury Fire & Emergency Services, and the County of Simcoe Emergency Services. Invitations were also sent to the Ontario Provincial Police, Simcoe Student Transportation Consortium, and the Central Ambulance Communication Centre.

Feedback related to the Simcoe Road 88 project included:



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- The Town of BWG was asked during the meeting for information about nearby projects within BWG. No municipal projects were identified near Highway 400 / Simcoe Road 88.
- South Simcoe Police requested that, if closing one east-west road, that the adjacent Highway 400 crossing road be kept open
- Emergency services need to be advised in advance of any diversion plans so they can plan ahead
- Traffic data would be provided by the Town of BWG
- The Town of BWG and County of Simcoe both confirmed there are no designated cycling routes on the bridges

A summary of subsequent municipal meetings and correspondence is included chronologically below:

- June 13, 2019: The project team met with the County of Simcoe to discuss a path forward to align project limits. The project team has had ongoing dialogue with the County on this project
- April 21, 2021: A teleconference was held with Town of BWG staff representatives for Transportation, Planning and Public Works departments. Stantec/MTO provided a project update for the Simcoe Road 88 / Line 9 (project 1) and Line 12 / Line 13 (project 2) projects. The Town of BWG confirmed that it is interested in maintaining McKinstry Road access to / from Simcoe Road 88
- January 16, 2023: A meeting was held with the Town of BWG to discuss the tertiary plan underway for the McKinstry Road development lands, and the proposed watermain crossing of Highway 400. The project team reviewed the Town's proposed interim alignment of McKinstry Road but noted that the road would be in conflict with the new ramp to northbound Highway 400. The proposed watermain relocation was discussed and the alignment would be provided to the Town of BWG
- March 14, 2023: MTO confirmed that a TESR Addendum is not required to install the watermain crossing of Highway 400; rather the change would be documented in the contract and the DCR. MTO and the Town of BWG would continue to discuss the watermain scope of work
- October 16, 2023: email sent to describe the proposed grade raise and adjusted location of 70 km/h posted speed limit zone on Simcoe Road 88 in the study area. MTO and County of Simcoe agreed to the change and the addition of illumination along Simcoe Road 88 between the east ramp terminal and McKinstry Road



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The Town of BWG and the County of Simcoe will continue to be notified of any updates concerning this project.

External agencies and stakeholder groups correspondence is included in **Appendix C**.

2.4 Indigenous Community Engagement

A letter introducing the project was sent on May 23, 2019 to the following Indigenous communities and organizations:

- Curve Lake First Nation
- Beausoleil First Nation
- Chippewas of Rama First Nation
- Chippewas of Georgina Island First Nation
- Hiawatha First Nation
- Alderville First Nation
- Mississaugas of Scugog Island First Nation
- Mississaugas of the Credit First Nation
- Huron-Wendat Nation

The Huron Wendat Nation responded on June 6, 2019 by providing updated contact information and asking whether an archaeological assessment would be required. MTO replied June 6, 2019 that a previous Stage 1 archaeological assessment was carried out for lands within the MTO right-of-way. MTO will carry out a Stage 2 archaeological assessment for areas that MTO intends to acquire for the project. At the Huron-Wendat Nation request, MTO will provide a copy of the final archaeological report when it is available.

The Chippewas of Rama First Nation responded June 12, 2019 that the community does not have any comments or concerns, but asked to be kept informed as the project moves forward. The community would like to be contacted in the future about any projects that may impact their traditional territories. The project team responded March 27, 2020 that Detail Design will be documented in a DCR at the completion of the project.

Indigenous community correspondence is included in **Appendix C**.



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2.5 Utilities

Utility relocation plans and mitigation measures are discussed in **Section 3.0**.

2.6 Public

Project notices were sent to property owners in the study area using addresses obtained from Town of BWG public tax rolls, and individuals were added to the mailing list, as requested. The Notice of Study Commencement was published in the *Bradford West Gwillimbury Topic* newspaper on May 30, 2019 and sent directly to contacts on the project mailing list on May 27, 2019. All engagement from members of the public were inquiries about proposed project plans, or schedule updates. Individuals along McKinstry Road requested information about project plans when it became available.

A summary of comments received, and responses or actions taken is included in **Appendix C**.

2.7 Impacted Property Owners

A project update and permission to enter (PTE) request letter was sent to impacted property owners adjacent to the MTO right of way, which provided project contact information. Property owners were provided with details regarding the project and the proposed fieldwork methodology, as well as a map showing the location of the investigations. A PTE form was provided for signature. PTE requests were made in September 2022 for work to commence in Fall 2022 and in 2023. All property acquisition was completed by August 10, 2023.

3.0 Detailed Description of the Recommended Design

The following sections provide a description of the major features of the proposed work. Detailed drawings for the Recommended Plan are provided in **Appendix A**.

3.1 Major Features of the Proposed Work

The purpose of this project is to replace the existing Highway 400 / Simcoe Road 88 underpass due to structural deficiencies, and to reconfigure the interchange to accommodate the widening of Highway 400 to 10 lanes with a southbound auxiliary



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lane for the heavy (east to south) traffic movement from the future Highway 400/Bradford Bypass Interchange to the north.

The Recommended Plan includes the following improvements:

- Replacement of the Highway 400 underpass (Site 30X-0309/B0) at Simcoe Road 88 to accommodate widening of Highway 400 to an ultimate 10-lane cross section along with a southbound auxiliary lane
- Widening of Simcoe Road 88 from two to four lanes and the addition of a raised island median between the new ramp terminals
- Reconstruction of the Highway 400 / Simcoe Road 88 Interchange to a Parclo A4 configuration
- Widening the platform of Highway 400 to accommodate the 10-lane ultimate cross section in the vicinity of the Highway 400 / Simcoe Road 88 Interchange
- A portion of the southbound auxiliary lane for the Bradford Bypass East to South (E-S) on ramp will also be constructed. In the interim, Highway 400 traffic will be positioned in the ultimate outside lanes in the northbound and southbound directions. Temporary concrete barrier will be left-in-place at the completion of construction to block off the additional paved area in the median
- Reconstruction of the existing commuter parking lot including an access from Simcoe Road 88
- Shifting a portion of McKinstry Road to the east to accommodate the ramp to northbound Highway 400 with a new intersection on Simcoe Road 88 opposite the Esso / Husky Travel Centre entrance

The following sections provided additional detail regarding the Detail Design.

3.1.1 Structural Improvements

The existing Highway 400 / Simcoe Road 88 underpass (Site 30X-0309/B0) was constructed in 1949 and is a rigid frame with a 33.18 m clear span and a rectangular-voided-slab superstructure on shallow foundations. There are neither expansion joints, approach slabs, nor deck drains on the structure. The bridge underwent rehabilitation in 1983, 1992, and 2010. The last of the rehabilitation work included some soffit repairs. Pavement has been resurfaced, although some pavement cracks were noted during inspections.



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The project includes the complete removal of the underpass and replacement with a new structure. This work is required due to the age and condition of the existing structure, and to accommodate widening on Highway 400.

The design for the new structure consists of a two-span (48-44 m), slab-on-girder, integral-abutment structure with NU 2100 girders supporting a cast-in-place concrete deck having an overall width of 29.7 m between deck flares.

The span also considers a future 12-lane cross section of Highway 400 with the possible addition of one 3.75 m lane in each direction. Future 12-laning would push ramps into each abutment foreslope where retaining walls would then need to be constructed.

General arrangement drawings are shown in **Appendix A**.

3.1.2 Highway 400 / Simcoe Road 88 Interchange

The Highway 400 / Simcoe Road 88 Interchange will be reconstructed to a Parclo A4 configuration and will involve reconfiguring all existing ramps, including the addition of a new East to North (E-N) interchange ramp.

A portion of the southbound auxiliary lane for the Bradford Bypass E-S on-ramp will also be constructed within the project limits. In the interim, Highway 400 traffic will be positioned in the ultimate outside lanes in the northbound and southbound directions. Two runs of temporary concrete barrier will be left in place after construction to block off the additional paved area in the median.

The existing tall wall barrier will be left in place with localized replacements at the location of the new Simcoe Road 88 bridge piers.

The Highway 400 ultimate platform will be constructed to accommodate the future 10 lane cross section in the vicinity of the interchange. At the north and south ends of the project, the northbound and southbound traffic will be transitioned back to the existing lanes, which is three lanes in each direction.

3.1.3 Simcoe Road 88

Simcoe Road 88 will be widened from two to four lanes from just east of 5th Sideroad to east of the new McKinstry Road intersection. A raised island median will be constructed between the new ramp terminals.

The Simcoe Road 88 underpass will be realigned to the north of the existing bridge to mitigate traffic impacts on Simcoe Road 88 during construction. The profile will be raised to achieve the minimum vertical clearance. The new Simcoe Road 88 underpass



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opening can accommodate a possible future 12-lane cross section on Highway 400 by converting the slope paving to a retaining wall.

3.1.4 Commuter Carpool Lot

A carpool lot is located in the southwest quadrant of the interchange. The existing carpool parking lot will be reconstructed to match the updated interchange configuration and realignment of Simcoe Road 88.

3.1.5 McKinstry Road Realignment

The southern portion of McKinstry Road will be realigned to the east to accommodate the proposed East to North (E-N) interchange ramp, grading, and proposed SWM facilities. The intersection of McKinstry Road at Simcoe Road 88 will be relocated to align directly across from the Esso / Husky Travel Centre commercial entrance, approximately 500 m east of Highway 400.

3.1.6 Safety and Signage

Roadside Safety and signage requirements were reviewed for this project, and include:

- New concrete tall wall barrier will be installed on Highway 400 to shield the new median bridge piers. Existing median tall wall barrier will be left in place throughout the remainder of the project limits
- Temporary construction barrier (TCB) will be left in place along the Highway 400 NB and SB lanes to block off the extra median width in the interim while traffic is shifted to the outside of the ultimate platform and three lanes maintained per direction
- The grading design will be completed to minimize the need for guide rail by providing desirable slopes and clear zone offsets in accordance with the MTO Roadside Design Manual. At locations where desirable grading cannot be provided or where there are roadside obstacles that constitute a roadside safety hazard, roadside barriers and appropriate end treatments will be installed
- All new guide rail, concrete barrier, and end treatments will meet the Ministry's current standards for 120 km/h design speed

3.1.7 Active Transportation

There are no existing sidewalks or crosswalks present in the project study area. The *Town of Bradford West Gwillimbury Transportation Master Plan (2022)* identifies future active transportation infrastructure plans within the Highway 400 Employment Lands



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with proposed crossings of Highway 400. Timing and plans are not confirmed as they are based on a post-2031 planning horizon.

3.1.8 Drainage

Existing drainage within the study area consists of seven centreline culverts and ditching along the highway and ramps. Median storm sewers are also present. The existing median storm sewers on Highway 400 will be maintained. Additional storm sewers are required to provide sufficient drainage for the site and storm sewer outlets will be extended as required and documented in the contract drawings.

Six centreline culverts along Highway 400 will be replaced. Four of these culverts will be replaced in the same location as the existing culverts and two will be shifted from their existing location to align with the proposed drainage configuration. One culvert is proposed for abandonment due to redundancy.

Nine non-structural culverts will be included along Simcoe Road 88, interchange ramps, McKinstry Road and at private entrances.

Two wet pond type SWM facilities and two linear dry detention swales will be constructed to provide water quality and quantity control for the site. The requirements for SWM facilities will be accommodated within the limits of property acquisition along the Highway 400 corridor and the northeast quadrant of the interchange. Temporary drainage is incorporated into staging.

3.1.9 Electrical

Illumination at ramp terminals and the carpool lot will be replaced. Illumination will be added on Simcoe Road 88 between the east ramp terminal and the new intersection with McKinstry Road. Traffic signals at the ramp terminal intersections will be replaced. Temporary traffic signals will be provided during staged construction. Counting stations at interchange ramps will be replaced. Electrical embedded work is required in the Simcoe Road 88 underpass.

3.1.10 Utilities

Bell, Hydro One, Rogers Communications, Enbridge and the Town of BWG (watermain) have existing infrastructure located within the project limits.

A Subsurface Utility Engineering (SUE) investigation (test pits) was completed and areas of conflict with underground infrastructure have been confirmed.



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- Hydro One poles carrying aerial lines will be impacted by the proposed work. The following utility relocations are addressed below:
 - Directly west of the N-E/W Ramp / Carpool lot entrance, aerial hydro lines cross from the south side of Simcoe Road 88 connecting to a pole on the north side which is directly in conflict with the roadway realignment. From this point through to the east limit of the project on Simcoe Road 88, hydro poles are in conflict with the proposed realignment and widening of Simcoe Road 88. The proposed Hydro One relocation includes an aerial line with poles south of Simcoe Road 88 and relocations are expected to be finished in Spring 2024.
 - There are also a few service crossings of Simcoe Road 88 which have poles in conflict with the proposed Simcoe Road 88 grading. This includes a pole at the commercial entrance west of the interchange, and two poles servicing private / commercial property on the east side of the interchange. Hydro One will relocate affected poles and service crossings with the mainline relocation.
 - Hydro One aerial lines also cross Highway 400 at Eighth Line where a pole is in direct conflict with the proposed grading of Highway 400. Hydro One will relocate the poles in conflict outside the proposed grading limits.
- Bell underground cables run along the existing Simcoe Road 88 alignment and cross Highway 400 on the south side of the existing bridge structure, and therefore are in direct conflict with the proposed removal and realignment of the Simcoe Road 88 bridge. Cables continue to run east of the interchange on the south side of Simcoe Road 88 and transition to aerial for a service crossing. Bell infrastructure such as pedestals, poles, and grade level boxes are in conflict with the proposed realignment of Simcoe Road 88 and associated grading throughout the west-east limit. Bell will relocate underground south of Simcoe Road 88 and relocation is expected to be complete by Summer 2024.
- Rogers Communications aerial lines follow along the Simcoe Road 88 hydro poles throughout the project limits. Therefore, Rogers lines along with Hydro One electrical lines / poles are in conflict with the proposed realignment and grading of Simcoe Road 88 as noted above. Rogers will relocate to the new Hydro One poles following the completion of Hydro One's relocation.
- An Enbridge gas main runs west-east along the south side of Simcoe Road 88 and crosses Highway 400 south of the existing bridge structure, and the proposed interchange ramps. Due to the shift of vehicle loading to the proposed ultimate widening of Highway 400 and the proposed W-S and S-E/W Ramps, un-encased sections of the gas main will be in conflict. In addition, a gas service line to a private



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property just west of the interchange is in conflict with the proposed ditching of Simcoe Road 88. The relocation for the gas main approximately 5 m south of the existing line is expected to be complete in December 2023.

- The Town of Bradford-West Gwillimbury (BWG) has several watermains and one sanitary sewer within the project limits. A watermain crossing Highway 400 and continuing along Simcoe Road 88 is in conflict with a proposed SWM pond adjacent to the E-N Ramp and the realignment of Simcoe Road 88 along with several valve chambers. The watermain relocation for BWG is included in the scope for the main contract.

Utility relocations will commence prior to construction, and relocations are planned to be completed by August 2024. The watermain relocation for BWG will be incorporated into the contract. The Contractor will avoid all other utilities as outlined in the contract documents.

3.1.11 Property

Permanent property acquisition from third parties and private owners was required to facilitate the interchange upgrades for an updated Parclo A4 layout, ultimate 10-lane widening of Highway 400, proposed SWM facilities, and the realignment of McKinstry Road. Included in the proposed acquisition is land owned by the County of Simcoe, the Town of BWG, and private / commercial owners along Highway 400 and Simcoe Road 88. Final property possession took place on August 10, 2023.

The McKinstry Road realignment is planned to be transferred to the Town of BWG following construction.

3.1.12 Construction Staging and Traffic Management

Construction is proposed to be completed over five seasons, as described below. Final staging will be confirmed prior to construction and included in the contract drawings:

Highway 400

- Staging on Highway 400 will maintain three lanes of traffic in each direction during peak hours.
- Temporary strengthening of Highway 400 median and outside shoulders will be completed to accommodate required lane shifting for northbound and southbound traffic.



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- Temporary overbuilding of the outside platform for Highway 400 northbound will be completed to accommodate required lane shifts for northbound traffic.
- Nightly, off-peak lane closures will be required on Highway 400 to set up temporary construction barrier, shoulder strengthening, resurface existing lanes, complete tie-in work, and apply pavement markings.
- In general, minimum through lane widths and shoulder widths will be 3.5 m and 0.5 m, respectively. In constrained areas, the outside shoulder will be reduced to 0.3 m.
- **Season 1:** Median and outside shoulder strengthening will be constructed Pre-Stage 1 with nightly lane closures. Construct outside widening north and south of Simcoe Road 88 structure except in the NW quadrant of the interchange and where other conflicts with SAR Bat habitat trees occur. Place pre-loading / surcharging for approaches on Simcoe Road 88 structure. Northbound traffic will be shifted to inside shoulders north and south of Simcoe Road 88. Southbound traffic will be shifted to the inside shoulders south of Simcoe Road 88.
- **Season 2:** Remove surcharging at and construct new Simcoe Road 88 median piers and drive piles for new abutments. Traffic will be shifted to the inside shoulders at Simcoe Road 88.
- **Season 3:** Construct outside widening in the NW quadrant of the interchange and where other conflicts with SAR Bat habitat trees occur. Southbound traffic will be shifted to the inside shoulder north of Simcoe Road 88. Construct the abutments, substructure and superstructure for the new Simcoe Road 88 structure.
- **Season 4:** Continue construction of the new Simcoe Road 88 structure. Construct outside widening across existing interchange ramps once construction is completed on proposed ramps and traffic shifts are complete. Traffic will be shifted to median shoulders.
- **Season 5:** A one-night full closure of Highway 400 is required for the demolition of the existing bridge structure. Padding on Highway 400 for crown shift and surface course paving. Traffic will be shifted to outside widening.

Simcoe Road 88

- Staging on Simcoe Road 88 will generally be maintained to one through lane in each direction.



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- Nightly, off-peak lane closures will be required on Simcoe Road 88 to set up temporary construction barrier, strengthen shoulders, resurface existing lanes, complete tie-in work, complete electrical works, and apply pavement markings.
- In general, the minimum through lane widths and shoulder widths will be 3.5 m and 0.5 m, respectively.
- Temporary traffic signals will be used at the west ramp terminal intersection (N-E/W exit ramp and E/W-S entrance ramp) and the east ramp terminal intersection (S-E/W exit ramp and E/W-N entrance ramp).
- **Season 1:** Traffic on existing lanes. Pre-loading / surcharging as required for approaches on Simcoe Road 88 structure.
- **Season 2:** Construct new Simcoe Road 88 abutments. Construct both wet pond SWM pond facilities and access roads.
- **Season 3:** Construct new alignment of Simcoe Road 88. Complete abutments, place girders, and construct superstructure for new bridge structure. Traffic to remain on existing lanes.
- **Season 4:** Construct tie ins for new Simcoe Road 88 alignment to existing alignment. Construct outside widening along new Simcoe Road 88 tie-in areas and carpool lot. Demolish existing bridge structure. Traffic on Simcoe Road 88 to remain on existing lanes with temporary overbuilding to accommodate tie-in construction. Traffic will be shifted to new alignment after Stage 4C when new alignment is complete.
- **Season 5:** Surface course paving with traffic on new alignment.

Simcoe Road 88 Interchange Ramps

- The majority of the work for the proposed interchange ramps will be completed with the existing ramps open to traffic in Seasons 1 and 2; however, throughout Season 4 it will be necessary to close each ramp for a maximum duration of five days to complete tie-ins to the new ramps.

McKinstry Road

- The realignment of McKinstry Road will be constructed to tie-in to existing Simcoe Road 88. McKinstry Road will be closed for a duration of 5 days to complete tie-in to the existing McKinstry Road at the north end.



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Simcoe Road 88 Carpool Parking Lot (SW Quadrant)

- Temporary closure of the existing carpool lot will be required during Season 4 to complete the required relocation of the parking lot within the southwest quadrant of the interchange. The existing lighting system and power supply will be adjusted and replaced with the lot reconfiguration.

4.0 Transportation Environmental Study Report Five Year Review

The following section describes the TESR Five Year Review of the original 2003 TESR. The review includes a description of the 2003 Recommended Plan and reason for change / impact, as well as significance of change.

Table 1: Comparison of 2003 TESR Approved Plan and Recommended Design

Design Element	2003 TESR Approved Plan	Detail Design Recommendations
Horizontal Alignment Highway 400	Project limits from the South Canal Bridge to 1.0 km south of Highway 89.	Project limits are within original study area from preliminary design. Minor additional property was required to accommodate grading and this was minimized to the extent possible. There are no significant impacts as a result of this change.
Vertical Alignment Highway 400	No change in vertical alignment on Highway 400.	No change in vertical alignment on Highway 400. There are no significant impacts as the existing highway alignment is maintained.
Drainage	SWM pond locations were proposed to be confirmed in Detail Design. Structural culvert crossing extensions on Highway 400 were proposed to accommodate widening to 10 lanes.	Drainage includes SWM pond locations to accommodate drainage within the MTO right of way. Low Impact Development (LID) ditches are utilized where possible, as requested by LSRCA.



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Design Element	2003 TESR Approved Plan	Detail Design Recommendations
		<p>There are no significant impacts as a result of this change.</p> <p>The existing median sewer on Highway 400 will be maintained. Leads to culvert outlets will be added and sewer outlets will be extended as required. Six centreline culverts along Highway 400 are proposed for replacement. Three of these culverts will be replaced in the same location as the existing culverts and three will be shifted from their existing location to align with the proposed drainage configuration. One culvert is proposed for abandonment due to redundancy.</p>
<p>Simcoe Road 88</p>	<p>Simcoe Road 88 is two lanes within the study area</p>	<p>Simcoe Road 88 will be widened from two to four lanes from just east of 5th Sideroad to east of the new McKinstry Road intersection.</p> <p>The County of Simcoe was consulted on the change, and the Simcoe Road 88 improvements allow for a tie-in to the 5th Sideroad intersection improvements completed by the County of Simcoe.</p> <p>The bridge will also accommodate growth associated with the Highway 400 Bradford West Gwillimbury Strategic Settlement Employment area, included in the <i>Growth Plan for the Golden Horseshoe</i> (GGH, 2022) implemented after the 2003 TESR.</p>



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Design Element	2003 TESR Approved Plan	Detail Design Recommendations
		There are no significant impacts as a result of this change.
McKinstry Road	McKinstry Road was realigned to the east to accommodate the new East to North ramp.	The realignment of McKinstry Road will occur in the alignment identified within the 2003 TESR. There are no significant impacts to the 2003 approved realignment.
Bradford Bypass	The Bradford Bypass concept was included in the 2003 TESR.	<p>The BBP Environmental Impact Assessment Report (EIAR) will document the justification for the SB auxiliary lane (within the study limits) and the additional lane on the North to East-West off-ramp to Simcoe Road 88.</p> <p>A separate Group 'C' Class EA will be completed by MTO for the southbound auxiliary lane required for the Bradford Bypass project. This Group 'C' Environmental Screening Document includes the area of the auxiliary lane south of Simcoe Road 88 which is outside the limits of the Bradford Bypass study.</p> <p>There are no significant impacts as a result of this change.</p>

Following the review, it was determined there are no significant impacts as a result of the changes identified.



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5.0 Environmental Issues and Commitments

Environmental investigations related to the natural and socio-economic environments were undertaken to confirm environmental conditions. A summary is provided in the following sections. In general, effects to the natural, socio-economic, and cultural environment were minimized during the study by following three principles:

- Avoidance;
- Identification of roadway design elements to minimize environmental impacts; and
- Development of site-specific and generic environmental protection plan guidelines for consideration during and following construction.

The design, construction and operation / maintenance phases of this project involve typical activities for which potential environmental impacts are predictable and known environmental protection measures are applied.

Details on how environmental impacts will be mitigated, either through the use of environmental design or through environmental constraints to be included in the construction contract package, are summarized in **Table 5** at the end of this report.

5.1 Natural Environment

5.1.1 Terrestrial Ecosystems

Background information and habitat characteristics were summarized in the *Terrestrial Ecosystems Existing Conditions and Impact Assessment Report* (Stantec, 2023), included in **Appendix D**.

The background review included a review of relevant data sources to identify known natural heritage features, including Designated Natural Areas and other natural features, and records of species at risk (SAR) and Species of Conservation Concern (SOCC) within or near the Study Area.

Field investigations were conducted for the Study Area (i.e., an area encompassing 120 m around the ROW). Data was collected using guidance from the *Environmental Reference for Highway Design* (MTO 2013). Natural heritage features examined included Ecological Land Classification (ELC) vegetation communities, potential species at risk (SAR) habitat and areas of candidate Significant Wildlife Habitat (SWH).



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5.1.1.1 Vegetation

Existing Conditions

The study area is located in a rural environment within Ecoregion 6E (Lake Simcoe-Rideau Ecoregion), and more specifically the Ecodistrict of 6E-6 (Barrie). The Study Area is also located within the Huron-Ontario section of the Great Lakes – St. Lawrence Forest Region.

Results of the field investigation identified that the Highway 400 ROW in the study area is composed primarily of agricultural crops and occasional meadows. Occasional shallow marshes associated with watercourses were also present. Deciduous and coniferous hedgerows of varying widths and maturity were common in the ROW, which was mainly comprised of meadow. Residential properties were sparsely dispersed throughout the Study Area. New construction was occurring on the southwest corner of the Simcoe Road 88 and Highway 400 interchange, and commercial properties were present in the southeast corner.

No provincially rare vegetation species (S1, S2 or S3) or SAR flora were identified in the Study Area. All vegetation communities observed were common and widespread throughout Southwestern Ontario. Highly invasive common reed *Phragmites australis* (Phragmites) was observed in several roadside locations throughout the study area (occurred throughout MASM 1-14) vegetation communities. A butternut search was completed on April 25 and June 19, 2023. There were no butternut trees observed within the Work Zone or within 50 m.

No Provincially Significant Wetlands (PSW), Areas of Natural or Scientific Interest (ANSI), or unevaluated wetlands were identified within the Study Area. There are no designated natural areas identified in the study area.

Impact Assessment

The proposed interchange improvements at the Highway 400 / Simcoe Road 88 interchange will require tree removal and the loss of terrestrial habitat to accommodate construction. Direct impacts on these communities include cut/fill and permanent vegetation removal to accommodate new road surfaces. There will be approximately 9.4 ha of permanent loss of terrestrial habitat to accommodate the interchange improvements and road widening.

Other potential impacts associated with the proposed improvements include soil compaction, siltation of onsite natural communities, vegetation disturbance, spills of deleterious substances into natural communities, noise disturbance and encounters with wildlife. These impacts are considered short term, localized to the construction area



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during construction activities, and will be mitigated through the application of appropriate construction techniques and mitigation measures.

Disturbance to Vegetation

The proposed improvements will require earth clearing and grading, which will result in vegetation removal and permanent loss of terrestrial habitat (approximately 9.44 ha). There will be 2.96 ha removed from forest hedgerow and plantation communities, 0.43 ha removed from graminoid shallow marsh communities, and 6.05 ha removed from meadow communities (most of which is roadside meadow). Temporary disturbance will consist of approximately 9.6 ha of roadside meadow communities and 1.43 ha of shallow marsh communities associated with drainage ditches within the ROW. The temporarily disturbed area will also include 8.07 ha of treed communities including forested hedgerows (FOCM5 and FODM11) and plantations (TAGM1 and TAGM5); the disturbance will result in long term alternation of the treed communities. All temporarily disturbed areas will be reseeded and replanted following construction.

Disturbance to Wetlands

Portions of shallow marsh communities (MASM1 and MASM1-14) located on the east side of Highway 400 and north side of Simcoe Road 88 will be impacted by grading and new construction (approximately 0.43 ha loss). These small wetland features are low quality and are unlikely to support wildlife habitat (i.e., unlikely to be SWH for amphibians).

Standard environmental protection and site-specific mitigation measures are discussed in separate sections below.

Mitigation Measures

Standard Sediment and Erosion Control and vegetation protection are proposed, including the management of invasive Phragmites which are provided in **Section 5.1.3** and **Table 5**.

5.1.1.2 Wildlife and Wildlife Habitat

Existing Conditions

Migratory Birds

Nest surveys were completed during the 2019 field investigations in the study area and at all culverts. No active bird nests were observed during the field investigations but vegetation within the proposed Work Zone may support nesting birds.



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Bats

To identify potentially suitable bat maternity roost trees in the areas identified for clearing, a leaf-off survey was completed on April 25, 2023. The survey followed guidance in *Treed Habitats – Maternity Roost Surveys* (MECP 2022). Trees that had characteristics of suitable bat SAR maternity roost trees (e.g., greater than 10 cm diameter at breast height (dbh) with cavities or peeling bark) were identified.

Bat Acoustic Monitoring was completed using Autonomous Recording Units (ARUs), specifically Wildlife Acoustic Mini Bat Detectors. Nine (9) ARUs were attached to trees with cable ties and were deployed on June 19, 2023 within areas that were identified as suitable bat maternity roost habitat that may be impacted. Recordings commenced 30 minutes before sunset and continued for five hours after sunset. The ARUs then remained on site for at least 10 nights in June and early-July during optimal weather conditions of warm / mild nights (i.e., ambient temperature >10°C) with low winds and no precipitation.

ARUs were retrieved on July 6, 2023 and recordings were then screened using Wildlife Acoustic's Kaleidoscope Pro Automatic ID and were visually assessed (i.e., via spectrograph) by Stantec qualified professionals with bat identification and monitoring experience and training to confirm identification of the bat species.

Five bat species were recorded during the acoustic surveys, including one SAR - Little Brown Myotis. A total of 16 Little Brown Myotis calls were recorded at six ARU locations: MB-32, SM4-20, SM4-F, SM4-G, SM4-I, and SM4-L. The 16 calls were recorded over 11 evenings of surveying.

The other four species recorded were Big Brown Bat, Hoary Bat, Silver-haired Bat, and Eastern Red Bat. Big Brown Bat, Hoary Bat, and Silver-haired Bat were recorded at the nine locations, where the Eastern Red Bat was recorded at only two locations.

Of the 37 potential bat trees, 30 trees were identified and confirmed as bat habitat (SAR or non-SAR) due to the presence of bats detected within areas proposed for grading and tree removal. Twenty-five (25) of those trees are located within the proposed grading and tree removal areas and were confirmed as SAR bat habitat.

Species at Risk / Species of Conservation Concern

Based on the background review, 10 SAR and 11 SOCC species were identified that have the potential to occur in the study area. The following 10 species were identified as SAR and are protected under the ESA as they are Threatened and Endangered:

- Vegetation: Butternut (*Juglans cinerea*)



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- Wildlife: Bank Swallow (*Riparia riparia*), Bobolink (*Dolichonyx oryzivorus*), Chimney Swift (*Chaetura pelagica*), Eastern Meadowlark (*Sturnella magna*), Eastern Whip-poor-will (*Antrostomus vociferus*)

The following 11 species were identified as SOCC and are not protected under the ESA:

- Wildlife: Monarch (*Danaus plexippus*), Western Chorus Frog (*Pseudacris triseriata*); Eastern Milksnake (*Lampropeltis Triangulum*), Midland Painted Turtle (*Chrysemys picta marginata*), Snapping Turtle (*Chelydra serpentina*), Common Nighthawk (*Chordeiles minor*), Canada Warbler (*Cardellina canadensis*), Eastern Wood-Pewee (*Contopus virens*), Grasshopper Sparrow (*Ammodramus savannarum*), Golden-winged Warbler (*Vermivora chrysoptera*), Wood Thrush (*Hylocichla mustelina*), Barn Swallow (*Hirundo rustica*)

Significant Wildlife Habitat

Significant Wildlife Habitat includes habitat which includes seasonal concentrations of wildlife (seasonal concentration areas, rare or specialized habitat, habitat for SOCC, or animal migration corridors).

- **Seasonal Concentration Areas:** None present in the Study Area.
- **Rare or Specialized Habitat:** Candidate SWH features present within the Work Zone was amphibian habitat within roadside marsh habitat (MASM1, MASM1-14).
- **Animal Movement Corridors:** Marsh communities in the Study Area have the potential to support breeding amphibians.
- **Habitat for SOCC:** Potential suitable habitat is present for Monarch, Midland Painted Turtle, Snapping Turtle, Eastern Milksnake, Western Chorus Frog, Grasshopper Sparrow, Barn Swallow, and Common Nighthawk.
- **Terrestrial Crayfish:** Marshes in the Study Area have the potential to support Terrestrial Crayfish and Terrestrial Crayfish chimneys were observed within the Work Zone in a marsh / meadow community.

Impact Assessment

Potential Interference with Nesting Birds

No active bird nests were observed during the field investigations but vegetation within the proposed Work Zone may support nesting birds. Any work near active bird nests has the potential to disturb nesting behavior or damage / destroy the nests, particularly if vegetation clearing occurs during the active breeding bird window (i.e., April 1 –



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August 31). Measures to mitigate impacts and protect bird nests will be implemented and are included in **Table 5**.

Potential Disturbance to Significant Wildlife Habitat

SWH was confirmed in the Work Zone for Terrestrial Crayfish within the MEGM3 meadow / marsh community. There is also candidate SWH for Bat Maternity Colonies present within the Work Zone. There were a large volume of Big Brown Bat and Silver-haired Bat calls detected on ARUs, which suggests that this type is likely to be considered significant, but the presence of maternity colonies cannot be confirmed with ARUs. Candidate Amphibian Breeding Habitat is also present within roadside marsh habitat (MASM1, MASM1-14). A permanent loss of 5.6 ha of Terrestrial Crayfish habitat and 30 suitable bat maternity roost trees is anticipated.

Construction phase disturbance to SWH can be mitigated through standard environmental protection measures for sediment and erosion control and vegetation protection. Species-specific mitigation for Terrestrial Crayfish and bats is provided in **Table 5**.

Potential Disturbance to Species at Risk and Species of Conservation Concern

Habitat assessments completed for SAR identified during the background review were completed using satellite photo interpretation and field data. Potential adverse effects are discussed for other SAR or SOCC that have the potential to be present (based on existing records and suitable habitat). Bat SAR, Monarch, and Eastern Milksnake, and Bank Swallow were identified as having potential to occur:

- **Little Brown Myotis** – Bat maternity roost habitat is present in the Work Zone. A permanent loss of 25 suitable SAR bat roost trees is anticipated. With the implementation of mitigation to be confirmed with MECP through an Avoidance Alternatives Form (AAF), including timing windows, impacts to this species can be reduced. Site-specific measures for this species are included in **Table 5**.
- **Bank Swallow** – This species may occur if stockpile materials become present within the Study Area as a result of construction activities. The Bank Swallow breeds on a variety of sites with vertical banks, including stockpiles of sand and soil. Site-specific mitigation measures for Bank Swallow are provided in **Table 5**.
- **Monarch** – Monarch habitat may be present in roadside meadows, where it was observed during 2019 field investigations. A permanent loss of 6.1 ha of meadow habitat is anticipated. Site-specific mitigation measures for Monarch are provided in **Table 5**.



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- **Eastern Milksnake** - Eastern Milksnake has potential to enter the Work Zone. Construction activities can result in direct mortality to snakes. Snakes may be vulnerable during emergence from a hibernaculum, re-entrance and basking periods, and may preferentially seek out construction materials to bask under. Peak activity for Eastern Milksnake is typically between late April and late June. Roadside meadows and ditches may provide habitat for Eastern Milksnake. With the implementation of site-specific mitigation measures for snakes at the Highway 400 / Simcoe Road 88 interchange Study Area, no direct impacts are expected.

Mitigation Measures

Mitigation will be implemented to reduce the likelihood of impacts to the natural environment. Standard and site-specific mitigation measures are listed in **Table 5**. Site specific mitigation measures for Little Brown Myotis, Bank Swallow, Monarch, Eastern Meadowlark, and Terrestrial Crayfish are documented in **Table 5**.

5.1.2 Fish and Fish Habitat

The Fish and Fish Habitat assessment was completed in accordance with the *MTO/DFO/MNRF Fisheries Protocol for Protecting Fish and Fish Habitat on Provincial Transportation Undertakings* (the Protocol) (MTO 2020a) and the *MTO Interim Environmental Guide for Fisheries* (MTO 2020b) (the Fish Guide).

5.1.2.1 Existing Conditions

Field investigations were conducted in the spring (May 3 and May 7, 2019). Due to the low water conditions and no water at several sites, field investigations were modified from the *Environmental Reference for Highway Design* (MTO 2013) and the *Environmental Guide for Fish and Fish Habitat* (MTO 2009) (i.e., there are no water quality data and/or no habitat data at locations that were dry at the time of the field investigations).

Although the format of the MTO field forms was updated with the release of the 2020 Fish Guide (MTO 2020b), the data requirements did not change; therefore, the field data collected is consistent with the information requirements of the 2020 Fish Guide.

Based on conditions documented by Stantec in 2019, direct fish habitat (seasonal) is limited to the east side of Highway 400 at Culvert C8. The watercourse associated with Culvert C9 did not directly support fish, as identified by Stantec and as a result of previous assessments (MH 2010) and provides indirect fish habitat.



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Direct fish habitat was identified in proximity to the following culverts within the Simcoe Road 88 Study Area:

- Culvert C7 (seasonal habitat)
- Culvert C8 (seasonal habitat on the east side of Highway 400)
- Culvert C-E1

There are no records of fish or mussel SAR in the Simcoe Road 88 Study Area and no Significant Fish Habitat was identified, as defined in the 2020 Fish Guide (MTO 2020b).

The following tributaries do not provide fish habitat, but provide flow contribution to downstream fish habitat (indirect):

- Culvert C9
- Culvert C11
- Culvert C-INT-3

5.1.2.2 Impact Assessment

The Highway 400 lanes in the vicinity of the interchange will be shifted to their ultimate outside location, so that future lane additions can occur in the median. At the completion of construction, the Highway 400 will be maintained at three lanes in each direction (three northbound and three southbound) with the extra platform width for the ultimate Highway 400 cross-section blocked off behind temporary concrete barrier in the median.

Drainage improvements will be required to accommodate the ultimate grading and stormwater management features. At watercourses identified as fish habitat, the following culvert modifications (extensions or replacements) will be required to accommodate the future widening:

- Culvert C7 (Station 14+875; shown as C1 on drawings) is currently 52 m long, and will be replaced with a new culvert that is 91 m, or 39 m longer than the existing culvert
- Culvert C8 (Station 15+350; shown as C2 on drawings) is currently 49 m long, and will be replaced with a new culvert that is 90m long, or 41 m longer than the existing culvert

In addition, one other culvert (C-E1) on Simcoe Road 88 has fish habitat present. No work is required at this culvert.



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A Request for Review (RfR) will be submitted to the Department of Fisheries and Oceans Canada (DFO) for review prior to construction. A *Fish and Fish Habitat Existing Conditions and Impact Assessment Report* is being prepared as supporting documentation for the project in conjunction with the RFR.

5.1.2.3 Mitigation Measures

Works adjacent to aquatic resources that provide fish habitat, or have the potential to support fish habitat, are often restricted to certain periods to reduce the risk of construction related impacts to fish during their most sensitive / vulnerable life cycles (i.e., during reproduction and early development stages of offspring). Therefore, construction activities are often not permitted close to or within fish habitat during these periods.

Construction mitigation measures will be implemented to reduce the risk of death of fish and the harmful alteration, disruption or destruction of fish habitat, in consultation with DFO as part of the Request for Review process.

Design

The following measures were incorporated into the project design to reduce the risk of impacts to fish and fish habitat:

- Design drainage system to reduce changes in drainage to watercourses that provide fish habitat
- Design and plan activities and works such that loss of fish habitat or disturbance to fish habitat is reduced to the greatest extent possible
- Design stormwater management measures to reduce effects on watercourses that provide fish habitat to the extent possible
- Design a rehabilitation / re-vegetation plan for long-term stability of the areas disturbed during construction
- For rock reinforcement below the normal high-water level, use appropriately sized material



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Construction

The in-water construction window for tributaries within the study area is July 16 to March 14 inclusive (in water work is not permitted from March 15 to July 15). The timing window does not apply to work above the high-water level.

Ontario Provincial Standard Specifications

Fish and fish habitat protection measures are included in the following OPSSs that will be included in the construction contract:

- OPSS.PROV 180 - General Specification for the Management of Excess Materials
- OPSS.PROV 182 - General Specification for Environmental Protection for Construction in and Around Waterbodies and on Waterbody Banks
- OPSS.PROV 517 - Construction Specification for Dewatering
- OPSS.PROV 803 - Construction Specification for Vegetative Cover (issued in November 2020 to replace former OPSS 804)
- OPSS.PROV 804 - Construction Specification for Temporary Erosion Control (issued in April 2021 to replace the erosion control components of former OPSS 805)
- OPSS.PROV 805 - Construction Specification for Temporary Sediment Control (issued in November 2020 to replace the sediment control components of former OPSS 805)
- OPSS 825.PROV - Construction Specification for Placement of Aggregates in Waterbodies
- OPSS 1005.PROV - Material Specification for Aggregates - Waterbody

5.1.2.4 Project Notification

A Project notification form will be prepared for MTO to be kept on file.

5.1.3 Erosion and Sediment Control

Mitigation measures for sedimentation, erosion, and dust control are recommended to prevent sediment and dust from entering sensitive natural areas (i.e., watercourse and wetlands). The primary principles associated with sedimentation and erosion protection measures are to: (1) reduce the duration of soil exposure; (2) retain existing vegetation, where feasible; (3) encourage re-vegetation; (4) divert runoff away from exposed soils;



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(5) keep runoff velocities low; and to (6) trap sediment as close to the source as possible. To address these principles, the following mitigation measures are recommended:

- Install sediment fencing and/or barriers along work zones where there is potential for sedimentation of watercourses or wetlands, or inadvertent encroachment of construction vehicles into trees or natural areas.
- Stabilize exposed soil areas and re-vegetate through the placement of seed and mulching (native seed mixes; sourced locally if possible) or seed and an erosion control blanket, promptly upon completion of construction activities. All disturbed substrates are recommended to be re-vegetated using seed mixes of species that are native to the site and suitable for site conditions. Introduce seed to disturbed substrates as soon as feasible following construction, and sediment fencing is recommended to remain in place until vegetation cover is re-established.
- Re-fuel equipment 30 m away from the watercourses and the wetland to reduce potential impacts in the event of an accidental spill.
- In addition to any specified requirements, make additional sediment fence available on site, prior to grading operations, to provide a contingency supply in the event of an emergency.
- Monitor sediment and erosion controls daily and properly maintain as required. Remove controls only after the soils of the construction area have been stabilized and adequately protected or until cover is reestablished.
- Monitor limits of construction adjacent to natural features during construction (along with sediment and erosion control measures) to maintain limits with respect to vehicular traffic and soil or equipment stockpiling.
- Restore disturbed natural areas to pre-construction conditions.

5.1.4 Drainage

Section 3.1.8 outlines the culvert replacements and SWM ponds proposed for this project.

The drainage design will maintain existing flow levels leaving MTO property at all times. There will be no drainage impacts on adjacent lands associated with the work and Stormwater Management measures will be implemented as part of the contract.

The MTO Highway Drainage Design standards have been met.



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Stormwater and Drainage Plans have been prepared and are included in the contract package. Further details regarding the drainage and hydrology are available in the *Drainage and Stormwater Management Report* (Stantec, 2023), on file with MTO.

5.1.5 Groundwater and Source Water Protection

5.1.5.1 Source Water Protection

The primary objective of the Source Protection Plan, as provided for in the *Clean Water Act*, is to protect existing and future drinking water sources. The Study Area is located within the South Georgian Bay Lake Simcoe Source Protection Region, as documented in the *South Georgian Bay Lake Simcoe Source Protection Plan* (2015).

Lake Simcoe Region Conservation Authority Regulated areas are present near the Highway 400 / Simcoe Road 88 interchange associated with watercourses.

There are no Intake Protection Zones (IPZ) or Significant Groundwater Recharge Areas (SGRA) present in the study area. There are no municipal wells or Wellhead Protection Areas within the study area. Highly Vulnerable Aquifers (HVA) are present within the study area. Sensitive groundwater resources are shown on available mapping (Town of Bradford West Gwillimbury OP, Schedule D3; County of Simcoe Official Plan (Schedule 5.2.4 to 5.2.6) and LSRCA interactive mapping).

5.1.5.2 Construction Dewatering

A *Foundation Investigation and Design Report* (Stantec 2023) was completed which documented groundwater investigations associated with the Highway 400 / Simcoe Road 88 interchange. The report is on file with MTO.

Groundwater levels were measured at approximately 240.4 m to 241.9 m in two monitoring wells near the bridge. These elevations are 1.6 m and 0.8 m below the existing ground surface adjacent to the highway. The report identified that excavation for the pile cap for the new centre pier may penetrate below the static groundwater level, although the presence of the existing highway drainage infrastructure likely depresses the static groundwater table in the immediate area of the planned centre pier. In addition, it is understood that temporary protection systems (TPS) are intended for the centre pier location, and this will also limit the volume of any seepage and infiltration into the open excavation.

Given the limited depth of excavation at the centre pier, the use of TPS, and low permeability of the native soils, a minimal volume of seepage and infiltration is anticipated and dewatering (drawdown of groundwater in advance of construction) will



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not be required. Unwatering (removal of water during construction) can use conventional sump and pump techniques for shallow excavations.

The design of dewatering and unwatering systems are the responsibility of the contractor. Specific to the volume of seepage and infiltration anticipated in the excavations, an Environmental Activity Sector Registry (EASR) was completed and will be submitted with the MECP for the purposes of un-watering of the excavations. Stantec anticipates that dewatering may be completed at rates of greater than 50,000 L/day and less than 400,000 L/day, and therefore an Environmental Activity and Sector Registry (EASR) registration with the Ministry of Environment, Conservation and Parks (MECP) is required. If additional dewatering is required, construction methods must be altered to remain below the permitted rate, or construction must be stopped until conditions change or a Permit to Take Water (PTTW) can be obtained. Depending on conditions encountered, the Contractor may need to:

- Employ additional mitigation measures to reduce flow into the excavation
- Reduce the size of the excavation
- Delay construction activity following a large precipitation event
- Cease dewatering activities and apply for a PTTW

Standard spills management and erosion and sediment control mitigation have been included to protect groundwater. Mitigation measures associated with groundwater management are provided in **Table 5**.

5.1.6 Landscaping

Tree removal is required for this project, and will be completed outside of the applicable migratory bird nesting and bat timing windows specified in this report. Contract drawings will identify the edge of work areas to avoid unnecessary removal of trees and vegetation.

Revegetation of disturbed areas, and watercourse realignment site-specific vegetation for slope stability will be provided on Contract drawings.

5.1.7 Soil Management and Excess Materials

A soil sampling program and an Excess Materials Management Plan (EMMP) were completed as part of the geotechnical and environmental requirements for this project. The EMMP was prepared to determine suitable management protocols for excess materials that may be generated at the Study Area during construction.



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A total of 12 borehole locations were selected for environmental analysis of soil quality based on a review of the *Contamination Overview Study* (Stantec, 2023), covering Simcoe Road 88, as well as at nearby structures at Line 9, Line 12, and Line 13. Six of the boreholes were at the Highway 400 / Simcoe Road 88 interchange.

Boreholes were completed between May 31, 2019 and May 15, 2023. From review of the COS, the land to the north and south of the interchange generally consists of agricultural land use, and as such, no environmental sampling was completed in these areas as no potential sources of contamination (PSOC) were identified. The soil sampling prioritized areas adjacent to properties with identified PSOCs. The borehole locations were selected to be generally representative of conditions across the Site, and at areas adjacent to potential sources of contamination.

Soil excavated as part of the construction will need to be managed on Site and/or disposed off-Site as part of the work program. The soil quality was assessed in the context of the Ontario Ministry of the Environment, Conservation and Parks (MECP) Ontario Regulation (O. Reg.) 153/04 Table 1 Site Condition Standards (SCS), which are considered representative of background soil quality, as well as the MECP Table 2.1 Excess Soil Quality Standards (ESQS) referenced by O. Reg. 406/19, *On-Site and Excess Soil Management*. These standards were the volume independent ESQS for a potable groundwater condition and for an industrial / commercial / community land use for comparison purposes and to assist with evaluating off-Site soil disposal options.

The concentrations of parameters tested were below the Table 1 SCS in all of the soil samples collected from the Site with the exception of:

- EC and/or SAR parameters from 19-14, NEW 325, SEW 300, SEW 350, 12-SB, 13-NB and 13-SB
- Cyanide at borehole location NEW 325
- PHC F3 and PHC F4 at borehole location 19-14

The concentrations of parameters tested were below the Table 2.1 ESQS in all of the soil samples collected from the Site with the exception of:

- EC and/or SAR parameters from NEW 325, SEW 300, 12-SB, 13-NB and 13-SB
- Cyanide at borehole location NEW 325

Based on the results of the waste classification analyses, excavated soil from the Site would be classified under Ontario Regulation 347 as non-hazardous waste for off-site disposal purposes.



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The EMMP will be made available to the contractor as general guidance on management of excess materials during construction and should be supplemented with testing of materials to be removed or managed, as appropriate.

All excess material generated during construction shall be managed in accordance with OPSS 180 and the recommendations in the EMMP, as well as the Amendment to OPSS 180 provided in the Contract documents. Opportunities for reducing, reusing, and recycling excess materials generated during construction will be considered.

Standard mitigation for excess materials management can be found in **Table 5**.

5.1.8 Designated Substances and Waste Management

A *Designated Substances and Hazardous Building Materials Assessment* (Stantec, 2023) was completed for the Highway 400 / Simcoe Road 88 interchange study area. The report is on file with MTO and findings are incorporated into the contract specifications.

The underside and top of the Highway 400 underpass at Simcoe Road 88 was assessed visually from the side of the road. Sampling occurred at the carpool lot near the Highway 400 / Simcoe Road 88 underpass. No sampling was conducted in areas where vehicle traffic was present. A document review was also completed by Stantec which included available previous structural drawings.

Based on the visual assessment and laboratory analysis, designated substances and hazardous building materials were found to be present. **Table 2** below provides a summary of the materials identified and recommendations on their management.

Table 2: Summary of Findings

Building Materials	Comments
Arsenic	Arsenic may be present in hot-mixed asphalt but at concentrations that are not expected to be a concern.
Asbestos	Suspect asbestos-containing asphalt sampled from the site 30X-309/B0 was identified to be non-asbestos-containing by laboratory analysis. The following building materials were observed to be present but not sampled, and are listed as presumed asbestos-containing materials (PACMs): <ul style="list-style-type: none">• Highway 400 / Simcoe Road 88 structure (Site 30X-309/B0)



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Building Materials	Comments
	– Asphalt
Lead	<p>Paint applications were observed within the Study Area at Simcoe Road 88.</p> <p>The following paint application was identified to contain lead in concentrations that is considered low level:</p> <ul style="list-style-type: none"> • Highway 400 / Simcoe Road 88 structure (Site 30X-309/B0) <ul style="list-style-type: none"> – carpool parking lot – Yellow colored road paint – <82 ppm <p>White and yellow coloured paint applications were observed on Highway 400 and Simcoe Road 88, however, were not sampled due to health and safety concerns. Coatings on steel within barrier walls may contain lead.</p>
Silica	The presence of silica may be present in materials such as asphalt, cement, and concrete.
Benzene	May be present in asphalt.
Other Designated Substances	Acrylonitrile, coke oven emissions, ethylene oxides, isocyanates, and vinyl chloride are not typically a concern in building materials; therefore, these substances were not investigated.
Mercury	Equipment suspected to contain mercury was not observed. Mercury may be present in paints and adhesives.
Polychlorinated Biphenyls (PCBs)	Equipment suspected to contain PCBs was not observed.

Recommendations pertaining to the handling, removal, disposal, and management of identified designated substances and hazardous building materials are provided in the Designated Substances and Hazardous Building Materials Assessment report (Stantec, 2023), and the Contractor should read the table above in conjunction with the remainder of that report.

Standard mitigation for designated substances, excess materials management, and spills management can be found in **Table 5**.



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5.2 Cultural Environment

5.2.1 Heritage Resources

The Highway 400 Heritage Bridge Replacement Design Concept Study, Major Mackenzie Drive to Highway 11, dated May 2009, identified a family of underpass bridges along the Highway 400 corridor from Vaughan to Barrie, with potential aesthetic and heritage value. MTO investigated the preservation of this value by incorporating sympathetic structural design principles in the bridge replacement strategy. This was achieved through the incorporation of aesthetically and historically significant features of the existing heritage bridges into the design of the replacement underpasses.

The existing Highway 400 / Simcoe Road 88 bridge contains the Provincial Coat of Arms as a sculptural relief formed into the surface of each wingwall. MTO has stipulated that heritage treatments consistent with the original heritage bridges along the Highway 400 corridor shall be incorporated into the replacement structure and, as a minimum, the Provincial Coat of Arms will be reinstated into the new bridge within each of the four quadrants.

The property located at 3533 County Road 88 is a listed resource on the Town of Bradford West Gwillimbury Heritage Register.

A Cultural Heritage Evaluation Report (CHER) was started by Golder Associates in 2011, however the report was not completed. Stantec updated the report in accordance with MTO's cultural heritage conservation policy and process, as well as the Standards and Guidelines for Conservation of Provincial Heritage Properties issued under the authority of the *Ontario Heritage Act*.

Following an evaluation of the property according to O.Reg. 9/06 and O.Reg. 10/06, the building was found to meet criterion 1 of O.Reg 9/06 as it contains a representative example of an Ontario vernacular Four Square residence with Edwardian influence. However, the CHER did not determine that the property exhibited a high degree of craftsmanship or demonstrated the work of a noted local architect.

The CHER was reviewed by the MTO Cultural Heritage Review Committee in August 2023 and the committee determined the property did not meet any criteria of O.Reg. 9/06. Therefore, 3533 County Road 88 is not a provincial heritage property or provincial heritage property of provincial significance.

The report is included in **Appendix D**.



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5.2.2 Archaeological Resource

A Stage 1-2 Archaeological Assessment (URS, 2000) was completed for additional areas that were not previously assessed as part of the 2003 TESR during Preliminary Design which provided archaeological clearance for the MTO ROW within the Study Area.

A Stage 1-2 Archaeological Assessment (PIF P394-0109-2023) was conducted, with fieldwork occurring from May 29-June 1 and June 19-22, 2023. A final fieldwork period was starting in October 2023.

The Stage 1-2 Archaeological Assessment will be completed and submitted to MCM for review and inclusion in the Ontario Public Register of Archaeological Reports.

There is always potential for deeply buried archaeological deposits to be discovered during construction. Mitigation measures for deeply buried archaeological deposits are included in **Table 5**.

5.3 Socio-economic Environment

The existing socio-economic environment conditions were outlined in the previous 2003 TESR during preliminary design. The sections below provide relevant details for the Detail Design phase, based on socio-economic conditions at the time of DCR preparation.

5.3.1 Adjacent Land Use / Property

5.3.1.1 Land Use

The study area is located entirely within the Town of BWG in the County of Simcoe, and it is located west of the urban areas of the community.

Northeast of the interchange are a series of agricultural properties with no structures that are connected to Simcoe Road 88 and Line 8 by McKinstry Road. Northwest of the interchange is a campground which serves motorhomes and other forms of campers. Two sewage lagoons are located on the property near the interchange which will be avoided as part of this project through modifications to ramp radii.

Areas south of the interchange are commercial and industrial properties which include a highway gasoline and service station on the southeast quadrant and large format properties in a business park on the southwest. The southwest business park access is from 5th Sideroad using Sterling Crescent. The business park development constitutes



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the primary change to the study area since the 2003 TESR as the property was previously an agricultural field.

The lands surrounding the Highway 400 and Simcoe Road 88 interchange and Line 9 are within the Highway 400 Employment Lands Secondary Plan, as shown on Schedule B-2 of the *Town of Bradford West Gwillimbury Official Plan (2021)*. These areas are envisioned to become a high priority commercial and industrial node with proposed collector roads running parallel to the highway, which connect to the east-west minor arterial road network. The proposed Highway 400-404 link (Bradford Bypass) will be located on an east-west corridor between Line 8 and Line 9.

5.3.1.2 Consistency with the Provincial Policy Statement and Provincial Policy

The Highway 400 Employment Lands are included within *A Place to Grow: Growth Plan for the Greater Golden Horseshoe (GGH) (2020)* where it is identified within the Schedule 8 Simcoe Sub-Area. The Town of Bradford West Gwillimbury is also identified as a “Primary Settlement Area”, which is one of seven locations where growth is directed within the sub-area. The County of Simcoe is forecast to rise in population to 555,000 people and 198,000 employment by 2051 according to the Plan. The Highway 400 Employment Lands are also included in the *County of Simcoe Official Plan (2018)*.

The *Provincial Policy Statement (PPS 2023)* is issued under Section 3 of the *Planning Act*. Section 3 of the Act states decisions affecting planning matters “shall be consistent with” the PPS. The improvements are consistent with the PPS Chapter 3, Sections 3.1 and 3.2 and 3.5 and in the following ways:

- The improvements are consistent with the PPS goal for transportation systems since they are safe, energy efficient, facilitate the movement of people and goods and address projected needs
- The improvements make efficient use of existing and planned infrastructure, including the existing alignment of Highway 400 as outlined in the 2003 TESR
- MTO has integrated transportation and land use considerations in all stages of the planning process, as required by the PPS
- MTO is planning for and protecting the Highway 400 corridor and ROW for the future, including building structures to accommodate future widening

The PPS requires that MTO consider the significant resources protected by Chapter 4 of the PPS (Wise Use and Management of Resources), when planning for corridors and rights-of-way. Significant resources typically include agricultural lands, SWH, and archaeological resources.



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The project requires construction on agricultural lands; however, these are minimized to the extent possible. Agricultural land is required to accommodate the McKinstry Road realignment, however the road connects with the original municipal ROW as soon as possible. Most proposed work is located within or immediately adjacent to MTO, County of Simcoe Road 88, and municipal ROW (McKinstry Road).

Investigations related to terrestrial ecosystems (including SWH) have been undertaken and are described in the DCR.

5.3.1.3 Property

One residential property was identified to be acquired as part of the 2003 TESR since it is impacted by the new northbound off-ramp to Simcoe Road 88. The project team confirmed the property would be impacted and the property was acquired by MTO as part of this project.

Additional permanent property acquisition is required for the ramp alignments and highway modifications. All property has been acquired as of August 10, 2023. Project drawings include the final property boundaries for this project and are identified in **Appendix A**.

5.3.2 Air Quality

Dust may be generated during construction, which may adversely affect air quality. Standard mitigation will be used for dust control (i.e., water, calcium chloride) during construction. Impacts will be minimized by compliance with MECP guidelines, as well as Contract General Conditions to minimize dust and other air quality impacts.

Best management practices for Air Quality Dust Management are provided in **Table 5**. The following best management practices are included:

- Regular cleaning of construction sites and access roads to remove construction-caused debris and dust
- Dust suppression on unpaved haul roads and other traffic areas susceptible to dust, subject to the area being free of sensitive plant, water or other ecosystems that may be affected by dust suppression chemicals
- Covered loads when hauling fine-grained materials
- Prompt cleaning of paved streets / roads where tracking of soil, mud or dust has occurred



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- Tire washes or other methods to prevent trucks and other vehicles from tracking soil, mud or dust onto paved streets or roads
- Covered stockpiles of soil, sand, and aggregates as necessary
- Compliance with posted speed limits, and as appropriate, further reductions in speeds when travelling sites or unpaved surfaces

5.3.3 Construction Noise Assessment

5.3.3.1 Operational Noise

MTO completed a Preliminary Design Study outlined in the *Highway 400 Planning and Preliminary Design Study from the South Canal Bridge to 1.0 km South of Highway 89 Transportation Environmental Study Report* (TESR), November 2003 (GWP 40-00-00) which included a Noise Assessment Report (RWDI, 2002). The report included both traffic and construction noise assessments. No noise mitigation measures were warranted at the Highway 400 / Simcoe Road 88 bridge based on the contents and analysis of the 2002 RWDI report.

A Construction Noise Impact Assessment Memorandum was completed for the Highway 400 Interchange at Simcoe County Road 88 (Stantec, 2023) in accordance with the MTO *Environmental Guide for Noise* (2022). The memo assessed traffic noise impacts due to the proposed changes to the Highway 400 Interchange at Simcoe Road 88 at the surrounding noise sensitive areas (NSAs) and investigates noise mitigation requirements.

Traditional NSAs include the following land uses, with an outdoor living area (OLA) associated with them: Private homes, townhouses, multiple unit buildings (e.g., as apartments with OLAs for use by all occupants), or Hospitals, nursing homes for the aged, where there are OLAs for the patients.

Where a freeway / highway improvement is planned, Special land use NSAs (such as educational facilities, campgrounds with overnight accommodation, community centres with OLAs, municipal parks, or places of worship with OLA) are only considered if it is located next to a traditional NSA.

Because the Yogi Bear campground is not next to a Traditional NSA, it is not considered a Special Land Use NSA per the MTO Guide. A mixed use industrial and commercial subdivision proposed for the southwest quadrant of the interchange is not a sensitive receptor for noise assessment.

The noise impact assessment identified two (2) points of reception (PORs):



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- Dwelling East of Intersection - South of Simcoe County Road 88 (3473 County Road 88) - POR01
- Dwelling East of Intersection - North of Simcoe County Road 88 (3420 County Road 88) - POR02

The assessment of the interchange noise impact was conducted by comparing future “Build” noise impact (with the Project in place) with future “No-Build” impact (without the Project). **Table 3** presents a comparison of future “Build” versus future “No-Build” sound levels.

Table 3: Predicted Future Sound Levels - Year 2033

Receptor ID	Modelling results			Assessment		
	Future “No Build” Sound Levels (dBA)	Future “Build” Sound Levels (dBA)	Increase in Sound Levels (“Build” – “No-Build”) dB	Predicted Greater than 5 dB Above Ambient?	Is Future “Build” Sound Levels Greater than 65 dBA?	Mitigation Required (Yes/No)
POR01	60	62	2	No	No	No
POR02	60	61	1	No	No	No

Predicted sound levels are within the criteria at all modeled receptors and therefore, no noise mitigation is recommended for the Project. Future Build sound levels were also modelled, and they were 1-3 dB lower than those predicted. Therefore, the noise model used for this assessment is appropriate.

The Construction Noise Memorandum also examined potential construction noise impacts and provides general mitigation measures, as described in the next section.

5.3.3.2 Construction Noise

Construction noise impacts are temporary in nature, and largely unavoidable to a certain extent. With adequate controls, impacts can be reduced. Construction noise in Ontario is typically regulated at the municipal level by limiting the construction period time of day and at the provincial level by limiting the noise level of specific construction equipment. There are no receptor-based noise limits to assess construction noise.

The MECP sets out noise emission standards for various types of construction equipment in its publications NPC-115 and NPC-118. Equipment noise emission



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standards from NPC-115 and NPC-118 are included in the Noise Memorandum for reference.

Noise from construction activities can be controlled in numerous ways, including operational time restrictions, source mitigation measures, as well as receptor-based mitigation measures. General guidance (code of practice) is provided to minimize the noise impact and the potential noise complaints. The Construction Noise mitigation measures are provided in **Table 5**.

5.3.4 Construction Vibration

Within the Highway 400 / Simcoe Road 88 Interchange, impact pile driving is limited to the Highway 400 / Simcoe Road 88 underpass. No pile driving is required for the ramps. The closest building / structure is located outside the zone of influence for impact piles. The vibration impact of pile driving will be insignificant on any nearby vibration sensitive buildings.

Within the construction activities surrounding the Highway 400 / Simcoe County Road 88 Interchange Improvement project, it is anticipated that operation of a vibratory roller would be the activity generating the most significant vibration that can be transmitted to nearby buildings through the ground soil.

A vibration impact assessment for the most impactful construction source was conducted using the method proposed by the United States Federal Transit Administration (FTA) Manual. The recommended setback distance from building damage (based on the City of Toronto Zone of Influence (ZOI) limit as a reference) was conducted.

Table 4: Construction Vibration Zone of Influence

Vibration Source	Minimum Setback Distance (m)	Applied Criteria
Vibratory Roller	8	5 mm/s (PPV) – City of Toronto Zone of Influence Limit
Impact Piling	30	5 mm/s (PPV) – City of Toronto Zone of Influence Limit
Impact Piling	12	20 mm/s (PPV) – Ontario Provincial Standard Specification Limit



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There are no vibration sensitive areas within any of the setback distances for building damage. No buildings are identified within the vibration ZOI of 8 m for vibratory roller along Simcoe County Road 88.

Sewage lagoons with clay lining are identified at Yogi Bear Campground in Preliminary Design. The lagoons are over 200 m away from the closest piling location for the bridge which is beyond the zone of influence for construction vibration for damage.

Specific construction vibration mitigation measures are not required. However, if there are any complaints due to operation of vibratory roller, it is recommended to use a non-vibratory roller in proximity to the sensitive areas, or smaller size vibratory roller such as Corniver CT48S with continuous vibration monitoring.

5.4 Traffic and Emergency Services

5.4.1 Traffic Staging and Detours

Advance Notice of Construction Start, the construction schedule, and any changes to proposed traffic flow will be provided in writing to emergency services at least two weeks in advance of construction.

Detours will be provided for ramp closures as well as the demolition of the Highway 400 / Simcoe Road 88 bridge. Signage will be provided to direct motorists to use the alternate routes, as specified in the contract documents.

5.4.2 Business Access During Construction

Businesses with access to Simcoe Road 88 are present within the study area.

The Contractor shall maintain access to all properties during the construction contract. Installation of a left turn lane into the Yogi-Bear property will be constructed on Simcoe Road 88 and will provide improvements to turning movements into the business. Temporary traffic signals will be installed at ramp terminals to assist with turning movements on Simcoe Road 88 during construction.

5.5 Utilities

The majority of the utility relocations will be undertaken in advance of construction. All other existing utilities will be protected as required to avoid conflicts or impacts during construction.



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The Contractor will be required to obtain a Road Occupancy Permit from the Town of Bradford West Gwillimbury and County of Simcoe for work on municipal or County property.

5.6 Climate Change

The project included a review of drainage modelling for various storm and future rainfall scenarios which were applied to the project. The project includes Stormwater Management facilities to manage water within the MTO right-of-way in the project limits.

Data was collected for the year 2097, based on a 75-year design service life (DSL) of infrastructure to consider climate change, considering up to a 100-year return period for rainfall parameters.

The project involves constructing a new bridge over Highway 400 which will accommodate the future expansion of the highway to up to 12 lanes. Overall improvements on Highway 400 will seek to reduce congestion and delays on the highway, and provide the space required for future infrastructure which may include high occupancy vehicle lanes.

During construction, motorists will be directed to the alternate carpool lots to encourage ridesharing during the carpool lot closure.

6.0 Summary of Environmental Effects, Mitigation and Commitments

The summary of environmental effects, mitigation and commitments table is included in **Table 5**.



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LEGEND			
MTO	Ontario Ministry of Transportation	EMERG	Emergency Services
MNRF	Ministry of Natural Resources and Forestry	BWG	Town of Bradford West Gwillimbury
MECP	Ministry of the Environment, Conservation & Parks	CS	County of Simcoe
DFO	Fisheries and Oceans Canada	CWS	Canadian Wildlife Service
MCM	Ministry of Citizenship and Multiculturalism	LSRCA	Lake Simcoe Region Conservation Authority
ECCC	Environment and Climate Change Canada	INDG	Indigenous Communities
		PUB	General Public
		BUS	Businesses

Table 5: Summary of Environmental Effects, Proposed Mitigation, and Commitments for Future Work

ID #	Environmental Effect/ Concern and Potential Impact	Concerned Agencies	ID #	Mitigation/Commitment for Future Work
1.0	Vegetation Communities (Section 5.1.1.1)			
1.1	<p><u>Vegetation Disturbance and Removal</u></p> <p>Heavy equipment could damage peripheral vegetation from contact, excavation and/or soil compaction.</p> <p>Tree removal will be required in the interchange and to facilitate highway improvements.</p>	MTO MNRF MECP	1.1.1	<ul style="list-style-type: none"> Minimize encroachment and vegetation disturbance to that necessary for construction, and implement standard measures to protect adjacent vegetation, including erosion and sediment control measures to protect adjacent habitats. Areas to be cleared of existing vegetation should be clearly marked to prevent unnecessary removal. Barriers for tree protection at project limits may be coincident with sediment fencing used to control erosion and sediment transport at the site in areas of grading. An Advance Tree Clearing Contract has been prepared to complete vegetation removal outside of the migratory bird window (i.e., April 1 to August 31) and the period when bats use trees for maternity roosts (i.e., April 1 to September 30). The 25 trees that were identified as potential bat SAR maternity trees will be protected from harm during tree clearing and trees will be clearly marked with a suitable buffer zone using tree protection fencing (OPSD 220.010 Barrier for Tree Protection). The 25 trees will not be removed until approval from MECP has been received.
1.2	<p><u>Invasive Species Management</u></p> <p>Phragmites was identified throughout the Study Area, typically in low-lying areas.</p>	MTO MNRF MECP	1.2.1	<ul style="list-style-type: none"> Invasive Phragmites are present in areas identified as MASM 1-14 in the <i>Terrestrial Ecosystems Existing Conditions and Impact Assessment Report</i> mapping, and areas are included in contract drawings. Phragmites will be treated by spraying, cutting, or cutting and spraying. If work will occur in or near features with Phragmites, the following measures are required to control the spread of the species: <ul style="list-style-type: none"> Soil from areas impacted by Phragmites shall not be stockpiled for reuse. Debris including earth clods and Phragmites material attached to the outside of the equipment is prohibited from entering the Working Area. Equipment coming on site shall be inspected as close to the site entrance as possible for debris, and if present, debris shall be completely removed and shall be collected and managed as specified in the Contract Documents prior to the equipment proceeding to the Working Area. Equipment shall also be inspected for debris prior to leaving the Working Area. Any debris shall be removed and managed as specified in the Contract Documents, and in a manner that prevents equipment from coming into further contact with Phragmites. Equipment may be inspected by the Contract Administrator upon entry to or exit from the Working Area for evidence of debris attached to the outside surfaces of the equipment.



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2.0	Wildlife and Wildlife Habitat (Section 5.1.1.2)			
2.1	<u>General Wildlife Protection</u> Potential to encounter wildlife and wildlife habitat during construction, including Species at Risk.	MTO MNRF MECP	2.1.1	<ul style="list-style-type: none"> • A thorough visual search of work zones should be conducted by Contractors before work commences each day. • The feeding, harassment, or taking of wildlife is strictly prohibited. • All construction equipment and vehicles shall give a right-of-way to wildlife, allowing wildlife to pass and proceed to a safe distance prior to construction equipment/vehicles commencing construction activities. • In the event wildlife is injured during construction activities, the Contractor shall immediately cease work activities and notify the MTO Contract Administrator providing details of the incident. • Handling of SAR species is not permitted within <i>Endangered Species Act</i> (ESA) authorization. • If the Contractor encounters a Species at Risk within the Working Area not otherwise identified in the Contract documents and that are likely to be impacted by the Contractor's operations, the Contractor shall immediately notify the Contract Administrator and suspend operations within the area identified by the Contract Administrator. Work will remain suspended within that area until otherwise directed by the Contract Administrator in writing.
2.2	<u>Protection of Migratory Birds</u> Potential to encounter migratory birds or nests that are protected under the <i>Migratory Birds Convention Act</i> .	MTO MNRF MECP CWS	2.2.1	<ul style="list-style-type: none"> • The Contractor shall not destroy the active nests (nests with eggs or young birds), or wound or kill birds, of species protected under the <i>Migratory Birds Convention Act, 1994</i> and/or Regulations under that Act. When active nests are encountered, the ministry's Contract Administrator must be contacted. • Clearing and removal of trees and shrubs shall not occur between April 1 and August 31 of any calendar year to avoid the usual nesting period for birds (core nesting period). April 1 to August 31 is the restricted period for vegetation clearing and work on existing structures that could disturb protected nests. Vegetation clearing outside of the core nesting period will eliminate the need for migratory bird nest searches • If a nest is located, a designated buffer will be delineated within which no activity will be allowed while the nest is active. The radius of the buffer will be determined by a qualified professional. Once the nest is determined to be inactive (e.g., the young have fledged the nest), clearing and other activities in the area may proceed. • Migratory bird nesting preventative measures are not anticipated in the study area. If a construction activity that may disturb or disrupt birds found nesting in the study area is required during the timing window for migratory bird nesting (April 1 to August 31), exclusionary measures (such as pre-tarping before April 1) could be employed to deter birds from nesting; following the <i>MNRF Best Management Practices for Excluding Barn Swallows and Chimney Swifts from Buildings and Structures</i>. • The Contract Administrator shall be notified if active nests (nests with eggs or young birds) are encountered.
2.3	<u>Species at Risk: Bat Species</u> Potential to encounter Little Brown Myotis, a species at risk bat and associated habitat within or adjacent to the Study Area.	MTO MECP	2.3.1	<ul style="list-style-type: none"> • Advanced clearing for the project is planned to commence in late November 2023 and be completed by the end of January 2024. This contract includes vegetation removal (no grubbing), except for 25 SAR bat trees identified on contract drawings. Remaining tree removal (non-SAR bat trees) will occur outside the period when bats use trees for maternity roosts (ie. April 1 to September 30) to reduce the likelihood of harm to bats. • The 25 trees that were identified as potential bat SAR maternity trees will be protected from harm during tree clearing and trees will be clearly marked with a suitable buffer zone using tree protection fencing (OPSD 220.010 Barrier for Tree Protection). • Consultation with MECP has been initiated with respect to a permit under the ESA. The 25 trees will not be removed until approval from MECP has been received.



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	With the implementation of mitigation, including timing windows, impacts can be reduced.			
2.4	<u>Monarch</u> Monarch is a Species of Conservation Concern and may be present in roadside meadows where loss of habitat is anticipated. Site specific mitigation measures are provided.	MTO MECP MNR	2.4.1	<ul style="list-style-type: none"> Construction activities with the potential to harm Monarch eggs, caterpillar or pupae (e.g., vegetation clearing in meadow areas) should not be undertaken during the larval period which is approximately May 1 to September 30. If vegetation clearing will proceed when Monarch larvae may be present (May 1 to September 30), inspection of milkweed plants is recommended to locate Monarch larvae. If larvae are present, they may be moved to a location that is suitable and safe under the direction of a qualified professional. Monarch caterpillars may be moved to other milkweed plants; for other larval stages (i.e., eggs and chrysalis), entire milkweed plants should be transplanted. Milkweed is disturbance tolerant and widespread within the study area, and the study area includes a busy highway, so impacts to Monarch are considered low. Standard roadside seed mixes are acceptable for use in the study area, in accordance with OPSS 803 – Vegetative Cover.
2.5	<u>Bank Swallow</u> Bank Swallow have potential to occur if stockpile materials become present within the Study Area at time of construction activities.	MTO MECP MNR	2.5.1	<ul style="list-style-type: none"> If stockpiles are anticipated to occur within the Study Area, the following mitigation measures are recommended prior to and during the breeding season (i.e., April 1 to August 31): <ul style="list-style-type: none"> Contour stockpiles to have a slope less than 70 degrees. Flatten vertical faces at the end of each construction day to prevent Bank Swallows from digging burrows in them overnight or on weekends. In the event a colony is formed in stockpile materials, a minimum buffer zone of 50 m should be installed around the colony. Stop excavation work if nests appear and operations are not to resume until birds leave at the end of the breeding period.
2.6	<u>Eastern Milksnake</u> There are records of Eastern Milksnake in the Study Area and potential habitat is present in open fields, meadows, thickets and within the ROW. Construction activity can result in mortality to snakes.	MTO MECP MNR	2.6.1	<ul style="list-style-type: none"> A thorough visual search of the Work Zone by construction contractors is recommended before work commences each day. Visual searches should include inspection of machinery and equipment, prior to starting equipment, particularly during the peak reptile activity period from April 1 to November 1. If reptiles or amphibians are encountered during construction, they will be permitted reasonable time to leave the area. Individuals will not be handled, chased, or harassed. If reptiles do not leave the work area on their own, contact should be made with the appropriate agency to obtain information about the species and direction on how to proceed. A Qualified Biologist may need to be retained to relocate the individuals. Disturbance to brush piles/logs will be avoided wherever possible. If a brush/log pile must be moved or disturbed, it will be inspected for reptiles and relocated within a few metres, to the extent possible, to retain the habitat feature.
2.7	<u>Terrestrial Crayfish</u> Terrestrial Crayfish chimneys/burrows were	MTO MECP MNR	2.7.1	<ul style="list-style-type: none"> Vegetation removal should be scheduled during periods when crayfish are less likely to be present, such as early spring, when adults are found in streams, lakes, and rivers. Vegetation should be retained adjacent to crayfish habitat as this is important for foraging.



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	<p>observed within a MEGM3 meadow vegetation community.</p> <p>Habitat is present in the Work Zone and is anticipated to be impacted by the proposed construction activities.</p>			<ul style="list-style-type: none"> • Avoid spraying pesticides to control roadside vegetation near crayfish habitat (MEGM3 areas) during construction as this can impact food supply. It is recommended to consider the use other de-icing compounds other than salt near crayfish habitat. • Direct surface water runoff away from crayfish habitat during construction to avoid sedimentation and contamination.
3.0	Fish and Fish Habitat (Section 5.1.2)			
3.1	<p><u>Timing Windows for In-Water Work</u></p> <p>Direct fish habitat was identified at two centreline culverts between Simcoe Road 88 and Line 6, as well as one watercourse on Simcoe Road 88. Indirect habitat is also present in the study area.</p>	MTO MECP MNRF DFO	3.1.1	<ul style="list-style-type: none"> • Works adjacent to aquatic resources that provide fish habitat, or have the potential to support fish habitat, may present a risk of construction-related impacts to fish, and entry into those watercourses is to be avoided. • The in-water construction window for tributaries within the study area is July 16 to March 14 inclusive (in water work is not permitted from March 15 to July 15). The timing window does not apply to work above the high-water level.
3.2	<p><u>Construction In or Near a Waterbody</u></p> <p>In-water work will be required to complete culvert work where fish habitat is present.</p> <p>Entry of sediment, debris, and deleterious substances (i.e., fuel, equipment fluids, etc.) into watercourses during operations around water.</p>	MTO MECP MNRF DFO	3.2.1	<ul style="list-style-type: none"> • The following measures were incorporated into the project design to reduce the risk of impacts to fish and fish habitat: <ul style="list-style-type: none"> – Design drainage system to reduce changes in drainage to watercourses that provide fish habitat – Design and plan activities and works such that loss of fish habitat or disturbance to fish habitat is reduced to the extent possible – Design stormwater management measures to reduce effects on watercourses that provide fish habitat to the extent possible – Design a rehabilitation/re-vegetation plan for long-term stability of the areas disturbed during construction – For rock reinforcement below the normal high-water level, use appropriately sized material • Fish and fish habitat protection measures are included in the following OPSSs that will be included in the construction contract: <ul style="list-style-type: none"> – OPSS.PROV 180 - General Specification for the Management of Excess Materials – OPSS.PROV 182 - General Specification for Environmental Protection for Construction in and Around Waterbodies and on Waterbody Banks – OPSS.PROV 517 - Construction Specification for Dewatering – OPSS.PROV 803 - Construction Specification for Vegetative Cover (issued in November 2020 to replace former OPSS 804)



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				<ul style="list-style-type: none"> - OPSS.PROV 804 - Construction Specification for Temporary Erosion Control (issued in April 2021 to replace the erosion control components of former OPSS 805) - OPSS.PROV 805 - Construction Specification for Temporary Sediment Control (issued in November 2020 to replace the sediment control components of former OPSS 805) - OPSS 825.PROV - Construction Specification for Placement of Aggregates in Waterbodies - OPSS 1005.PROV - Material Specification for Aggregates – Waterbody • A DFO Request for Review will be prepared and submitted. The Contractor will be required to adhere to any further mitigation measures requested by DFO. • A project notification form will be prepared to document the fish mitigation measures and will be kept on file with MTO.
4.0	Erosion and Sediment Control (Section 5.1.3)			
4.1	Sediment and dust may enter sensitive natural features. Minimize the potential for erosion of newly exposed cuts or slopes.	MTO LSRCA MECP DFO MNRF	4.1.1	<ul style="list-style-type: none"> • Erosion and sedimentation control measures will be implemented in accordance with the Contract Documents to prevent or mitigate impacts. To address these principles, the following mitigation measures are proposed: • Sediment fencing and/or barriers installed along work zones where there is potential for sedimentation of watercourses or wetlands, or inadvertent encroachment of construction vehicles into trees or natural areas. • Stabilize exposed soil areas (native seed mixes; sourced locally if possible) and re-vegetate through the placement of seed and mulching or seed and an erosion control blanket, promptly upon completion of construction activities. • All disturbed substrates are recommended to be re-vegetated using seed mixes of species that are native to the site and suitable for site conditions. Introduce seed to disturbed substrates as soon as feasible following construction, and sediment fencing is recommended to remain in place until vegetation cover is re-established. • Re-fuel equipment 30 m away from the watercourses and the wetland to reduce potential impacts in the event of an accidental spill. • In addition to any specified requirements, make additional sediment fence available on site, prior to grading operations, to provide a contingency supply in the event of an emergency. • Monitor sediment and erosion controls daily and properly maintain as required. Remove controls only after the soils of the construction area have been stabilized and adequately protected or until cover is reestablished. • Monitor limits of construction adjacent to natural features during construction (along with sediment and erosion control measures) to maintain limits with respect to vehicular traffic and soil or equipment stockpiling. • Restore disturbed natural areas to pre-construction conditions.
			4.1.2	<ul style="list-style-type: none"> • The time interval between commencement and completion of any work that disturbs earth surfaces shall be a maximum of 45 days. Commencement of such work shall be considered to have occurred when the original stabilizing ground cover has been removed, including grubbing, or has been covered with fill material. Completion of such work shall be considered to have occurred when the specified cover material has been applied.
			4.1.3	<ul style="list-style-type: none"> • A 200 m stand-by supply of prefabricated light duty sediment fence barrier, in addition to sediment fence barrier which may be specified elsewhere in the Contract Documents, shall be maintained at the Contract site prior to commencement of grading operations and throughout the duration of the Contract.



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5.0	Drainage (Section 4.1.4)			
5.1	<p><u>Drainage</u></p> <p>Existing drainage has the potential to be impacted by the project.</p> <p>Stormwater management (SWM) ponds and swales will be implemented in accordance with the drainage plan.</p>	MTO MECP LSRCA	5.1.1	<ul style="list-style-type: none"> The drainage design will maintain existing flows leaving MTO property at all times. There will be no drainage impacts on adjacent lands associated with the work and Stormwater Management measures will be implemented as part of the contract. The MTO Highway Drainage Design standards have been met. Stormwater and Drainage Plans have been prepared and are included in contract package.
6.0	Groundwater and Sourcewater Protection (Section 5.1.5)			
6.1	<p><u>Dewatering</u></p> <p>Groundwater dewatering is required for this project.</p>	MTO MECP LSRCA	6.1.1	<ul style="list-style-type: none"> Design of dewatering/unwatering is the responsibility of the Contractor. All groundwater control systems required for construction of the new bridge must be designed and implemented in accordance with NSSP FOU0003, to be included in the contract documents. An EASR is required to address the limited volume of seepage and infiltration anticipated in the excavations.
6.2	<p><u>Management of Spills</u></p> <p>Improper handling and disposal of operating fluids from equipment and machinery may result in spills, which may impact the environment.</p>	MTO MECP MNRF LSRCA	6.2.1	<ul style="list-style-type: none"> All spills will be immediately controlled and reported to the Contract Administrator, and contact will be made with the MECP Spills Action Centre. The Spills Action Centre Hotline number (1-800-268-6060) shall be posted at the work zones. Maintain an easily accessible spill kit on the work site. Any effluent or cleaning materials generated during the work program will be considered waste and will need to be managed as such. They should be contained in appropriate storage containers and sampled prior to off-site disposal to determine the quality and the appropriate location for disposal. Effluent and cleaning materials cannot be discharged over land or to surface water bodies. The Contractor shall maintain the working area in a tidy condition and free from the accumulation of debris, other than that caused by the owner or others.
7.0	Landscaping (Section 5.1.6)			
7.1	<p><u>Landscape</u></p> <p>Potential to require landscape modifications.</p>	MTO	7.1.1	<ul style="list-style-type: none"> Contract drawings will identify the edge of work areas to avoid unnecessary removal of trees and vegetation. Revegetation of disturbed areas will be provided on contract drawings.



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8.0	Soil Management and Excess Materials (Section 5.1.7)			
8.1	Excess materials may be encountered during construction at the sites and require proper management/disposal.	MTO MECP	8.1.1	<ul style="list-style-type: none"> • Soil excavated during construction should be reused to the greatest extent possible within the Site boundaries, if deemed to be geotechnically suitable, and following the soil management guidance presented in the <i>Excess Materials Management Plan</i> (EMMP). The EMMP provided general guidance on management of excess materials during construction and should be supplemented with testing of materials to be removed or managed, as appropriate. • In general, soil excavated during construction should be reused to the greatest extent possible within the Site boundaries, if deemed to be geotechnically suitable, and following the soil management guidance presented. <ul style="list-style-type: none"> – The Contractor should reference the following guidance during the project: – Regulation (Reg.) 347, Waste, as amended by Ontario Regulation (O.Reg.) 408/19. – Ontario Regulation (O.Reg.) 406/19, On-Site and Excess Soil Management. – MECP 2022 document Rules for Soil Management and Excess Soil Quality Standards, (the “Soil Rules” referenced by O.Reg. 406/19). – O.Reg.153/04 Record of Site Condition. – MTO 2006 document Contaminated Property and Excess Material Management. – Ontario Provincial Standard Specification (OPSS) 180, General Specification for the Management of Excess Materials. • Several sets of soil quality standards are provided in the Soil Rules referenced by O.Reg. 406/19 that may be applicable to site soil when assessing reuse or disposal options. Testing to characterize soil quality in advance of construction is recommended, to better assess excess soil management options. • The contractor can choose to sample soil in-place, or to temporarily stockpile the excavated/disturbed soils on-Site and collect soil characterization samples to determine potentially re-use options. This work shall be done in coordination with a Qualified Person for environmental site assessment (QPESA), as defined in O.Reg. 406/19 and O.Reg.153/04, to maintain data quality and provide appropriate assessment of the soils for potential on-site reuse, off-site re-use, or disposal. Samples should be collected at a frequency established in consideration of O.Reg. 406/19, at the discretion of the QPESA, and in consideration of requirements of the potential receiving site(s). It is noted that the timing of the work contract and construction may affect the sampling requirements, as outlined in O.Reg. 406/19. • At a minimum, soil samples should be analyzed for benzene, toluene, ethylbenzene, xylenes (BTEX), PHC F1 to F4, metals (including Hydride Forming Metals, Cyanide, Available Boron, Chromium Hexavalent, and Mercury), pH, EC, and SAR. If the excavated soils are temporarily stockpiled on-Site, appropriate environmental controls must be put in place to avoid adverse effects, as described in the Soil Rules document, including setback limits and volume restrictions. • During the course of excavation, should suspect soils (e.g., stained or odourous soil, or soil containing debris or slag, etc.) be encountered, the Contract Administrator (CA) on behalf of MTO, and a QPESA, shall be consulted to determine appropriate actions, in accordance with O.Reg. 406/19, O.Reg.153/04, and OPSS 180, including Table 3 of the Special Provision No. ENVR0014. It is expected that additional sampling and/or off-Site removal of suspect soils to an appropriately licensed facility would be required. If there are discrepancies between OPSS 180 and either O.Reg. 406/19, O.Reg.153/04, or Reg. 347, the requirements of O.Reg. 406/19, O.Reg.153/04, and Reg. 347 take precedence.



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				<ul style="list-style-type: none"> It is anticipated that salt-related parameters (including, but not limited to, EC and SAR) related to de-icing activities along the highway would likely be present at concentrations that exceed the applicable soil quality standards at much of the Site. Under O.Reg. 406/19, soil with elevated concentrations of parameters that are attributable to road de-icing may be reused within the Site or elsewhere, subject to certain restrictions and considerations as described in the Soil Rules. If soil impacted by salt-related parameters is to be excavated and removed from the Site, it should be managed in accordance with MTO's Non-Standard Special Provision (NSSP) for the management of salt-impacted fill and the Soil Rules referenced by O.Reg. 406/19. Soil intended for re-use within the site boundaries should also be reviewed and assessed by a geotechnical engineer to determine if it is geotechnically suitable for re-use. The CA consultant (and its QPESA) retained by MTO should be retained as a third party to observe sampling and analytical methods, and to review the characterization data prior to reuse of soils excavated at the Site within the site boundaries.
9.0	Designated Substances and Waste Management (Section 5.1.8)			
9.1	<u>Water Management</u> Potential to generate excess water	MTO MECP	9.1.1	<ul style="list-style-type: none"> As identified in table ID 6.1.1, the contractor will comply with any conditions of the EASR, as confirmed by MECP.
9.2	<u>Construction Effluent, Cleaning Materials, and Waste Management</u> Effluent and cleaning materials may be generated by the construction work	MTO	9.2.1	<ul style="list-style-type: none"> Effluent or cleaning materials generated during the work program will be considered waste and will need to be managed as such. Effluent or cleaning materials should be contained in appropriate storage containers and sampled prior to off-Site disposal to determine the quality and consequently the appropriate location for disposal. Effluent and cleaning materials cannot be discharged overland or to surface water bodies, unless testing determines that they meet the Provincial Water Quality Objectives. Should any construction materials need to be disposed during the construction of the project, the contractor should ensure that the materials go to an appropriately licensed facility or be reused in accordance with OPSS 180.
9.3	<u>Designated Substances</u> Potential to Encounter Designated Substances	MTO MECP	9.3.1	<ul style="list-style-type: none"> The Contractor is advised using SSP 101F21 - <i>Occupational Health and Safety Act</i>-List of Designated Substances, that designated substances are present onsite. Should suspected designated substances, such as asbestos, silica, or lead based paint, be encountered during the construction of the project, the Contractor should notify the CA/MTO so that an appropriately qualified contractor or consultant can be retained to assess and manage the designated substances prior to disturbances, in accordance with SSP 101 F21 - <i>Occupational Health and Safety Act</i>-List of Designated Substances, and with O.Reg. 490/09 and O.Reg. 278/05 made under the <i>Occupational Health and Safety Act</i>.
10.0	Heritage Resources (Section 5.2)			
10.1	<u>Built Heritage Resources</u> Potential for Cultural Heritage impacts due to the interchange and bridge replacement.	MTO MCM INDG	10.1.1	<ul style="list-style-type: none"> Bridge design incorporates heritage elements, including the Provincial Coat of Arms. These elements will be installed, as directed by the contract drawings. A CHER was prepared for the 3533 Simcoe Road 88 structure. No further mitigation was recommended.



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10.2	<u>Archaeological Resources</u> Potential disruption of deeply buried archaeological material.	MTO MCM INDG	10.2.1	<ul style="list-style-type: none"> • A Stage 1-2 archaeological assessment is underway with field visits occurring in spring and summer 2023. Remaining fieldwork will be completed in fall 2023 and documented in a report to be submitted to MCM prior to construction. • The MTO right-of-way and study area has been cleared of archaeological potential by previous archaeological assessments • If deeply buried archaeological deposits are discovered during the Contractor’s operations, MCM will be notified immediately and work near the discovery must be suspended immediately.
11.0 Land Use (Section 5.3.1)				
11.1	<u>Property Acquisition</u> Property requirements have been identified for this project.	MTO PUB	11.1.1	<ul style="list-style-type: none"> • All property has been acquired for this project. No further mitigation required.
12.0 Air Quality (Section 5.3.2)				
12.1	Potential for temporary reduction in air quality during construction	MTO MECP	12.1.1	<ul style="list-style-type: none"> • Dust may be generated during construction, which may adversely affect air quality. Standard mitigation will be used for dust control (i.e., water, calcium chloride) during construction. • Impacts will be minimized by compliance with MECP guidelines, as well as Contract General Conditions to minimize dust and other air quality impacts. • Best management practices for dust management are provided: <ul style="list-style-type: none"> – Regular cleaning of construction sites and access roads to remove construction-caused debris and dust. – Dust suppression on unpaved haul roads and other traffic areas susceptible to dust, subject to the area being free of sensitive plant, water or other ecosystems that may be affected by dust suppression chemicals. – Covered loads when hauling fine-grained materials. – Prompt cleaning of paved streets/ roads where tracking of soil, mud or dust has occurred. – Tire washes or other methods to prevent trucks and other vehicles from tracking soil, mud or dust onto paved streets or roads. – Covered stockpiles of soil, sand, and aggregates as necessary. – Compliance with posted speed limits, and as appropriate, further reductions in speeds when travelling sites or unpaved surfaces.
13.0 Construction Noise and Vibration (Sections 5.3.3 and 5.3.4)				
13.1	<u>Construction Noise</u> Potential for increased noise during construction	MTO MECP	13.1.1	<ul style="list-style-type: none"> • The Contractor shall develop a complaints management process to provide residents/occupants in the vicinity of planned construction sites with the contact details (construction noise complaint process). • Conduct construction during the daytime (7:00 am to 7:00 pm) where possible, and stage the loudest construction equipment and operations during the daytime and keep them away from the noise-sensitive areas, if possible. • Use construction equipment compliant with noise level specifications in MECP guidelines NPC-115 and NPC-118. • Keep equipment well-maintained and fitted with efficient muffling devices. • Restrict idling of equipment to the minimum necessary to perform a specified work. • Consider the use of broadband backup alarms instead of the traditional tonal backup alarms/beepers.



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				<ul style="list-style-type: none"> • Take advantage of shielding from existing buildings to shield residential and other noise-sensitive locations from construction equipment where possible. • Maximize the distance between construction equipment operations and noise sensitive areas. • Minimize the concurrent use of high impact construction equipment, where possible. • Consider main roads for haulage/dump trucks routes where possible, rather than quieter residential roads. • During construction work, if it is determined that there is a need to further reduce noise effects (e.g., if persistent complaints arise), the following additional mitigation measures may be considered and implemented, where appropriate: <ul style="list-style-type: none"> – Coordinate ‘noisy’ operations such that they will not occur simultaneously, where possible. – Where possible, investigate and implement the use of alternative construction equipment or methods to reduce noise emissions from construction. Utilize alternative equipment that generates lower noise levels or optimize silencer/muffler/enclosure performance. – Use rubber linings in chutes and dumpers to reduce impact noise. – Install temporary noise barriers/solid construction hoarding on site boundary to screen affected locations. • Install acoustic enclosures, noise shrouds or noise curtains around noisy equipment.
13.2	<u>Construction Vibration</u> Potential for increased vibration during construction	MTO MECP	13.2.1	<ul style="list-style-type: none"> • There are no buildings located in the 8 m vibration zone of impact. • If there are any complaints due to operation of vibratory roller, it is recommended to use a non-vibratory roller in proximity to the sensitive areas, or smaller size vibratory roller such as Corniver CT48S with continuous vibration monitoring.
14.0	Active Transportation, Traffic and Emergency Services (Section 5.4)			
14.1	<u>Traffic Staging and Detours</u> Temporary detours are required for the project during ramp tie-ins, and for the Highway 400/Simcoe Road 88 bridge demolition.	MTO EMERG PUB/BUS	14.1.1	<ul style="list-style-type: none"> • Advance Notice of Construction Start, the construction schedule, and any changes to proposed traffic flow will be provided in writing to emergency services at least two weeks in advance of construction. • The new Highway 400 / Simcoe Road 88 bridge will be constructed to the north of the existing bridge to help maintain traffic flow during construction. Traffic will shift to the new bridge prior to demolition of the existing bridge. • Detours will be provided for ramp closures as well as the demolition of the Highway 400 / Simcoe Road 88 bridge. Signage will be provided to direct motorists to use the alternate routes, as specified in the contract documents.
14.2	<u>Business Construction Access</u> Businesses with access to Simcoe Road 88 are present within the study area.	MTO PUB/BUS	14.2.1	<ul style="list-style-type: none"> • The Contractor shall maintain access to all properties during the project. • Installation of the left turn lane into the Yogi-Bear property will be constructed on Simcoe Road 88 which will improve the turning movements into the business. • Temporary traffic signals will be installed at ramp terminals to assist with turning movements on Simcoe Road 88 during construction.



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15.0	Utilities (Section 5.5)			
15.1	Existing utility infrastructure was identified throughout the project Study Area. Impacts to existing utilities are anticipated to be avoided or relocated in advance of construction.	MTO UTIL	15.1.1	<ul style="list-style-type: none"> • Utility relocations will be undertaken in advance of construction where feasible. • All existing utilities will be protected as required to avoid conflicts or impacts during construction. • The Contractor will be required to obtain a Road Occupancy Permit from the Town of Bradford West Gwillimbury and County of Simcoe for work on municipal or County property.
16.0	Climate Change (Section 5.6)			
16.1	Consideration of climate change impacts	MTO MECP	16.1.1	<ul style="list-style-type: none"> • Stormwater management ponds and drainage swales have been designed based on a review of drainage modelling for various storm scenarios. The Contractor will install the stormwater management features to manage water within the project limits as indicated in the Contract documents. • Signage will be installed to direct motorists to alternate carpool lots to encourage ride-sharing during the carpool lot closure.



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7.0 Environmental Clearances, Approvals and Permits

No formal clearances are required under the *EA Act* since the structure replacement has been “screened”, as required by MTO’s Class EA for a Group ‘B’ project. MTO is not required to obtain Noise By-Law exemptions.

An EASR will be submitted to MECP by the Contractor to address localized unwatering of excavations. Supporting documentation (a Dewatering Management and Discharge Report prepared as part of the design phase) will be provided to the Contractor for reference.

An EASR has been prepared and will be submitted to MECP to address localized unwatering of excavations.

A Request for Review will be submitted to DFO as part of this project.

The Contractor will be required to obtain a Road Occupancy Permit from the Town of BWG and County of Simcoe for work on municipal or County property.

An Information Gathering Form was submitted to the MECP and MECP will provide comments to help confirm the mitigation and protection measures for bat SAR under the ESA. An Avoidance Alternatives Form is currently being developed and will be submitted to MECP for review and approval. An appropriate compensation plan will then be developed.

8.0 Environmental Inspection and Monitoring

An Environmental Synopsis will be developed so that the Contract Administrator and the Contractor are made aware of, and are prepared to deal with, environmental issues that may arise during construction. Specific environmental controls based on these mitigation measures will be included in the contract documents and drawings to address environmental concerns during the construction phase.

Monitoring will be conducted by on-site construction supervisory staff to make sure that environmental protection measures, as outlined in the contract, are being implemented and are effective. This includes making sure that the implementation of mitigating measures and key design features is consistent with commitments made to external agencies prior to construction. If protective measures do not address concerns identified



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or if major problems develop, the appropriate agency will be contacted to provide additional input.

In the event that the impacts of construction are different than anticipated, or that the method of construction is such that there are greater than anticipated impacts, the Contractor's method of operation will be modified to reduce those impacts. Any changes proposed by the Contractor should be thoroughly evaluated to make sure that the intent of the mitigation measures and provisions is maintained.



Appendix A: Recommended Plan



Appendix B: Notification Materials



Appendix C: Select Correspondence



Appendix D: Reports

