Welland Thorold Power Line Class Environmental Assessment

Draft Environmental Study Report

July 11, 2025

Prepared by:

Hydro One Networks Inc.

Environmental Services

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Executive Summary

Hydro One Networks Inc. (Hydro One) has prepared this draft Environmental Study Report (ESR) for the proposed construction of a new double-circuit 230 kilovolt (kV) transmission line (the Project) in the Niagara Region. The Project is approximately 18.5 kilometres (km) in length and will connect to an existing Hydro One corridor in Thorold and the Crowland Transformer Station (TS) in Welland. The Preferred Route Alternative will repurpose approximately 13 km of the existing 115 kV transmission line corridor and will involve dismantling and removal of the existing transmission structures, conductor and associated components and equipment.

To facilitate the upgrade of the existing 115 kV transmission line to a 230 kV transmission line, an expansion of the Crowland TS to include a new 230 kV yard adjacent to the existing 115kV yard will be required to facilitate the connection of the new transmission line. The purpose of the Project is to reliably supply the forecast load growth in the Niagara Region in the near- to mid-term.

The proposed Project has been subject to the Class Environmental Assessment (Class EA) for Transmission Facilities (Hydro One, 2024), an approved planning process under the *Environmental Assessment Act* (*EA Act*) designed for proponents to characterize the existing environment, assess potential environmental effects and mitigation, identify, and evaluate alternatives, conduct consultation, and document study findings. This draft ESR has been prepared in accordance with the requirements of the *EA Act* and describes the Class EA process undertaken for the proposed Project.

At the outset of the Class EA, two study areas (Local Study Area [LSA] and Project Study Area [PSA]) were established to assess potential natural environment, socio-economic environment, technical and cultural constraints, and potential effects associated with each of the three route segments identified and their respective Route Alternatives (**Figure E-1**). The three route segments for the Project, including their Route Alternatives and corresponding route variations, include the following:

- **Route Segment A** begins at the location of a proposed connection to an existing 230kV transmission line, located approximately 300 m south of Beaverdams Road, in the City of Thorold, and proceeds south to the Allanburg TS. There are two Route Alternatives proposed for this segment, as discussed below.
  - **Route Alternative A1** is a net-new corridor (greenfield) and proceeds south from the connection to the existing transmission line parallel to Thorold Townline Road along the existing transmission line corridor for approximately 1.75 km before crossing Thorold Townline Road to the east, proceeding for 0.9 km, and crossing the Thorold Townline Road to the west for the duration of the line; and,
  - **Route Alternative A2** is a net-new corridor (greenfield) and proceeds south-easterly from the existing transmission line connection for approximately 3.17 km, then directly east for approximately 1.1 km to Thorold Townline Road where it meets Route Alternative A1 near the Allanburg TS.
- **Route Segment B** begins near the Allanburg TS and proceeds southerly along Moyer Road for approximately 8 km. There are two Route Alternatives proposed for this segment, as discussed below.
  - **Route Alternative B1** is a net-new corridor (greenfield) and largely parallels the Route Alternative B2 alignment with exception to two bump-outs around residential homes; and,
  - **Route Alternative B2** proceeds south near the Allanburg TS along Moyer Road for 8 km along the existing 115 kV transmission line corridor until reaching Route Alternative C1. Route Alternative B2 includes repurposing an existing 115 kV transmission line within the existing transmission corridor.
- **Route Segment C** begins approximately at the end of Route segment B north of Schisler Road and proceeds southwesterly for approximately 6.6 km before reaching the Crowland TS. There is one main Route Alternative (C2) and three corresponding Route variations (C1/C2, C2/C3 and C1/C2/C3) associated with this segment, which include:
  - **Route Alternative C1** is net-new corridor (greenfield) located north of the existing 115 kV corridor and begins north of Schisler Road at the southern limit of route segment B and proceeds southwesterly for approximately 1.5 km before joining Route Alternative C2. Generally, it runs west of and parallel to C2. Route Alternative C1 is included in two Route variations, C1-C2 and C1-C2-C3, respectively;
  - **Route Alternative C2** proceeds southwesterly from the southern limit of Route segment B along the existing transmission line corridor for approximately 6.6 km

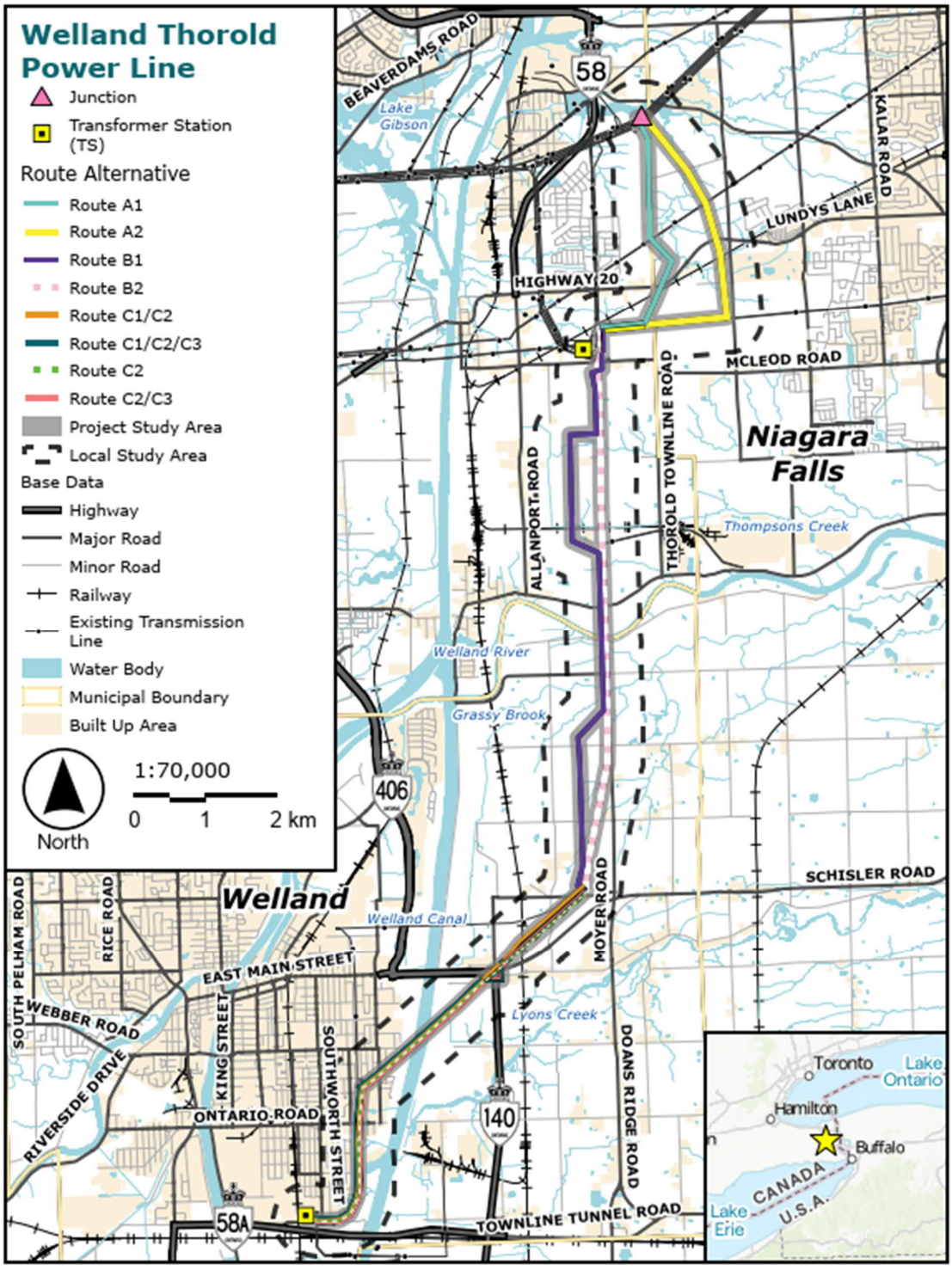
before terminating at the Crowland TS. Route Alternative C2 includes repurposing an existing 115 kV transmission line within the existing transmission corridor. Route Alternative C2 is included in all three Route Alternative variations, C1-C2, C2-C3 and C1-C2-C3, respectively; and,

- **Route Alternative C3** is a net-new corridor (greenfield) and begins north of East Main Street at its intersection with Route Alternative C2 and proceeds south for 0.2 km crossing Silverthorn Court, then immediately west for approximately 0.25 km crossing both Silverthorn Court and Highway 140 until rejoining Route Alternative C2. It provides an alternative that crosses these roads at right angles, eliminating the diagonal crossing of the intersection in C2. Route Alternative C3 is included in two Route Alternative variations, C2-C3 and C1-C2-C3, respectively.

Ancillary Works:

Crowland TS: All Route Alternatives will require the expansion of the Crowland TS to add a new 230 kV yard to facilitate the connection of the new transmission line.

Figure E-1: Route Alternatives and Local Study Area



In order to select a Preferred Route Alternative a weighted multi-criteria decision-making (MCDA) approach was undertaken. The criteria were grouped into the following categories:

- Natural Environment;
- Socio-economic Environment;
- Indigenous Culture, Values and Land Use; and
- Technical and Cost.

The first step was the collection of information on existing conditions associated with each criterion using data obtained from literature reviews, reports and technical memos commissioned by Hydro One, online databases, mapping, consultation, and field surveys. Once this information was collected, an analysis of each Route Alternative was undertaken, assessing the potential impact of the proposed transmission line. Route Alternatives were then compared using a multi-criteria decision-making (MCDA) process, which accounted for the relative importance (i.e., weights) of the criteria used in the assessment. Evaluation criteria were identified, and relative weightings were assigned, using input obtained through the consultation process for the Project. This comparative evaluation resulted in the selection of the Technically Preferred Route Alternative A1/B2/C1/C2 (**Figure E-2**).

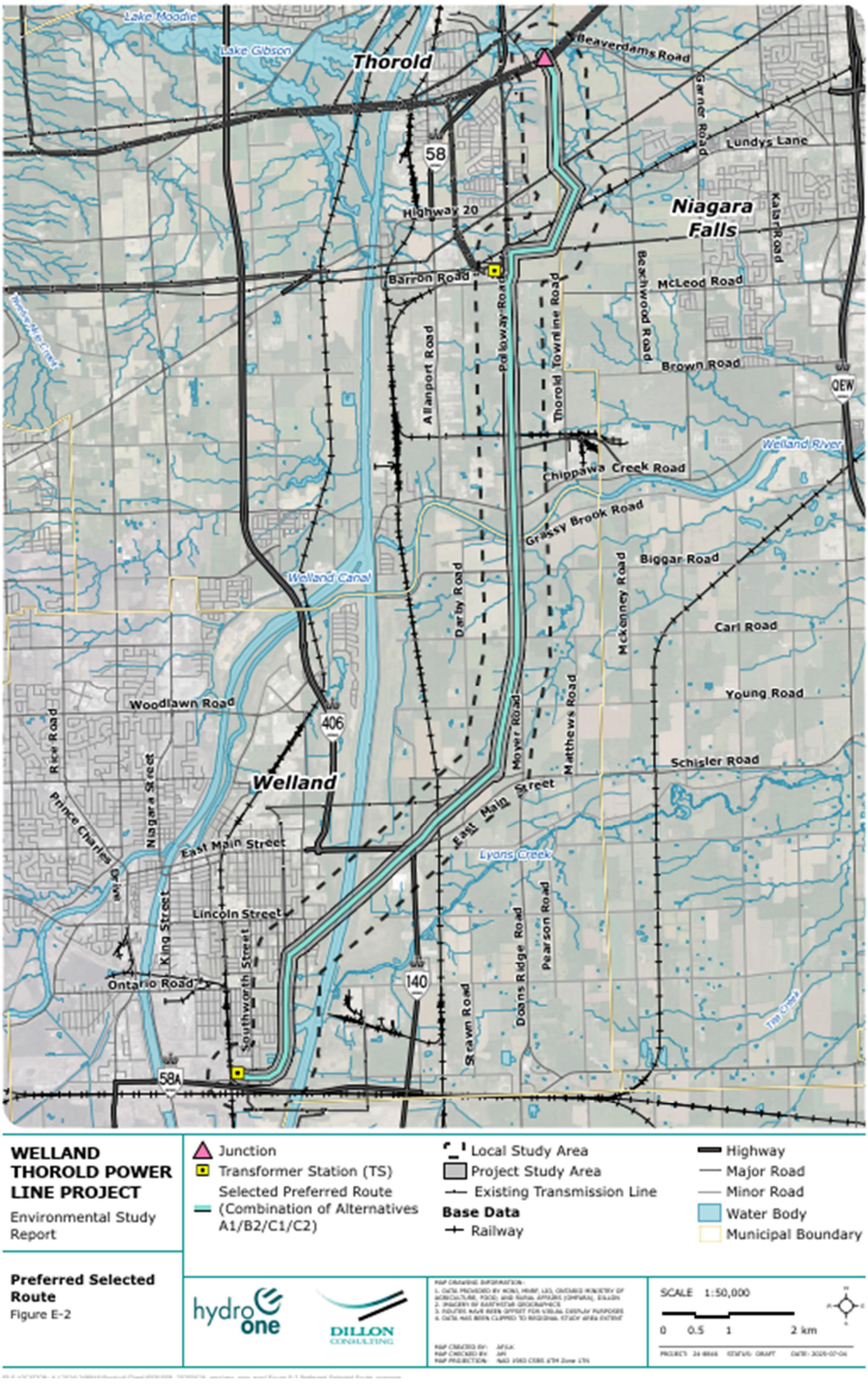
Consultation and engagement have been an important component of the Class EA process, providing opportunities for meaningful participation and input. Since the Project's commencement in 2024, Hydro One has consulted with a range of parties, including municipal, provincial, and federal government officials and agencies, Indigenous communities, potentially affected and interested persons, businesses, and interest groups. Key consultation methods included the development of a Project website with an interactive map, two in-person Community Open Houses (COHs), in-person and virtual meetings with Indigenous communities, government officials, and potentially affected and interested persons.

Potential environmental effects resulting from the proposed Project have been identified, and avoidance and/or mitigation measures have been proposed accordingly.

Based on information collected to date, no significant net adverse environmental effects were identified.

A project-level Cumulative Effects Assessment (CEA) was completed for the Project in accordance with the requirements of the Class EA (Hydro One, 2024). The CEA determined there are no areas of environmental concern that will result in a significant cumulative effect. It was determined that mitigation measures outlined for the Project provide adequate Project specific mitigation that remain effective considering cumulative effects from the other projects evaluated as part of the CEA.

Figure E-2: Preferred Route Alternative



Hydro One is providing a comment period from **July 15, 2025,** to **August 19, 2025**, to allow sufficient time for review and comment on this draft ESR. Written comments regarding the draft ESR are to be submitted to Hydro One no later than 4:30 PM on **August 19, 2025**, and must be addressed to:

Adam Haulena, Environmental Planner, Hydro One Networks Inc.
483 Bay Street, North Tower, 14th Floor, Toronto, ON M5G 2P5
Phone: 1-877-345-6799 (community relations hotline)
Email: Community.Relations@HydroOne.com

The draft ESR will be available electronically on Hydro One's website on the Welland Thorold Power Line (WTPL) Project web page: https://www.hydroone.com/WTPL.

Copies of the draft ESR will also be available in print at the following locations:

Thorold Public Library
14 Ormond Street North
Thorold, Ontario
L2V 1Y8
905-227-2581

Welland Public Library - Main Branch
50 The Boardwalk
Welland, Ontario
L3B 6J1
905-734-6210

Comments and concerns received by Hydro One during the draft ESR comment period will be recognized, considered, addressed, and documented. Hydro One will make best efforts to respond and resolve issues raised. Following the comment period, the ESR will be finalized in accordance with the Class EA. Upon completion of the Class EA process, the final ESR will be filed with the Ministry of the Environment, Conservation and Parks (MECP), and the Project will then be considered acceptable to proceed as outlined in the ESR. Necessary environmental approvals and permits will be obtained prior to construction.

Under the *EA Act*, a request may be made to the MECP for an order requiring a higher level of study, or that conditions be imposed (e.g., require further studies). This process is referred to as a Section 16 Order request. Such requests may only be made on the grounds that the requested order may prevent, mitigate or remedy adverse effects on

constitutionally protected Aboriginal and treaty rights. The MECP will not consider requests on other grounds.

Requests should include the requester's contact information and full name, as well as specify what kind of order is being requested, explain how an order may address potential adverse effects on Aboriginal and treaty rights, and provide supporting information. Section 16 Order requests should be sent in writing or email to the Minister of the Environment, Conservation and Parks, and the Environmental Assessment Branch of the MECP, and should also be copied to Hydro One.

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

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

Requests should also be copied to Hydro One per the contact information provided above.

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Acronyms and Abbreviations

Acronym or Abbreviation	Definition
AA	Archaeological Assessment
AIA	Agricultural Impact Assessment
ANSI	Area of Natural and Scientific Interest
AQHI	Air Quality Health Index
BHR	Built Heritage Resource
CA	Conservation Authority
CAO	Chief Administrative Officer
CEA	Cumulative Effects Assessment
CDM	Conservation Demand Management
CFA	Capacity Funding Agreement
CFIA	Canadian Food Inspection Agency
CHREC	Cultural Heritage Report: Existing Conditions
CHER	Cultural Heritage Evaluation Reports
CHL	Cultural Heritage Landscape
CHVI	Cultural Heritage Value or Interest
Class EA	Class Environmental Assessment
CLI	Canada Land Inventory
cm	Centimetres
CN Rail	Canadian National Railway
CO	Carbon monoxide
COH	Community Open House
CPKC	Canadian Pacific Kansas City Limited
CWS	Canadian Wildlife Services
DESN	Dual Element Spot Network
DFO	Fisheries and Oceans Canada
Dillon	Dillon Consulting Limited
EA	Environmental Assessment
EA Act	*Environmental Assessment Act*
EAB	Environmental Assessment Branch
EASR	Environmental Activity and Sector Registry
ECA	Environmental Compliance Approval

Acronym or Abbreviation	Definition
ECCC	Environment and Climate Change Canada
ELC	Ecological Land Classification
EMF	Electro-magnetic Fields
EMP	Environmental Management Plan
ENDM	Ministry of Energy, Northern Development and Mines
EPC	Engineering, Procurement and Construction
ESA	*Endangered Species Act*
ESA	Environmentally Significant Areas
ESC	Erosion Sediment Control
ESR	Environmental Study Report
E.S.T.	Eastern Standard Time
GIS	Global Information System
GPS	Global Positioning System
ha	Hectares
HCCC	Haudenosaunee Confederacy Chiefs Council
HDI	Haudenosaunee Development Institute
HIA	Heritage Impact Assessments
HVA	Highly Vulnerable Aquifer
Hydro One	Hydro One Networks Inc.
ICNIRP	International Commission on Non-Ionizing Radiation Protection
IBA	Important Bird Area
IESO	Independent Electricity System Operator
IO	Infrastructure Ontario
IP	Identity Preserved
IPZ	Intake Protection Zone
Niagara IRRP	Niagara Integrated Regional Resource Plan
km	Kilometres
kV	Kilovolt
LIO	Land Information Ontario
LSA	Local Study Area
m	Metres

Acronym or Abbreviation	Definition
MAIFNR	Ministry of Indigenous Affairs and First Nations Economic Reconciliation
MBCA	*Migratory Birds Convention Act*
MCBC	Mississaugas of the Credit Business Corporation
MCDA	Multi-Criteria Decision Making Analysis
MCM	Ministry of Citizenship and Multiculturalism
MECP	Ministry of the Environment, Conservation and Parks
MEDCJT	Ministry of Economic Development, Job Creation and Trade
MEM	Ministry of Energy and Mines
MHBC	MacNaughton Hermsen Britton Clarkson Planning Limited
mm	Millimetres
MIA	Ministry of Indigenous Affairs
MNR	Ministry of Natural Resources
MP	Member of Parliament
MPP	Member of Provincial Parliament
MMAH	Ministry of Municipal Affairs and Housing
MOEE	Ministry of Energy and Electrification
MOECC	Ministry of the Environment and Climate Change
MOU	Memorandum of Understanding
MTE	Mechatronics Engineering Consultants
MTO	Ministry of Transportation
MW	Megawatt
MWh	Megawatt Hour
NEECR	Natural Environment Existing Technical Report
NHIC	Natural Heritage Information Centre
NHRM	Natural Heritage Reference Manual
NO_2	Nitrogen dioxide
NoC	Notice of Commencement
NPCA	Niagara Peninsula Conservation Authority
NRCan	Natural Resources Canada
NRIP	Niagara Regional Infrastructure Plan

Acronym or Abbreviation	Definition
O. Reg.	Ontario Regulation
O_3	Ozone
^oC	Degrees Celsius
OEB	Ontario Energy Board
OFA	Ontario Federation of Agriculture
OHN	Ontario Hydrological Network
OMAFA	Ministry of Agriculture, Food, and Agribusiness
OP	Official Plan
OPG	Ontario Power Generation Inc.
OWES	Ontario Wetland Evaluation System
PDWT	Prescribed Drinking Water Threat
$PM_{2.5}$	Particulate Matter
PPS	Provincial Planning Statement
PSA	Project Study Area
PSW	Provincially Significant Wetlands
PTTW	Permit to Take Water
PWQMN	Provincial Water Quality Monitoring Network
ROW	Right-of-way
SAC	Spills Action Centre
SAR	Species at Risk
SARA	*Species at Risk Act*
SARO	Species at Risk Ontario
SCC	Species of Conservation Concern
SGRA	Significant Groundwater Recharge Area
SNGR	Six Nations of the Grand River
SO_2	Sulphur dioxide
SPA	Source Protection Area
SPP	Source Protection Plan
SWH	Significant Wildlife Habitat
SWHTG	Significant Wildlife Habitat Technical Guide
SWP	Source Water Protection
TC	Transport Canada
TMHC	Timmins Martelle Heritage Consultants Inc.

Acronym or Abbreviation	Definition
TS	Transformer Station
WHO	World Health Organization
WPA	Wellhead Protection Area

1.0 Introduction

Hydro One Networks Inc. (Hydro One or the proponent) is proud to energize life for communities, homes, and businesses across Ontario now and in the future. As part of this, Hydro One is completing the Welland Thorold Power Line Project (the Project). The Project consists of a new double-circuit 230 kilovolt (kV) transmission line, approximately 18.5 kilometres (km) in length, extending from an existing 230 kV Hydro One corridor in Thorold and connecting into the Crowland Transformer Station (TS) in Welland and an expansion of the Crowland TS. (**Figure 1-1**).

In Ontario, the Independent Electricity System Operator (IESO) is responsible for planning for the province's future energy needs. According to the latest Niagara Integrated Regional Resource Plan (Niagara IRRP), released by the IESO in December 2022, electricity demand in the area south of the Allanburg TS is expected to significantly increase and will require capacity increases. To support this growth, the IESO identified the need for the transmission line to be in service by 2029 based on its near-to-mid-term planning.

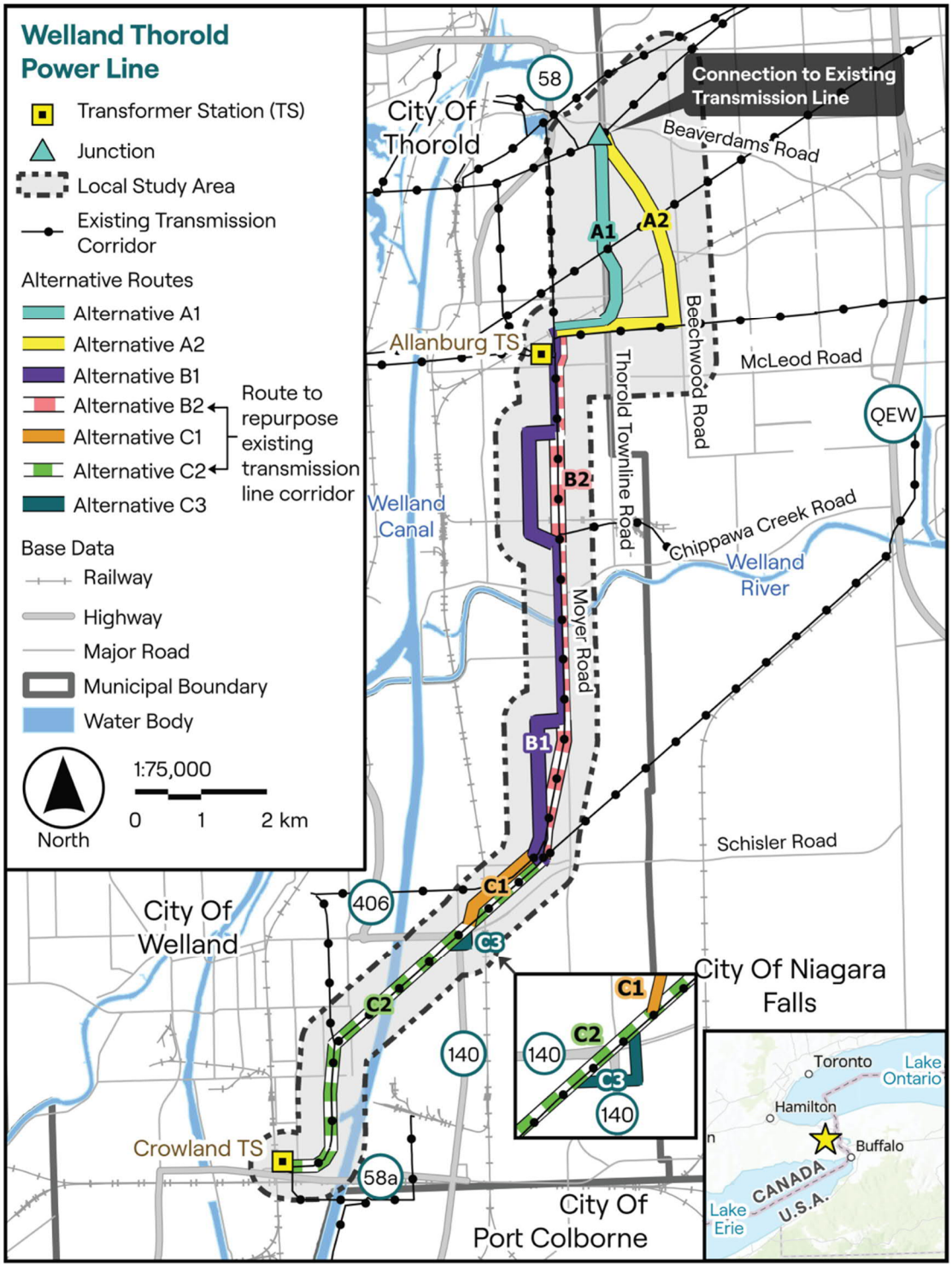
In November 2024, Hydro One commenced a Class Environmental Assessment (Class EA) to construct this new double-circuit 230 kV transmission line. The proposed Project is subject to the Class EA for Transmission Facilities (Hydro One, February 2024), an approved planning process under the *Environmental Assessment Act* (EA Act) designed for proponents to characterize the existing environment, assess potential environmental effects and mitigation, identify, and evaluate alternatives, conduct consultation and document study findings. This draft Environmental Study Report (ESR) has been prepared in accordance with the Class EA.

This draft ESR describes the Class EA process undertaken for the proposed Project. The draft ESR:

- Summarizes existing conditions in the Local Study Area (LSA; 500 m), Project Study Area (PSA; 120 m);
- Documents the notification to, and consultation undertaken with, Indigenous communities, government agencies, municipal staff and elected officials, interest groups and members of the public about the Project;

- Documents the route segment identification and evaluation process conducted to select the Preferred Route Alternative;
- Identifies potential environmental effects associated with the Project; and
- Identifies recommended avoidance, mitigation, and restoration measures to address these potential environmental effects.

Figure 1-1: Project Location



1.1. Need for the Undertaking

In December 2022, the IESO – the agency responsible for monitoring electricity demand and forecasting future needs in the province – requested Hydro One to initiate work on development activities, including seeking relevant regulatory approvals and to construct a new double-circuit 230 kV transmission extending from an existing 230 kV Hydro One corridor in Thorold and connecting into the Crowland TS in Welland. This forecasted need was identified through the Niagara Regional Infrastructure Plan (Hydro One, July 2023). (**Appendix A**).

The purpose of the new double-circuit 230 kV transmission line is to ensure sufficient bulk transfer capabilities to supply the forecast load in the Niagara region and surrounding area in the near to mid-term.

The required in-service date for the Project is 2029 to address the specified bulk system electricity needs. To meet the energy needs of the region as quickly as possible, Hydro One is seeking opportunities to advance the in-service date.

1.2. Description of the Undertaking

The undertaking will involve the installation of a new double and triple-circuit 230 kV transmission lines, including associated infrastructure (e.g., towers, access roads) and improvements to the Crowland TS. The undertaking will also involve the removal of the existing transmission structures, conductor, and components associated with the existing 115 kV transmission line section that will be replaced. The Project will also involve an upgrade of the Crowland TS from 115 kV to 230 kV, as well as expansion of the Crowland TS to facilitate connection of the new transmission line. Upon the successful completion of the Class EA process and receipt of subsequent required approvals, construction would begin in 2027, with potential to begin earlier if possible.

1.3. Alternatives to the Undertaking

The Class EA process requires identification and evaluation of alternatives to the undertaking. “Alternatives to” the undertaking are functionally different approaches to addressing the need for the undertaking.

Alternatives to the undertaking must be reasonable from a technical, economic, and environmental perspective and must fall within the mandate of the proponent. It is understood that companies whose operating licences [i.e., as granted by the Ontario Energy Board (OEB)] are limited to assessment of transmission alternatives cannot, for example, assess generation as an alternative to transmission facilities.

This Project resulted from a recommendation of the IESO, as documented in the Niagara Integrated Regional Resource Plan (NIRRP, December 22, 2022), and the Niagara Regional Infrastructure Plan (NRIP, July 12, 2023), requesting Hydro One to initiate work on development activities, including seeking relevant regulatory approvals and to construct a new double-circuit 230 kV transmission line extending from an existing 230 kV Hydro One corridor in Thorold and connecting into the Crowland TS in Welland.

In such cases, the transmitter will accept the recommendations of an independent agency as a starting point for the Class EA process and will not revisit alternatives considered and rejected by the planning process (e.g., generation alternatives and other transmission alternatives). The following summarizes the conclusions of the NIRRP regarding the alternatives to the undertaking that were considered to address the identified need:

- Alternative 1: Do Nothing;
- Alternative 2: Non-Transmission Alternatives; and
- Alternative 3: Transmission Alternatives.

Alternative 1: Do Nothing

The "Do Nothing Alternative" is an alternative to the undertaking that must be considered.

Due to the significant increase in the demand forecast for electricity in the region and the surrounding area, the Do Nothing Alternative would result in the inability to reliably supply the forecasted load growth. This load growth is anticipated for the region and the surrounding area in the near- and mid-term. Furthermore, the “Do Nothing Alternative” would limit resources and bulk facilities in the region from operating efficiently for local and system needs. Therefore, the “Do Nothing Alternative” is not considered to be a feasible option.

Alternative 2: Non-Transmission Alternatives

The IESO, in the NIRRP, documents the results of a planning study undertaken by the IESO. This study assessed the adequacy of the bulk transmission system in the Niagara Region and recommended preferred solutions to address identified needs.

Non-wires options were screened for additional evaluation for the Crowland TS supply needs. For the Crowland TS, incremental targeted Conservation Demand Management (CDM), battery storage, and gas generation were all considered either as standalone or integrated options. The most cost-effective non-wires solution portfolio for the Crowland capacity need included incremental CDM (approximately 10 Megawatts (MWs) of additional savings by 2041), plus a 10 MW/40-Megawatt hours (MWhs) battery storage facility installed in two phases (2025 and 2038) to match the need profile.

As the NIRRP progressed and the interplay between the Crowland TS needs and the broader Niagara 115 kV supply capability became clearer, a non-wires option was also considered at a high level. Through screening protocols, a non-wires option was deemed not a feasible solution due to various factors.

An all-generation option was also considered; however, there are significant challenges in implementing and operating a resource to address both the multiple, layered, and local needs. Generation is typically not considered a feasible option to solve load security needs.

Alternative 3: Transmission Alternatives

Two sets of transmission options were identified by the IESO.

Option 1 includes:

- New 115 kV station in Welland, supplied by the existing A6C/A7C circuits (to address the Crowland TS capacity need);
- New 230 kV Allanburg bus (to improve supply to the 115 kV sub-system and mitigate the A6C/A7C load security need); and,
- Re-building of 115 kV Crowland TS like-for-like (to address the asset replacement need).

Option 2 includes:

- Replacement of sections of 115 kV D3A/A3C circuits with new 230 kV double-circuit supply lines tapping off Q24HM and Q29HM; and,
- The replacement of Crowland TS with a 230 kV station (to address its asset replacement and capacity needs, offload the Niagara 115 kV sub-system, and mitigate the A6C/A7C load security need).

Option 1 is expected to require three years to complete, while Option 2 is expected to take six.

Recommended Alternative

The IESO had identified Option 2 of Alternative 3: Transmission Alternatives as its preferred solution. It is the more cost-effective option, evaluated at more than $100M less expensive than Option 1. Qualitatively, by expanding the 230 kV transmission system, Option 2 also offers long-term flexibility to accommodate more load growth in the southern portion of the Niagara Region, particularly along the industrial and commercial hub around the Welland Canal. Option 1 provides limited growth options in the area in comparison to Option 2, without extensive station expansion at Allanburg TS. Meanwhile, converting the existing 115 kV Crowland TS to 230 kV in Option 2 allows the other 115 kV stations in the Niagara Region to accommodate new growth and maximizes the use of existing infrastructure with the available capacity normally utilized by the 115 kV Crowland TS**.** Triggering the reconfiguration is also a time-sensitive opportunity, since Crowland TS is expected to require asset replacement in the near term. Both Options 1 and 2 enable the increased capability required for the reference forecast, and neither Option precludes a further wires or non-wires option in the long-term. These future actions can include new generation resources or additional 230 kV/115 kV auto-transformation.

In contrast, a non-transmission (non-wires) option sized precisely to meet the reference need would have less flexibility to accommodate growth that exceeds today's expectations. Regardless, none of the non-wires' options can sufficiently address the multiple needs at once. Option 2 would cost-effectively resolve the Crowland capacity and replacement needs, the A6C/A7C security issue, and enable other load growth on the 115 kV subsystem.

1.3.1. Niagara Regional Infrastructure Plan (July 2023)

In July 2023, Hydro One released the Niagara Regional Infrastructure Plan, which outlines in greater detail potential alternatives and recommendations for the Project. These alternatives are outlined below:

Alternative 1: Maintain Status Quo

This alternative is not viable as it does not meet the area customers' loading requirements. It is therefore not considered further.

Alternative 2: Uprate the A6C and A7C Circuits

This alternative considers reconductoring the A6C/A7C line between Allanburg TS and Crowland TS (~14.5 km) using a higher rated conductor, increasing the circuit rating from 214 MW to 280 MW.

Alternative 3: Reduce Loading on A6C/A7C

This alternative reduces loading on circuits A6C and A7C by rebuilding Crowland TS as a 230 kV/2706 kV station supplied from a new 230 kV circuit line.

Recommended Alternative

The Regional Infrastructure Plan Technical Working Group recommends Alternative 3 as the preferred and cost-effective alternative addressing the overloading issue on the A6C/A7C line. Transferring of Crowland TS to a 230 kV supply also addresses multiple other issues; reduces load on the Allanburg TS autotransformers, allows increase capacity at Crowland TS, and reduces the severity of the load security issue.

1.4. Approval Process and Regulatory Requirements

This section outlines the approval process required under the Class EA process as well as other regulatory requirements.

1.4.1. Class Environmental Assessment Process

The purpose of the Class EA is to select and confirm the Preferred Route Alternatives and conceptual design for a new double-circuit 230 kV transmission line extending from an existing 230 kV Hydro One corridor in Thorold and connecting into the Crowland TS in Welland, and associated TS improvements to identify potential environmental effects

that could result from the construction, operation, maintenance, and retirement of the Project. The EA will also recommend and document appropriate and necessary mitigation measures to eliminate, minimize, or avoid potential adverse Project-related effects.

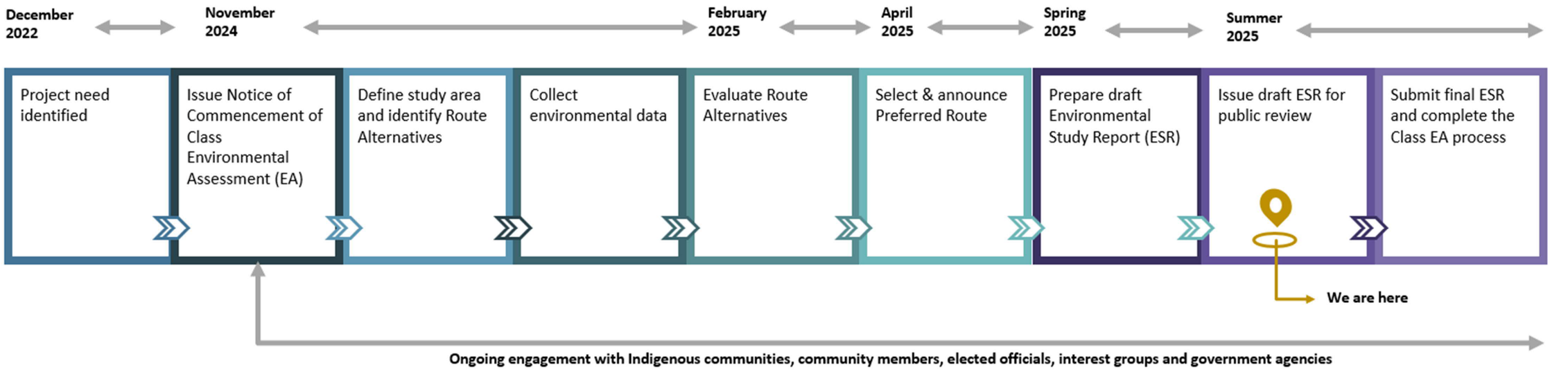
This draft ESR has been prepared in accordance with the Class EA for Transmission Facilities (Hydro One, February 2024), an approved planning process under the *EA Act*.

Components of the process include:

- Establish need (**Section 1.1**);
- Identify and evaluate “alternatives to” the undertaking (**Section 1.3**);
- Define study area (**Section 2.0**);
- Issue initial notification (**Section 3.1**);
- Conduct an environmental inventory (**Section 4.0**);
- Identify and evaluate route alternatives (**Section 5.2 and 0**);
- Select the Preferred Route Alternative (**Section 5.5**) and prepare the draft ESR;
- Issue Notice of Completion and the draft ESR for public review and comment (**Section 3.11**); and,
- Conduct consultation and engagement throughout the process (**Section 3.0**).

The Class EA process is illustrated in **Figure 1-2**.

Figure 1-2: Class Environmental Assessment Process



Section 1.2 of the Class EA for Transmission Facilities (Hydro One, February 2024) sets out the types of projects to which the Class EA applies:

1. Establishing a new or temporary transmission line that has a nominal operating voltage of greater than or equal to 115 kV and is greater than 2 km in length;
2. Refurbishing an existing transmission line that has a nominal operating voltage of greater than or equal to 115 kV and is greater than 2 km in length;
3. Establishing a new transmission station that has a nominal operating voltage of greater than or equal to 115 kV; and
4. Expanding an existing transmission station, where the expansion involves the acquisition of land and the transmission station has a nominal operating voltage or greater than or equal to 115 kV.

Section 1.3 of the Class EA sets out four project categories that determine the level of detail of assessment and consultation required to evaluate a project or whether a project is exempt from the EA Act:

1. Emergency Situations;
2. Projects Eligible for Exemption Subject to the Archaeological Screening Process;
3. Projects Eligible for Exemption Subject to the Class EA Screening Process; and
4. Projects Subject to the Full Class EA.

This Project meets the criteria for establishing a new transmission line that has a nominal operating voltage of greater than or equal to 115 kV and is greater than 2 km in length. The Project does not meet the eligibility for exemption from the Class EA process for emergency situations, archaeological screening, or Class EA Screening. Therefore, the Project is subject to a full Class EA in accordance with the Class EA for Transmission Facilities (February 2024).

Upon the completion of the draft ESR, Hydro One will issue the Notice of Completion of the draft ESR and subsequent comment period to municipal, provincial, and federal government officials and agencies, Indigenous communities consulted, potentially affected and interested persons, and interest groups. The draft ESR will be available for public review and comment on July 15, 2025, until August 19, 2025. Hydro One will make its best efforts to respond and resolve issues raised by concerned parties during

the draft ESR review period. Issues and their respective responses will be documented and summarized in the final ESR.

As outlined in Section 3.4.4 of the Class EA, a request may be made to the MECP for an order requiring a higher level of study (i.e., requiring a comprehensive EA approval before being able to proceed) or that conditions be imposed (e.g., require further studies), only on the ground that the requested order may prevent, mitigate or remedy adverse impacts on constitutionally protected Aboriginal and treaty rights. The MECP will not consider requests on other grounds.

A copy of the draft ESR has been placed on the Hydro One Project website, as well as provided to the Environmental Assessment Branch (EAB) and the appropriate Regional EA Coordinator at MECP for filing. Once the final ESR and the Class EA Statement of Completion have been filed with MECP, the proposed Project will be considered accepted and may proceed as outlined in the final ESR.

1.4.2. Other Permits, Licenses and Approvals

In addition to meeting *EA Act* requirements, several permits, licenses, and approvals may be required under municipal by-laws and provincial and federal legislation and regulations. These are described in **Table 1-1**. In addition to the notifications and engagements described in this draft ESR, Hydro One or its contractors will continue to contact the appropriate regulatory agencies to ensure that the proposed Project will meet the regulatory requirements prior to construction. The proposed Project does not trigger a federal EA under the *Impact Assessment Act*, 2019.

As stated in Section 62(1) of the Planning Act (R.S.O. 1990, c. P.13), “An undertaking of Hydro One Inc. that has been approved under the *EA Act* is not subject to this Act.” While the proposed Project is not subject to the Planning Act, Hydro One will continue to work with local municipalities during and after the Class EA process and will continue to consult with them regarding design, and the potential effects of the construction on local traffic and nearby communities, as needed.

Table 1-1: Potentially Required Permits, Licenses and Approvals

Permit, License, or Approval	Primary Agency	Description
Section 92 Leave to Construct	OEB	Required for the construction of the new transmission line.
Transport Canada Aeronautical Assessment	Transport Canada	Required for the construction of the new transmission structures within 6 km of an aerodrome.
Approval under the Canadian Navigable Waters Act (CNWA)	Transport Canada	May be required for transmission line crossing of the Welland River and Welland Canal.
Nav Canada Land Use Assessment	Nav Canada	Required for the construction of the new transmission structures within 6 km of an aerodrome.
Environmental Activity and Sector Registry (EASR)/Permit to Take Water (PTTW)	MECP	May be required for construction dewatering.
Air and Noise EASR	MECP	May be required for noise-emitting equipment as part of the expansion of the Crowland TS.
Industrial Sewage Works Environmental Compliance Approval (ECA) for station drainage	MECP	May be required for changes to the station drainage system as part of the expansion of the Crowland TS.
Approvals and/or Permits under the *Endangered Species Act, 2007*	MECP	May be required for planned works that might affect species at risk and/or their habitat, which are protected under the *Endangered Species Act, 2007*.
Approvals and/or Permits under the Species at Risk Act (*SARA*), 2022	Environment and Climate Change Canada (ECCC) / Canadian Wildlife Services (CWS)	May be required for planned works that might affect species at risk and/or their habitat, which are protected under the *Species at Risk Act, 2022*.

Permit, License, or Approval	Primary Agency	Description
Archaeological Acceptance Letters	Ministry of Citizenship and Multiculturalism (MCM)	Archaeological assessment is required before undertaking new ground disturbance in areas with archaeological potential.
Land Use Permit	Ministry of Transportation (MTO)	Required for project assets to be located within MTO Permit Control Areas.
Noise By-law Exemption	Niagara Region City of Welland City of Thorold	An exemption may be required if the operation of construction equipment occurs outside of the Noise By-law curfew.
Use, Storage, Transportation of Explosives	Natural Resources Canada (NRCan)	Required for magazines, vehicles used for transportation of explosives, and activities related to the storage of explosives in support of splicing.
Road Entrance Permits	Niagara Region City of Welland City of Thorold	Required to construct potential new entrances for access to a construction site from existing municipal roads.
Building Permit	Niagara Region City of Welland City of Thorold	May be required for additional buildings constructed (e.g., relay buildings) as part of the expansion of the Crowland TS.
Demolition Permit	Niagara Region City of Welland City of Thorold	Required for the demolition and removal of structures.
Tree Cutting Permit	Niagara Region City of Welland City of Thorold	May be required by local municipalities if significant tree removal is necessary.

Permit, License, or Approval	Primary Agency	Description
Municipal Road Use Agreements	Niagara Region City of Welland City of Thorold	May be required by local municipalities for transportation of oversized loads or temporary road closures during construction.
Temporary Occupancy Permits	Niagara Region City of Welland City of Thorold	May be required for the temporary use of public lands or right-of-way (ROW) areas during construction.
Fisheries Act Authorization	Fisheries and Oceans Canada (DFO)	May be required for in-water construction works or works with potential releases that have the potential to adversely affect fish or fish habitat.
Notice of Work	Rail Companies	May be required for crossings of federally regulated rail lines.
Clearance Letter	Utility companies	Required to cross utilities (e.g., natural gas or oil pipelines, fibre optics).

In the event that other permits are identified as required, Hydro One and/or the Engineering, Procurement and Construction (EPC) contractor will work with the regulator to ensure compliance.

2.0 Study Area

At the outset of the Class EA, two study areas (Local Study Area and Project Study Area) were identified to consider potential natural and socio-economic environmental features and potential effects associated with each of the route alternatives (**Figure 2-1**).

As further described in **Section 5.2** at the beginning of the Class EA process, the Hydro One Project team completed a preliminary assessment to identify the technical and environmental constraints and opportunities for the proposed double-circuit 230 kV transmission line. This included mapping known environmental and technical feature constraints, identifying opportunities to parallel existing linear infrastructure, as well as utilization of existing easements and/or ROW, where possible.

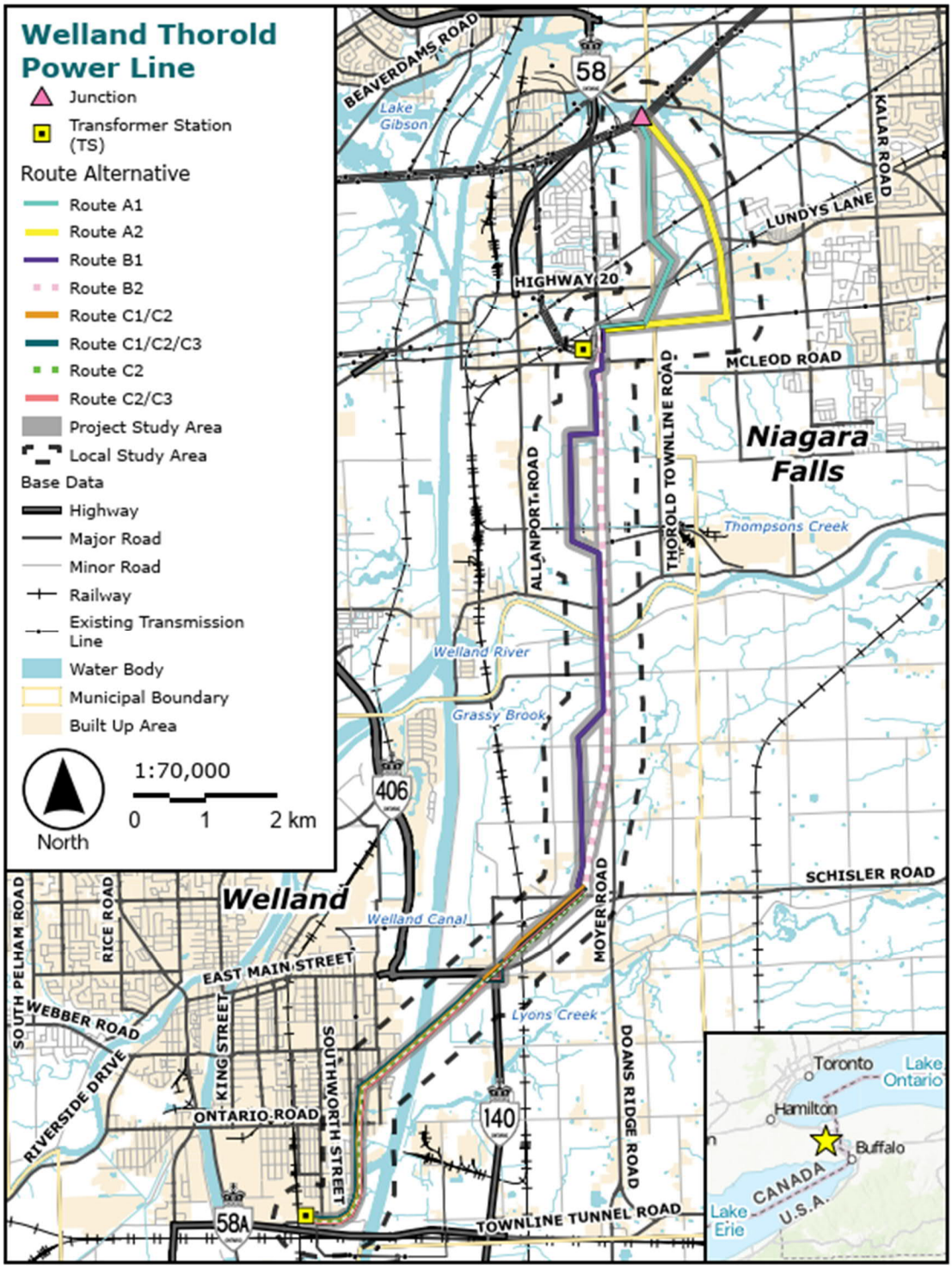
2.1. Project Study Area

The Project Study Area (PSA) was delineated to include lands within 120 metres (m) of each of the route alternative centre lines. The PSA encompasses the proposed length of the transmission line extending from an existing 230 kV Hydro One corridor in Thorold and connecting into the Crowland TS in Welland. The purpose of the PSA was to determine an area that would encompass the future asset location, associated ROW, and abutting/directly adjacent lands such that technical studies and field investigations, for the purposes of documenting baseline existing conditions, could be appropriately scoped and planned.

2.2. Local Study Area

The Local Study Area (LSA) was delineated to include lands within 500 m of each of the route alternative centre lines. The LSA encompasses the proposed length of the transmission line route alternatives from an existing 230 kV Hydro One corridor in Thorold and connecting into the Crowland TS in Welland. The purpose of the LSA was to expand upon the PSA to include an area of potential project effects on the natural and socio-economic environments associated with each of the route alternatives.

Figure 2-1 : Study Areas



3.0 Consultation

Consultation and engagement are an important component of the Class EA process by providing opportunities to meaningfully participate and provide input in the planning process. It also allows the proponent to learn about social, cultural, economic, and natural environment feedback and considerations related to the proposed Project. The key principles that have guided Hydro One's approach to consultation and engagement include:

- Ongoing, meaningful, and open engagement with residents and communities affected by or interested in the proposed Project;
- A transparent and flexible engagement process;
- Communicate Project information to support a two-way dialogue with Indigenous communities, local elected officials, federal, provincial, and municipal government agencies, local residents, and property owners, interested persons, businesses, and interest groups;
- Ongoing opportunities for interested parties to learn about and provide meaningful input on the proposed Project; and,
- Full and fair consideration and documentation by the proponent of all input received during the consultation and engagement process, and incorporation of such input, where feasible and reasonable, into Project planning.

The Project contact list at the time of this report is provided in **Appendix B1**.

To facilitate transparent and robust consultation and engagement, a variety of tools were implemented, consisting of:

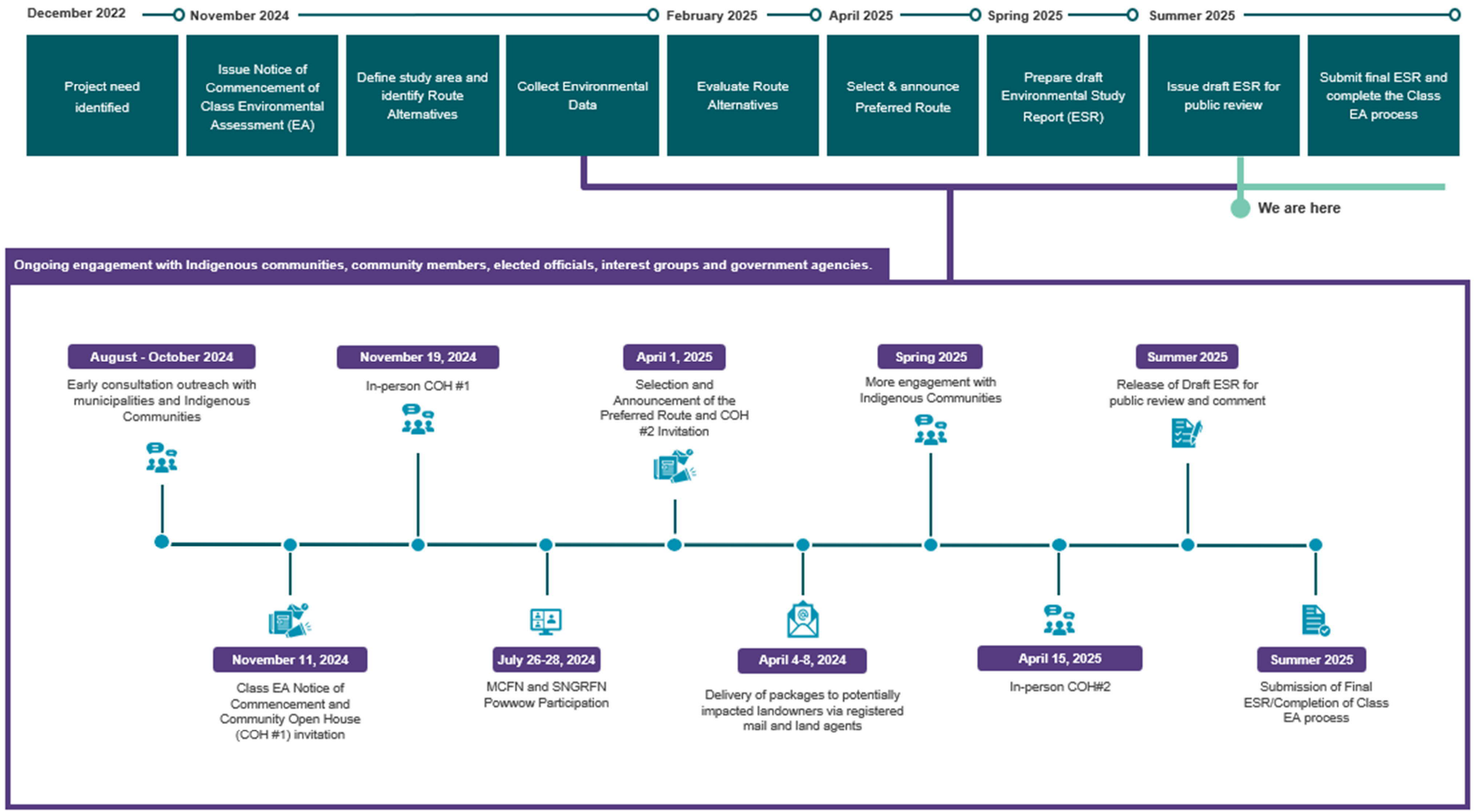
- Notification letters to provide updates on the Project. Notices were sent via Canada Post admail to available postal routes and PO boxes intersecting the PSA. Letters via registered mail were sent to potentially and directly affected landowners to provide updates on the Project and encourage any questions and feedback to be discussed with the appropriate Project representative;
- Newspaper, radio, and social media advertisements to provide updates on the Project and reminders of upcoming public engagement events;
- Two in-person community open houses (COHs);
- Meetings and discussions with municipal, provincial and federal elected officials, agency and municipal staff, Indigenous communities, and residents;

- Virtual and in-person meetings, and correspondence with Rights-holders and stakeholders who expressed specific interests, concerns and/or feedback;
- Establishment of a Project contact list, through which interested parties received Project updates via email, or via Canada Post mail for those who requested accommodation;
- Dedicated Community Relations email address and phone number for receiving questions and feedback; and,
- A Project website: https://www.hydroone.com/WTPL with an interactive online mapping tool to help share Project information and updates.

The results of the consultation and engagement activities are summarized in the sections below. Feedback was considered by the Project team and incorporated where appropriate. Copies of consultation and engagement materials such as notices, COH display panels, presentation slides, and correspondence are included in **Appendix B2,** and key correspondence with stakeholders is included in **Appendix B3**. A copy of the Project Record of Consultation is provided in **Appendix B4**.

A high-level overview of the consultation and engagement timeline is outlined in **Figure 3-1** and further explained in the subsequent sections below.

Figure 3-1: Consultation Timeline



3.1. Notice of Commencement and Community Open House #1 (COH #1)

The Notice of Commencement (NoC), which included an invitation to the first in-person COH, was published in the Welland Tribune on November 5, 12, 18 and 19, 2024. The NoC was additionally emailed to the Project contact list by Hydro One and issued by Dillon Consulting Limited (Dillon) through Canada Post admail beginning the week of November 4, 2024. The Canada Post admail consisted of approximately 13,000 notices being sent to properties whose postal routes and PO boxes generally intersected the LSA. Radio advertisements for the COH were aired periodically between November 4 and 19, 2024 on the following radio stations: Giant FM, Move 105.7, News Talk 610, HTZ Fm, and Today's Best Country.

The NoC introduced the Project by providing details on the Project need, description, study area, route alternatives, and associated regulatory processes. The NoC referred to the Project website and solicited questions and comments to be provided to Hydro One Community Relations.

Refer to **Appendix B2.1** for a copy of the Notice of Commencement and Community Open House #1.

3.2. Community Open House #1 (COH #1)

3.2.1. Overview

Approximately 60 individuals attended the COH #1 (**Table 3-1**). Attendees had opportunities to sign-up for the Project contact list through the provided sign-in sheets. In addition to members of the public, representatives from the City of Niagara Falls, the Region of Niagara, Red Jar Niagara Power Company, Welland Hydro Electric System Corporation, Rankin Renewable Power Incorporated, and the Preservation of Agricultural Lands Society were in attendance.

Table 3-1: Summary of Community Open House #1

Date and Time	Location	Number of Attendees
November 19, 2024 2:00 p.m. to 7:00 p.m. Eastern Standard Time (E.S.T.)	Royal Canadian Legion 383 Morningstar Avenue Welland	60

3.2.2. Consultation Materials

Large format display panels, a large format tabletop map, Social PinPoint interactive map, and comment forms were available for attendees to review, discuss, and/or provide comments. A summary of these materials and the comments received is provided in the sections below.

3.2.2.1. Display Panels

Display panels presented at COH #1 (**Appendix B2.2**) included information on:

- Why the Project is needed;
- How the electricity system works;
- Hydro One's role in delivering power;
- The Class EA process, including examples of EA studies;
- A Project Overview including the route alternatives being studied;
- The route alternative evaluation and selection process;
- How Hydro One is working with Indigenous communities;
- Building the new Welland Thorold Power Line;
- The Crownland TS expansion;
- Project timelines; and
- How Hydro One is working with property owners and engaging with communities.

3.2.2.2. Tabletop Map

Tabletop maps were available for information purposes and included both a large-scale and small-scale perspective of the study area. The maps depicted the route alternatives, the planned Crowland TS expansion, the Allanburg TS, and existing transmission lines on aerial imagery. These maps enabled attendees to direct the Project team to areas of interest or concern. The comments received on the tabletop map related to property easements and the proposed quarry development. Attendees

also noted that more rural road names should be added to the map to assist the public with locating their own property.

3.2.2.3. Social PinPoint Interactive Map

On November 4, 2024, Hydro One launched an interactive map available through the Project website (https://www.hydroone.com/WTPL) where stakeholders and members of the public could leave comments, photos, and ask questions. The interactive map allowed members of the public to turn the route alternatives on and off and to explore the alternatives in more detail by zooming in to specific locations. Members of the public were able to post comments directly on the interactive map under factor-specific focus areas (e.g., natural environment, socio-economic environment, technical considerations) or as general input. During the COH#1, the Project team had tablets with the interactive map available as an option to help record comments and to have more in-depth one-on-one conversations with attendees. **Table 3-2** provides the one comment made on the interactive map up to and including November 19, 2024.

Table 3-2: Summary of Social Pinpoint Comments up to and including November 19, 2024

Comment	Hydro One Response
A member of the public inquired about the B1 alternative route and its specific location in relation to their property. They asked if the route will be situated at the back of their property or in the adjacent farmer's field. Additionally, they inquired about whether the existing transmission lines will be removed if route alternative B1 is selected.	The B1 alternative route is located on the adjacent agricultural property to the west. During the Class EA process, Hydro One will evaluate each route alternative to select a Preferred Route Alternative. To do this, the Project team collects existing conditions data based on desktop reviews/information, field investigations, as well as stakeholder and public feedback. The existing conditions data will help to inform the evaluation of the route alternatives to identify a Preferred Route Alternative that balances the natural environment, socio-economic environment (which includes agricultural lands), and technical considerations.

3.2.3. Comment Forms

A total of 10 comment forms were submitted by COH #1 attendees and included questions and comments regarding the Project.

Table 3-5 summarizes the comment form feedback received at COH #1 as well as Hydro One responses.

3.2.4. Discussion Feedback

In addition to the materials noted above, several comments and concerns were heard through discussions with attendees during the COH #1. These comments are summarized in Table 3-5.

3.2.5. Summary

Through the different materials available, the key comments/concerns received focused on the following themes:

- Route direction, location, and design;
- Suggestions to parallel the existing transmission line for its entirety;
- Concerns about impacts to private property, buyouts, and property values;
- Concerns about impacts to residential land and future development on properties;
- Concerns about impacts to agricultural land, operations, and potential business loss;
- Concerns about impacts to natural features in the area;
- Concerns about power outages in the area;
- Interest in nearby developments;
- Tower design, placement, and maintenance;
- Existing transmission line infrastructure and capacity; and
- Questions about how further Project engagement will be provided.

The input received through the COH #1 was considered and incorporated, where feasible, into the comparative evaluation of the route alternatives.

3.3. Community Open House #2 (COH #2)

3.3.1. Overview

COH #2 provided stakeholders with the opportunity to attend an in-person event and speak to the Project team to learn more about the Project, the route selection process, and the selected Preferred Route Alternative. COH #2 allowed the Project team to engage in discussions with stakeholders and gather feedback/input on the Project. A total of 40 individuals signed in at COH #2 (**Table 3-3**). Attendees had opportunities to sign-up for the Project contact list through the provided sign-in sheets. In addition to members of the public, representatives from Welland Hydro Electric System Corporation, Northland Power Inc., Walker Industries and the Niagara Regional Agricultural Society were in attendance.

Table 3-3: Summary of Community Open House

Date and Time	Location	Number of Attendees
April 15, 2025 2:00 p.m. to 7:00 p.m. Eastern Standard Time (E.S.T.)	Royal Canadian Legion 383 Morningstar Avenue, Welland	40

3.3.2. Consultation Materials

Large format display panels, a large format tabletop map, Social PinPoint interactive map, and comment forms were available for attendees to review, discuss, and/or provide comments. A summary of these materials and the comments received is provided in the sections below.

3.3.2.1. Display Panels

Display panels presented at COH #2 (**Appendix B2.3**) included information on:

- The Project overview;
- How the electricity system works;
- Hydro One's role in delivering power;
- The Preferred Route Alternative;
- The Class EA process;
- The route alternative evaluation and selection process;
- How Hydro One is working with Indigenous communities;

- How Hydro One is working with property owners and engaging with communities;
- Building the new Welland Thorold Power Line;
- The Crowland TS expansion;
- Mitigation and restoration opportunities; and,
- Project timelines.

3.3.2.2. Tabletop Map

Tabletop maps were available for information purposes and included both a large-scale and small-scale perspective of the study area. The maps depicted the Preferred Route Alternative, the planned Crowland TS expansion, the Allanburg TS, and existing transmission lines on aerial imagery. These maps enabled attendees to direct the Project team to areas of interest or concern.

3.3.2.3. Social PinPoint Interactive Map

On November 4, 2024, Hydro One hosted an interactive map available through the Project website (https://www.hydroone/com/WTPL) where stakeholders and members of the public could leave comments and ask questions. The interactive map allowed members of the public to turn the route alternatives on and off and to explore the alternatives in more detail by zooming in to specific locations. Members of the public were able to post comments directly on the interactive map under factor-specific focus areas (e.g., natural environment, socio-economic environment, technical considerations) or as general input. During the COH #2, the Project team had tablets as an option to help record comments and to have more in depth one-on-one conversations with attendees.

Table 3-4 provides the two comments made on the interactive map from November 20, 2024 to April 15, 2025.

Table 3-4: Summary of Social Pinpoint Comments from November 20, 2024 to April 15, 2025

Comment	Hydro One Response
A member of the public stated that they believe expanding the existing corridor is the best option, and route alternative C3 is not preferred.	All route alternatives and the potential for expanding the existing corridor, were evaluated as part of the Class EA process. This evaluation considered a range of factors including environmental, socio-economic, and technical considerations, as well as public and stakeholder input. Route alternative C3 has not been selected as part of the Preferred Route Alternative.
A member of the public asked where the new transmission towers will be located and if Hydro One is replacing existing lines or putting up new transmission towers on the east side of the existing power lines.	The Project will involve constructing new transmission towers however Hydro One has not yet finalized tower locations. Tower siting will be informed by technical feasibility, safety, and stakeholder input. Further details will be shared with impacted landowners as the Project progresses and more information becomes available.

3.3.3. Comment Forms

A total of three comment forms were submitted by the COH #2 attendees and included questions and comments regarding the Project.

Below, **Table 3-5** summarizes the comment form feedback received at the COH #2 as well as Hydro One responses.

3.3.4. Discussion Feedback

In addition to the materials noted above, several comments and concerns were heard through discussions with attendees during the COH #2. These comments are summarized in **Table 3-5**.

3.3.5. Summary

Through the different materials available, the key comments/concerns received focused on the following themes:

- Requests for clarity on the location of the Preferred Route Alternative and tower placement;
- Preference to follow the existing transmission corridor;
- Concerns about impacts to homes and future development;
- Concerns about effects on farmland and farm operations;
- Environmental concerns, including Species at Risk and wildlife protection, vegetation management and soil quality;
- Interest in nearby development plans;
- Questions about tower design, location, lighting, and maintenance;
- Clarification on existing infrastructure and added capacity;
- Requests for ongoing updates and clear communication.
- The input received through the COH #2 was considered and incorporated, where feasible, into the ESR for the Project.

3.4. Indigenous Communities

Consultation with Indigenous communities is an important part of the engagement requirements of the Class EA process. The Crown's Duty to Consult requirements per Section 35 of the *Constitution Act* (1982) may be discharged (partially or fully) concurrent with the Class EA process. Hydro One contacted the Ministry of Energy and Electrification (MOEE; formerly Ministry of Energy) on July 16, 2024, to understand if the Crown's Duty to Consult was triggered by the Project. Hydro One wished to confirm which Indigenous communities were to be consulted and if the Crown would be delegating procedural aspects of the consultation to Hydro One. In the correspondence, Hydro One provided a description of the characteristics, general location, and scope of the proposed Project.

On November 4, 2024, a letter from the MOEE provided specific delegation of procedural aspects of the Crown's Duty to Consult to Hydro One, and advised that the following communities were to be included in the consultation and engagement process (see **Appendix B5** for the Hydro One inquiry letter to the Crown and the Crown Duty to Consult delegation letter):

- Mississaugas of the Credit First Nation (MCFN).
- Haudenosaunee Confederacy Chiefs Council (HCCC).
  - Haudenosaunee Development Institute (HDI).
- Six Nations of the Grand River (SNGR).

- Six Nations Elected Council.

The letters outlined that the procedural aspects of the Duty to Consult had been delegated to Hydro One and provided Crown contacts for questions or comments regarding this delegation.

The communities listed above were notified of the proposed Project through a pre-NoC email sent on October 28, 2024, notifying the communities that the IESO had contacted Hydro One identifying the need to build a new double-circuit 230 kV transmission line from an existing 230 kV Hydro One corridor in Thorold and connecting into the Crowland TS in Welland, and provided notification that Hydro One was initiating a Class EA for the Project.

The Indigenous community consultation and engagement process was implemented to promote a transparent and meaningful approach. The process included:

- Notifications and provision of information to provide updates on the Project throughout the Class EA process;
- Offers by the Hydro One Project team to meet with the community to present the proposed Project and to address their issues or concerns;
- Meetings, correspondence, and discussions with designated staff/leaders from Indigenous communities at their convenience;
- Dedicated Indigenous Relations Project representatives;
- The invitation to participate in archaeological assessments (AA) and Natural Environment field studies;
- Establishment and maintenance of a Project website and interactive Project map, allowing for the sharing of Project information and updates; and,
- Offering capacity funding to support monitoring and Project engagement activities.

Ongoing correspondence and records of engagement activities with Indigenous communities are included in the Record of Consultation (**Appendix B4**).

3.4.1. Capacity Funding Agreements

The Indigenous communities identified by the Crown to be consulted by Hydro One (via delegation) are key contributors to the Project planning. At the outset of the Class EA process, Hydro One offered financial assistance through an initial Memorandum of

Understanding, followed by the offer of Capacity Funding Agreements (CFA). The MOUs and CFAs are meant to address the following aspects with communities:

- Outline an agreed-upon method of consultation and engagement, considering community protocols and practices;
- Outline a jointly agreed-upon work plan and budget for each community to be meaningfully consulted on the Project, including adequate capacity and resourcing to participate;
- Identify a Community Engagement Coordinator or similar position; and,
- Outline a process for the sharing of information regarding the Project and associated studies and regulatory processes.

Hydro One recognizes that each community may wish to amend aspects of the agreement to reflect community consultation protocols that may already be established. Indigenous communities were requested to review the agreements and share revisions with Hydro One.

3.4.2. Mississaugas of the Credit First Nation

On June 18, 2024, Hydro One emailed MCFN and shared information about the Project, offering to meet and discuss the Project in detail.

On June 20, 2024, Hydro One emailed MCFN and confirmed a meeting in July 2024 to discuss the Project.

On July 2, 2024, Hydro One emailed MCFN's Powwow Committee and confirmed mailing details for sponsorship payments and to explore the possibility of setting up a booth at the upcoming Powwow. On July 7, 2024, the Mississaugas of the Credit Business Corporation (MCBC) emailed Hydro One to confirm participation in the upcoming Powwow from July 26-28, 2024.

On July 11, 2024, Hydro One met with MCFN representatives to discuss the Project, providing an overview of its history and scope.

On July 30, 2024, Hydro One emailed MCFN and provided an attachment of an early engagement Memorandum of Understanding (MOU). Hydro One offered to schedule a meeting to walk through the agreement.

On August 30, 2024, Hydro One emailed MCFN and followed up on a previous email regarding the sharing of the MOU to confirm receipt.

On September 20, 2024, Hydro One emailed MCFN and offered to schedule a meeting to provide Project updates. Hydro One requested confirmation of the preferred communication method.

On September 26, 2024, Hydro One emailed MCFN and provided Project updates. Hydro One noted that Dillon had been selected as the Environmental Consultant for the Project. Hydro One encouraged MCFN to provide feedback on the duty-to-consult process directly to the MOEE. A map of the broad project study area was provided to MCFN. Hydro One noted they intended to share the NoC following the receipt of the delegation letter. Hydro One highlighted opportunities for MCFN to influence the Project during the EA process and provided an invitation to participate in field surveys and stage 1 desktop archaeological report reviews. Hydro One confirmed all documentation would be shared with MCFN and reiterated the availability of a MOU to support MCFN's participation.

On October 28, 2025, Hydro One called MCFN and informed them about the incoming NoC and offered to present the previously shared MOU. Hydro One suggested a mapping exercise to review the Study Area. MCFN expressed interest in the MOU and agreed to consider the mapping exercise. Hydro One then shared an advance copy of the NoC later that day. Hydro One requested the information remain confidential until its release to the general public on November 4, 2024. Hydro One additionally included an MOU with a revised date. Hydro One proposed a meeting with Dillon and Timmins Martelle Heritage Consultants (TMHC) to review the Study Area, inviting MCFN to provide knowledge for incorporation into the Stage 1 AA.

On October 31, 2024, Hydro One emailed MCFN and facilitated connections between MCFN and Dillon, inviting community participation in natural environment fieldwork scheduled for November 2024. Hydro One also clarified the Project's equity eligibility, acknowledging that cost estimates were still too broad to confirm opportunities but expressing willingness to discuss this further with MCFN.

On December 10, 2025, Hydro One emailed MCFN and inquired about an email received from the MCBC. Hydro One clarified that while the Project is public, it is not currently a business opportunity and sought guidance from MCFN regarding what the

information was being used for. Hydro One attached a copy of the NoC and MOU. Hydro One suggested a meeting in January 2025 to further discuss the Project.

On December 12, 2025, Hydro One and MCFN agreed on a meeting date on January 14, 2025.

On January 14, 2025, Hydro One met with MCFN the discuss the Project scope, environmental assessments, and archaeological studies. MCFN raised concerns about the age of the existing corridor and requested further information on co-located utilities.

On January 16, 2025, Hydro One emailed MCFN and provided key documentation, including a link to an interactive map, the MOU, the NoC and the Duty to Consult delegation letter. Hydro One explained that proposed routes largely parallel existing infrastructure, except for Section A (Route Alternatives A1 and A2).

On January 27, 2025, Hydro One emailed MCFN and forwarded a request from an MCFN Councillor looking for Project information. Hydro One noted that they had not yet connected with the Councillor and referenced a prior discussion on outreach strategy. Hydro One requested guidance on how best to assist. On the same day, MCFN responded to indicate that they would handle the matter internally and would contact the Councillor.

On January 28, 2025, in response to MCFN’s question, Hydro One emailed MCFN and provided clarification regarding the equity eligibility of the Project. Hydro One indicated that the Project had not yet been confirmed as an equity opportunity project. Hydro One noted eligibility would not be determined until Engineering, Procurement, and Construction contractors are engaged and costs are refined.

On February 4, 2025, Hydro One emailed MCFN and invited them to review the Project study area and provide insights on cultural and environmental considerations. Hydro One reiterated the availability of MOU funds to support MCFN's participation. Input was requested by February 21, 2025, to allow time for data compilation and assessment completion.

On February 7, 2025, Hydro One emailed MCFN and confirmed additional archaeological surveys will be conducted once a Preferred Route Alternative is selected. Hydro One indicated they would share the Stage 1 AA once available.

On February 18, 2025, Hydro One emailed MCFN and provided a revised version of the MOU. On February 19, 2025, Hydro One emailed MCFN a signed and executed copy of the MOU.

On February 28, 2025, Hydro One emailed MCFN a signed and executed copy of the MOU.

On March 12, 2025, Hydro One met with the Mississaugas of the Credit Business Corporation (MCBC) to provide background information on the Project and commence early discussions about economic opportunities.

On March 13, 2025, Hydro One emailed MCFN and followed up on the recent meeting with MCBC. Hydro One suggested scheduling a meeting to introduce the Project contractors, Forbes Bros. and Iconic to MCFN.

On March 18, 2025, MCFN emailed Hydro One and inquired on the next steps to complete the CFA. On the same day, Hydro One emailed MCFN to answer questions surrounding the CFA and MOU. Hydro One additionally provided a templated CFA for review. Hydro One noted that MCFN's signature and a Band Council Resolution would be needed to finalize the agreement.

On March 25, 2025, Hydro One emailed MCFN and provided a Project update. Hydro One indicated that a Preferred Route Alternative had been selected and additional details would be shared at COH #2, being held on April 15, 2025. On March 26, 2025, Hydro One emailed MCFN and provided a formal update letter.

On March 28, 2025, Hydro One met with MCFN and Forbes Bros. to connect contractors for the Project with the MCBC. The meeting included conversation around economic opportunities and the inclusion of Indigenous-owned companies in request for proposals. MCBC requested an additional 30-minutes to discuss the Project with Hydro One.

On March 31, 2025, MCBC emailed Forbes Bros., working on behalf of Hydro One, and provided a set of documents outlining current MCBC partnerships and available products and services. The MCBC shared the Indigenous Treaty Holders Participation Plan with Forbes Bros. On the same day, MCFN emailed Hydro One and provided a letter of response from the Department of Consultation and Accommodation.

On April 8, 2025, Hydro One emailed MCFN and acknowledged their review of the CFA. Hydro One confirmed the agreement would be reviewed internally, with a follow-up response to be provided within the week.

On May 5, 2025, Hydro One met with MCBC and discussed the Project. Hydro One confirmed the Project is eligible for the Hydro One Equity Partnership program.

On May 14, 2025, Hydro One emailed MCFN and provided a revised version of the CFA.

On May 16, 2025, Hydro One emailed the Chief of MCFN and provided Project updates. Hydro One indicated that the Project is eligible for the 50/50 equity model. Hydro One further clarified that the 50/50 equity model refers to equal ownership split between Hydro One and all participating Indigenous partners collectively.

On May 26, 2025, Hydro One emailed MCFN and confirmed TMHC was refining the Stage 2 Archaeology scope. Hydro One inquired whether Dillon or TMHC had reached out to establish a monitoring agreement.

On June 2, 2025, Hydro One emailed MCFN and confirmed the requested changes to the monitoring agreement would be reflected in the updated document.

On June 6, 2025, Hydro One emailed MCFN and provided the revised copy of the Stage 1 AA report.

On June 9, 2025, Hydro One emailed MCFN and confirmed the CFA should be signed by MCFN before Hydro One finalizes the report.

On June 10, 2025, Hydro One emailed MCFN and indicated that their contractor would be reaching out regarding upcoming field work, planned for July 2025. Hydro One shared that the Socio-Economic Existing Conditions Memo, the Natural Environment Existing Conditions Report and the Stage 1 AA were available for review. Hydro One noted the draft ESR would be shared with Indigenous communities 30 days in advance of the public posting. Hydro One offered to sponsor upcoming community events.

On June 26, 2025, Hydro One emailed MCFN and invited feedback on the fieldwork program.

3.4.3. Haudenosaunee Confederacy Chiefs Council (HCCC), Haudenosaunee Development Institute (HDI)

On October 28, 2024, Hydro One emailed the HCCC and provided an advanced NoC for the Class EA taking place for the Project, detailing the Project's scope. Hydro One shared the NoC and a Project map, requesting confidentiality until the public release on November 4, 2024. Hydro One offered to arrange a meeting to discuss the Project further.

On October 31, 2024, Hydro One emailed the HCCC and facilitated a connection between HCCC and their environmental consultants, Dillon, inviting community participation in the planned fieldwork for November 2024.

In parallel, Hydro One engaged with the (HDI). On November 4, 2024, Hydro One emailed the HDI and introduced the environmental consultant team responsible for coordinating fieldwork. Hydro One inquired about the preferred point of contact for ongoing Project correspondence. On this same day, HDI emailed Hydro One and requested participation in any ecological surveys that have been completed. HDI requested that they be involved in any removal of vegetation is required.

On November 5, 2024, HDI emailed Hydro One and requested information be provided to finalize a monitoring agreement. On this same day, Dillon provided HDI with an Indigenous Monitor Agreement in support of upcoming field studies, which included rates approved by Hydro One. On November 5, 2024, HDI provided Dillon with their insurance information as well as their standardized monitoring agreement, which included monitoring rates that were not approved by Hydro One. HDI decided not to participate in the natural environment field work on November 6, 2024, and Dillon advised that additional field work would be completed on November 7, 2024, should they wish to participate. HDI had indicated that they would likely attend the field work on November 7, 2024. On November 6, 2024, HDI contacted Dillon inquiring whether field work was completed on November 6, 2024, and whether field work was still planned for November 7, 2024. HDI advised that there would be no consent for field work to occur if the agreement was not finalized.

On November 13, 2024, HDI emailed Hydro One and requested ecological field work be paused until an agreement is reached. HDI also attempted to call Hydro One. On this

same day, Hydro One apologized to HDI for a missed call on the same day and reiterated the details of the notice sent in October 2024. Hydro One explained that the preliminary fieldwork conducted in November 2024 involved ecological land classification and habitat identification, with more detailed natural environment studies to be determined once the Preferred Route Alternative was selected. Hydro One expressed willingness to repeat the fieldwork with an HDI monitor once an agreement was signed.

On November 20, 2025, HDI emailed Hydro One and provided an agreement for review, emphasizing the need for a formal agreement before proceeding with any further ecological work. On the same day, Hydro One emailed HDI and noted they would be unable to accept the proposed field monitor rates by HDI. Hydro One expressed they apply standard rates for monitoring work. Hydro One committed to coordinating field dates once the agreement is finalized. Hydro One proposed holding a meeting to discuss the Project.

On November 26, 2024, Hydro One emailed the HDI and inquired about holding a meeting before the holiday season. On the same day, Hydro One called the HDI and discussed the ongoing field monitor agreement. Hydro One confirmed further studies would be conducted in spring 2025 and offered to repeat previous studies for HDI's inclusion. HDI indicated that they preferred to use their own templates for documentation. Hydro One agreed to this, pending senior approval and potential legal adjustments.

On December 3, 2024, HDI emailed Hydro One and advised that they have a fixed monitoring rate, indicating the field work could not proceed for the Project until an agreement was met. HDI requested a meeting to discuss.

On December 4, 2024, Hydro One called the HDI and inquired on a refusal to accept the Hydro One field monitoring rates after an early indication of acceptance. HDI directed Hydro One to a senior staff for further discussion. On the same day, Hydro One left a voicemail with the identified contact at the HDI and requested a call back to discuss the Project. Hydro One sent a follow up email to HDI confirming they had attempted to call the identified individual but were unable to get in contact.

On December 18, 2024, Hydro One emailed the HDI and followed up on previous discussions. Hydro One proposed scheduling a meeting early in the new year to present project information and facilitate HDI's participation in the planning process.

On February 3, 2025, the HDI emailed Hydro One and confirmed February 13, 2025, as the preferred date for their meeting.

On February 11, 2025, Hydro emailed the HDI and acknowledged that the meeting needed to be rescheduled. Hydro One suggested a new date of February 24 or 25, 2025.

On February 20, 2025, Hydro One emailed the HDI and followed-up regarding a potential meeting on February 24 or 25, 2025.

On February 21, 2025, HDI emailed Hydro One and requested a meeting on March 6 or 7, 2025. On the same day, Hydro One emailed the HDI and confirmed a new meeting date of March 6, 2025, as per HDI’s request.

On March 3, 2025, Hydro One emailed the HDI and requested confirmation of attendance for their meeting planned for March 6, 2025. On March 4, 2025, the HDI emailed Hydro One and requested a meeting invite be sent, including meeting logistics. On March 5, 2025, Hydro One emailed the HDI and shared a meeting invite.

On March 6, 2025, Hydro One met with HDI to discuss various topics including archaeological and construction monitors, as well as community programming. Hydro One shared a list of current and future projects that HDI will be engaged in.

On March 14, 2025, the HDI emailed Hydro One and inquired about the timeline for upcoming ecological surveys for the Project. HDI requested information on potential AAs for the Project. On the same day, Hydro One emailed the HDI and proposed a meeting to further discuss the upcoming field season the week of March 17, 2025.

On March 17, 2025, Hydro One emailed the HDI and thanked them for setting up a meeting on March 20, 2025.

On March 20, 2025, Hydro One met with the HDI and presented the potential routes and the selection process. HDI inquired about further environmental surveys. Hydro One indicated the possibility of additional studies would be dependent on Dillon’s review of any potential gaps in required information. HDI expressed interest in the Welland

Canal crossing. HDI confirmed agreement with Hydro One's monitoring rates and requested a standard agreement template. HDI indicated they will request copies of both the archaeology and natural environment surveys after signing the agreement.

On March 25, 2025, Hydro One emailed the HDI and provided a Project update. Hydro One indicated that a Preferred Route Alternative had been selected and additional details would be shared at COH #2, being held on April 15, 2025.

On March 31, 2025, Hydro One emailed the HDI and requested the latest version of their monitoring agreement to share with their internal team for review.

On April 21, 2025, the HDI emailed Hydro One and asked for an update on the monitoring agreement and details regarding upcoming surveys. On the same day, Hydro One emailed the HDI and indicated they would circle back after speaking with their consultants.

On May 5, 2025, Hydro One emailed the HDI and confirmed that the monitoring agreement template was under review by Dillon and TMHC for sign-off.

On May 14 and 16, 2025, Hydro One emailed the HDI and noted that Dillon was coordinating with construction contractors to identify future study needs. Hydro One inquired if HDI would be interested in reviewing the ESR once finalized.

On May 15, 2025, the HDI emailed Hydro One and acknowledged the need for Dillon and TMHC to sign-off on the agreement template.

On June 10, 2025, Hydro One emailed HDI and indicated that their contractor would be reaching out regarding upcoming field work, planned for July 2025. Hydro One shared that the Socio-Economic Existing Conditions Memo, the Natural Environment Existing Conditions Report and the Stage 1 AA were available for review. Hydro One noted the draft ESR would be shared with Indigenous communities 30 days in advance of the public posting. Hydro One offered to sponsor upcoming community events.

On June 12, 2025, Hydro One emailed HDI and confirmed that ecological studies were expected to begin in June 2025, with possible continuation into the fall. Hydro One noted that contractors will be required to provide advanced notice to accommodate scheduling. An updated link to the Socio-Economic Existing Conditions Memo, the Natural Environment Existing Conditions Report and the Stage 1 AA was shared.

On June 26, 2025, Hydro One emailed HDI and invited feedback on the fieldwork program. On this same day, HDI emailed Hydro One and agreed to providing feedback on the fieldwork program if needed.

3.4.4. Six Nations of the Grand River (SNGR)

On June 18, 2024, Hydro One emailed SNGR and provided details about the Project and extend an invitation for a meeting to discuss it further.

On June 24, 2024, Hydro One emailed SNGR and confirmed that they would be included in future correspondence and scheduled a virtual meeting to discuss the Project.

On July 5, 2024, Hydro One met with SNGR and introduced the Project's history, scope, and timelines. Both parties agreed to move forward with drafting a MOU and scheduling regular meetings to continue discussions. SNGR raised concerns regarding the historic line's previous assessments.

On July 9, 2024, Hydro One emailed SNGR and inquired about a possible sponsorship for SNGR's upcoming Powwow from July 26-28, 2024. On the same day, SNGR emailed Hydro One and confirmed Powwow meeting details and contact information.

On July 30, 2024, Hydro One emailed SNGR and provided an early engagement MOU. Hydro One offered to schedule a meeting with SNGR to review the MOU.

On July 31, 2024, Hydro One emailed SNGR and provided an updated MOU. On the same day, SNGR emailed Hydro One and notified that they would be providing a signed copy of the MOU sometime the following week.

On August 7, 2024, SNGR emailed Hydro One to provide a signed copy of the MOU.

On August 16, 2024, Hydro One emailed SNGR and noted that Hydro One's signatory was away. Hydro One stated another Hydro One representative could provide signature and inquired if SNGR had any concerns. On August 20, 2024, SNGR emailed Hydro One and indicated that they were amenable to waiting for the signatory to return.

On September 3, 2024, Hydro One emailed SNGR and provided a signed copy of the MOU. Hydro One requested SNGR's availability for a meeting.

On September 4, 2024, SNGR emailed Hydro One and provided potential meeting dates to discuss the Project. On this same day, Hydro One emailed SNGR and confirmed that September 2024 was the preferred date for their meeting. On September 5, 2024, SNGR emailed Hydro One and provided a link for a virtual meeting on September 11, 2024.

On September 11, 2024, Hydro One met with SNGR to discuss updates to the Project. On the same day, Hydro One emailed SNGR's representatives from their meeting earlier in the day and provided copies of the presentation materials. Hydro One committed to providing a draft CFA.

On October 28, 2024, Hydro One emailed SNGR and shared an advance copy of the NoC, requesting confidentiality until the public announcement. Hydro One highlighted technical resolutions that allowed for the identification of study areas and invited SNGR to contribute knowledge to the Stage 1 Archaeological Assessment report. Hydro One proposed meetings with Dillon to review mapping details and encouraged written feedback if scheduling constraints existed.

On October 31, 2024, Hydro One emailed SNGR and facilitated a connection between SNGR and their environmental consultants, Dillon, inviting community participation in the planned fieldwork for November 2024.

On November 26, 2024, Hydro One emailed SNGR and shared a link to an interactive public map, where points of interest can be marked to aid in route evaluations. Hydro One offered to support SNGR in using the software. Hydro One proposed hosting an information session with the Environment and Project Management teams and inquired if this would be of interest to SNGR.

On February 4, 2025, Hydro One emailed MCFN and invited them to review the Project study area and provide insights on cultural and environmental considerations. Hydro One reiterated the applicability of MOU funds to support MCFN's participation. Input was requested by February 21, 2025, to allow time for data compilation and assessment completion. On February 11, 2025, SNGR sent an email to Hydro One and expressed their strong value for the natural environment within the study. However, SNGR noted that they did not have capacity to engage community members to determine areas of heightened significance. SNGR requested to receive the draft Terms of Reference (ToR)

for the natural environment studies once available. On the same day, Hydro One emailed SNGR and clarified that the Project is a full Class EA and thus does not have a ToR. Hydro One offered to connect with their Environment department if specific information was needed. Hydro One also noted that the draft Stage 1 AA and Natural Heritage Existing Conditions Report would soon be provided and offered to explore a CFA to support SNGR's involvement and proposed sending a template for review. SNGR sent a reply stating they would wait for the Natural Heritage Existing Conditions Report. SNGRFN emphasized the importance of including searches for plants and animals significant to SNGR to ensure valued species such as deer are not overlooked. SNGR also requested the CFA template for review. Hydro One confirmed that the feedback provided would be forwarded to the Environmental Consultation lead of SNGR and stated that they were awaiting managerial approval to provide the CFA template. Hydro One promised to send it later in the week.

On February 14, 2025, Hydro One emailed the Chief of SNGR and provided a draft CFA. Hydro One offered to provide a briefing to the Chief and Council on the Project.

On February 18, 2025, Hydro One emailed SNGR and noted that they could no longer attend the Chief and Council meeting planned for March 24, 2025. Hydro One did, however, confirm availability for the SNGR Wealth, Economy, Lands, and Resources Committee meeting taking place on March 11, 2025.

On February 24, 2025, Hydro One emailed SNGR and proposed an in-person meeting on March 11, 2025, followed by a meeting with the Chief and Council in April 2025.

On March 3, 2025, Hydro One emailed SNGR and inquired if a presentation to the the SNGR Wealth, Economy, Lands, and Resources Committee is still scheduled for March 11, 2025. On this same day, SNGR emailed Hydro One and inquired if Hydro One could present the proposal to the committee in April 2025, followed by attendance at the April 2025 council meeting.

On March 4, 2025, Hydro One emailed SNGR and confirmed availability for discussions in April 2025. Hydro One noted they would soon be providing the preliminary environmental reports and the Stage 1 AA for review.

On March 13, 2025, Hydro One emailed SNGR and provided the Stage 1 AA for review. Hydro One noted the findings would be used in the route evaluation process. Hydro

One indicated further assessments will follow once a Preferred Route Alternative is selected. Hydro One noted the Natural Environment Existing Conditions Report would be available soon.

On March 25, 2025, Hydro One emailed SNGR and provided a Project update. Hydro One indicated that a Preferred Route Alternative had been selected and additional details would be shared at COH #2, being held on April 15, 2025. Hydro One proposed a meeting to discuss the route selection. On the same day, SNGR emailed Hydro One and confirmed they would coordinate internally to schedule a meeting date.

On March 26, 2025, Hydro One emailed the Chief of SNGR and provided a formal update letter regarding the route selection for the Project.

ON April 7, 2025, Hydro One emailed SNGR and requested an update on previously discussed meetings planned for April 2025.

On April 8, 2025, SNGR emailed Hydro One and indicated they had presented the CFA to council, with approval to advance to council's April 28, 2025, meeting. SNGR additionally highlighted a spelling mistake in the CFA that should be corrected. On this same day, Hydro One Hydro One emailed SNGR and noted they would follow up with the proposed correction to the CFA.

On April 14, 2025, SNGR emailed Hydro One and inquired on when they could expect to receive the corrected CFA.

On April 23, 2025, SNGR emailed Hydro One and provided contact information for their Development Corporation staff to discuss possible economic opportunities. SNGR confirmed Hydro One are tentatively scheduled to present at the council meeting on April 28, 2025. SNGR requested that any presentation materials be sent in advance. On the same day, Hydro One emailed Hydro One and confirmed they would reach out to facilitate a discussion on potential procurement opportunities.

On April 24, 2025, Hydro One emailed SNGR's Development Corporation and proposed a meeting to discuss the Project.

On May 5, 2025, Hydro One emailed SNGR and followed up regarding the CFA. Hydro One inquired whether the CFA had been tabled with Council. Hydro One asked for confirmation of the appropriate contact for economic development discussions, noting a

lack of response from a previously identified contact. On the same day, SNGR emailed Hydro One and confirmed the CFA had been approved by Council. SNGR stated a signed copy would be forwarded once received. SNGR recommended reaching out to the same contact for economic development opportunities.

On May 16, 2025, Hydro One emailed the Chief of SNGR and provided a letter, confirming the Project is anticipated to meet the criteria for the 50/50 equity model.

On May 20, 2025, Hydro One emailed SNGR's Development Corporation and confirmed availability for a meeting on May 26, 2025.

On May 26, 2025, Hydro One met with SNGR's Development Corporation to discuss the Project and potential Equity Partnership.

On June 10, 2025, Hydro One emailed SNGR and indicated that their contractor would be reaching out regarding upcoming field work, planned for July 2025. Hydro One shared that the Socio-Economic Existing Conditions Memo, the Natural Environment Existing Conditions Report and the Stage 1 AA were available for review. Hydro One noted the draft ESR would be shared with Indigenous communities 30 days in advance of the public posting. Hydro One offered to sponsor upcoming community events.

On June 12, 2025, Hydro One emailed SNGR and provided an updated link to the Socio-Economic Existing Conditions Memo, the Natural Environment Existing Conditions Report and the Stage 1 AA. Hydro One also indicated that Forbes Bros. and Iconic were selected as the contractors for the Project. Hydro One noted that the contractors should be reaching out for upcoming fieldwork opportunities. On the same day, SNGR emailed Hydro One and indicated they had been contacted by Forbes Bros. and Iconic.

3.5. Federal Government and Agencies

As part of the consultation and engagement program for the Project, the following federal government representatives and agencies were contacted during the Class EA Process:

- Agriculture and Agri-Food Canada;
- Canadian National Railway (CN Rail);
- Canadian Pacific Kansas City Limited (CPKC);

- Fisheries and Oceans Canada (DFO);
- Nav Canada;
- Transport Canada (TC); and
- Members of Parliament:
  - Vance Badaway, MP for Niagara Centre.

Federal agencies provided feedback, but no concerns were raised. Correspondence with federal government and agencies is included in the Record of Consultation (**Appendix B4**).

3.5.1. Agriculture and Agri-Food Canada

On November 11, 2024, Hydro One emailed Agriculture and Agri-Food Canada and issued the combined NoC and invitation to the November 19, 2024, COH #1 for the Project.

On April 1, 2025, Hydro One emailed Agriculture and Agri-Food Canada and provided a Project update and issued an invitation to the April 15, 2025, COH #2 for the Project.

On April 2, 2025, Agriculture and Agri-Food Canada emailed Hydro One and requested that two individuals be removed from the Project contact list. Agriculture and Agri-Food Canada provided a new contact to be added in their place. On this same day, Hydro One emailed Agriculture and Agri-Food Canada and advised that the Project contact list had been updated.

3.5.2. Canadian National Railway (CN Rail)

On November 11, 2024, Hydro One emailed CN Rail and issued the combined NoC and invitation to the November 19, 2024, COH #1 for the Project.

On April 1, 2025, Hydro One emailed CN Rail and provided a Project update and issued an invitation to the April 15, 2025, COH #2 for the Project. No comments or concerns were raised by CN Rail.

3.5.3. Canadian Pacific Kansas City Limited (formerly Canadian Pacific Railway) (CPKC)

On November 11, 2024, Hydro One emailed CPKC and issued the combined NoC and invitation to the November 19, 2024, COH #1 for the Project.

On April 1, 2025, Hydro One emailed CPKC and provided a Project update and issued an invitation to the April 15, 2025, COH #2 for the Project. No comments or concerns were raised by CPKC.

3.5.4. Fisheries and Oceans Canada (DFO)

On November 11, 2024, Hydro One emailed DFO and issued the combined NoC and invitation to the November 19, 2024, COH #1 for the Project.

On April 1, 2025, Hydro One emailed DFO and provided a Project update and issued an invitation to the April 15, 2025, COH #2 for the Project. No comments or concerns were raised by DFO.

3.5.5. Nav Canada

On November 11, 2024, Hydro One emailed Nav Canada and issued the combined NoC and invitation to the November 19, 2024, COH #1 for the Project.

On November 26, 2024, Hydro One emailed Nav Canada and TC and informed them they will submit the land use proposal once the information becomes available. Hydro One explained that navigational impacts are anticipated to be negligible given an existing parallel line. Hydro One inquired if a particular staff member or the general inbox should be consulted moving forward. On the same day, Nav Canada emailed Hydro One and noted the land use proposal should be submitted to the general inbox.

On April 1, 2025, Hydro One emailed Nav Canada and provided a Project update and issued an invitation to the April 15, 2025, COH #2.

On April 10, 2025, Nav Canada emailed Hydro One and requested a formal submission to Nav Canada once sufficient information was made available in relation to tower locations and heights for the Project. Nav Canada directed Hydro One to their website for additional information regarding submission requirements and forms. On the same

day, Hydro One emailed Nav Canada and confirmed this information would be shared once detailed design was complete for the Project.

3.5.6. Transport Canada

On May 21, 2024, Hydro One emailed TC and provided an early notice of the proposed project before public disclosure. Hydro One noted that the new conductors could potentially reduce clearance over the Welland Canal due to their size and weight, but acknowledged that the crossing currently has some buffer relative to minimal height requirements. Hydro One requested to connect with technical specialists to determine if the Project would qualify as Minor Works and to obtain information regarding the ordinary high water level elevation and the required vertical clearance at 230 kV.

On November 11, 2024, Hydro One emailed TC and issued the combined NoC and invitation to the November 19, 2024, COH #1 for the Project.

On April 1, 2025, Hydro One emailed TC and provided a Project update and issued an invitation to the April 15, 2025, COH #2 for the Project. No comments or concerns were raised by TC.

3.5.7. Vance Badeway [Member of Parliament (MP) for Niagara Centre]

On November 11, 2024, Hydro One issued the combined NoC and invitation to the November 19, 2024, COH #1 for the Project to MP Vance Badeway for the Niagara Centre Constituency.

On April 1, 2025, Hydro One emailed MP Vance Badeway for the Niagara Centre Constituency and provided a Project update and issued an invitation to the April 15, 2025, COH #2 for the Project. No comments or concerns were raised by the MP for the Niagara Centre Constituency.

3.6. Provincial Government & Agencies

As part of the consultation and engagement program for the Project, the following provincial government representatives and agencies were contacted during the Class EA Process:

- Members of Provincial Parliament:
  - Jeff Burch, Member of Provincial Parliament (MPP) for Niagara Centre

- Infrastructure Ontario (IO);
- Ministry of Agriculture, Food and Agribusiness (OMAFA);
- Ministry of Citizenship and Multiculturalism (MCM);
- Ministry of Tourism, Culture and Gaming (MTCG);
- Ministry of Economic Development, Job Creation and Trade (MEDJCT);
- Ministry of Energy and Mines (MEM);
- Ministry of Indigenous Affairs and First Nations Economic Reconciliation (MIAFNER);
- Ministry of Municipal Affairs and Housing (MMAH);
- Ministry of Natural Resources (MNR);
- Ministry of the Environment, Conservation and Parks (MECP);
- Ministry of Transportation (MTO); and
- Niagara Peninsula Conservation Authority (NPCA).

Correspondence with provincial government and agencies is included in the Record of Consultation (**Appendix B4**).

3.6.1. Jeff Burch, MPP for Niagara Centre

On November 11, 2024, Hydro One emailed MPP Jeff Burch for the Niagara Centre Constituency and issued the combined NoC and invitation to the November 19, 2024, COH #1 for the Project.

On April 1, 2025, Hydro One emailed MPP Jeff Burch for the Niagara Centre Constituency and provided a Project update and issued an invitation to the April 15, 2025, COH #2 for the Project. No comments or concerns were raised by the MPP for the Niagara Centre Constituency.

3.6.2. Infrastructure Ontario

On November 11, 2024, Hydro One emailed IO and issued the combined NoC and invitation to the November 19, 2024, COH #1 for the Project.

On April 1, 2025, Hydro One emailed IO and provided a Project update and issued an invitation to the April 15, 2025, COH #2 for the Project. No comments or concerns were raised by IO.

3.6.3. Ministry of Agriculture, Food and Agribusiness (formerly the Ministry of Agriculture, Food and Rural Affairs) (OMFA)

On November 11, 2024, Hydro One emailed the OMAFA and issued the combined NoC and invitation to the November 19, 2024, COH #1 for the Project.

On April 1, 2025, Hydro One emailed the OMAFA and provided a Project update and issued an invitation to the April 15, 2025, COH #2 for the Project. No comments or concerns were raised by the OMAFA.

3.6.4. Ministry of Citizenship and Multiculturalism

On November 11, 2024, Hydro One emailed the MCM and issued the combined NoC and invitation to the November 19, 2024, COH #1 for the Project.

On December 16, 2024, the MCM emailed Hydro One and acknowledged receipt of the NoC for the Project. On this same day, Hydro One emailed the MCM and informed them that their consultants would reach out regarding cultural heritage and archaeological work.

On April 1, 2025, Hydro One emailed the MCM and provided a Project update and issued an invitation to the April 15, 2025, COH #2 for the Project. On the same day, the MCM emailed Hydro One and requested a contact be replaced on the Project contact list. The MCM also inquired about the status of Technical Cultural Heritage studies and asked for the Project Information Form number if an archaeological assessment had been initiated. The MCM requested that technical studies be provided for review and comment prior to issuance of a Notice of Completion.

On April 2, 2025, Hydro One emailed the MCM and confirmed that the Project contact list had been updated. Hydro One indicated they would reach out to their consultant, TMHC, to follow up on technical studies and the Project Information Form.

3.6.5. Ministry of Tourism, Culture and Gaming

On November 11, 2024, Hydro One emailed the MTCG and issued the combined NoC and invitation to the November 19, 2024, COH #1 for the Project.

On April 1, 2025, Hydro One emailed the MTCG and provided a Project update and issued an invitation to the April 15, 2025, COH #2 for the Project. No comments or concerns were raised by the MTCGS.

3.6.6. Ministry of Economic Development, Job Creation and Trade

On November 11, 2024, Hydro One emailed the MEDJCT and issued the combined NoC and invitation to the November 19, 2024, COH #1 for the Project.

On April 1, 2025, Hydro One emailed the MEDJCT and provided a Project update and issued an invitation to the April 15, 2025, COH #2 for the Project. No comments or concerns were raised by the MEDJCT.

3.6.7. Ministry of Energy and Mines (formerly the Ministry of Energy and Electrification) (MEM)

On July 16, 2024, Hydro One emailed the MEM and requested a delegation for the Duty to Consult for the Project.

On September 17, 2024, the MEM emailed Hydro One and requested confirmation of Project details. The MEM also inquired whether the existing corridor for this component of the Project would need to be widened to accommodate the larger infrastructure.

On September 20, 2024, Hydro One emailed the MEM and provided MEMadditional Project details, clarifying that the new infrastructure is expected to fit within the existing corridor.

On November 11, 2024, Hydro One emailed the MEM and issued the combined NoC and invitation to the November 19, 2024, COH #1 for the Project.MEM

On April 1, 2025, Hydro One emailed the MEM and provided a Project update and issued an invitation to the April 15, 2025, COH #2 for the Project.

3.6.8. Ministry of Indigenous Affairs and First Nations Economic Reconciliation (formerly the Ministry of Indigenous Affairs)

On November 11, 2024, Hydro One emailed the MIAFNER and issued the combined NoC and invitation to the November 19, 2024, COH #1 for the Project.

On April 1, 2025, Hydro One emailed the MIAFNER and provided a Project update and issued an invitation to the April 15, 2025, COH #2 for the Project. No further comments or concerns were raised by the MIAFNER.

3.6.9. Ministry of Municipal Affairs and Housing

On November 11, 2024, Hydro One emailed the MMAH and issued the combined NoC and invitation to the November 19, 2024, COH #1 for the Project.

On April 1, 2025, Hydro One emailed the MMAH and provided a Project update and issued an invitation to the April 15, 2025, COH #2 for the Project. No further comments or concerns were raised by the MMAH.

3.6.10. Ministry of Natural Resources (formerly the Ministry of Natural Resources and Forestry) (MNR)

On November 11, 2024, Hydro One emailed the MNR and issued the combined NoC and invitation to the November 19, 2024, COH #1 for the Project.

On April 1, 2025, Hydro One emailed the MNR and provided a Project update and issued an invitation to the April 15, 2025, COH #2 for the Project. No further comments or concerns were raised by the MNRF.

3.6.11. Ministry of the Environment, Conservation and Parks

On November 11 and 12, 2024, Hydro One emailed the MECP and issued the combined NoC and invitation to the November 19, 2024, COH #1 for the Project.

On November 12, 2024, the MECP emailed Hydro One and provided a key contact from the MECP for the Project moving forward. The MECP requested that the general inbox be removed from the Project contact list and be replaced with the identified contact. The MECP reminded Hydro One of their mandatory notification procedures, implemented in May 2018. The MECP advised Hydro One to ensure notices were being shared with the appropriate contacts. On November 13, 2024, Hydro One emailed the MECP and informed them that the NoC was forwarded to the contact provided.

On April 1, 2025, Hydro One emailed the MECP and provided a Project update and issued an invitation to the April 15, 2025, COH #2 for the Project. On this same day, the

MECP emailed Hydro One and noted the biologist contacted does not cover the Niagara area. The MECP directed Hydro One to the appropriate contact.

On May 9, 2025, the MNR emailed Hydro One and expressed concerns regarding potential corridor expansion beyond the existing ROW, given that the route follows an existing transmission corridor. The MNR highlighted key areas such as Barron Road and Hurricane Road, where sensitive environmental features are present. The MNR requested further clarification on whether work would remain within the existing corridor in those areas. The MNR also inquired if route alternative B1 was developed specifically to reduce impacts to natural heritage features compared to B2. The MNR shared a link to their Geohub for additional mapping of natural heritage features within the Study Area.

On May 12, 2025, Hydro One emailed the MNR and explained that the preference for maintaining the existing alignment was guided by the Provincial Planning Statement. Hydro One indicated that minimizing disturbances across all 4 evaluation criteria (natural, socio-economic, Indigenous, and technical/cost) informed the selection of the Preferred Route Alternative. Hydro One confirmed a natural heritage report was being conducted and would be shared with the MNR once completed.

3.6.12. Ministry of Transportation

On November 11, 2024, Hydro One emailed the MTO and issued the combined NoC and invitation to the November 19, 2024, COH #1 for the Project.

On February 14, 2025, Hydro One emailed the MTO and followed up on the NoC for the Project. Hydro One additionally stated that they were currently assessing line alternatives and were seeking to understand limitations, crossings, and future planning considerations from MTO. Hydro One additionally requested confirmation of the appropriate contact person or direction to other relevant staff for further discussions.

On April 1, 2025, Hydro One emailed the MTO and provided a Project update and issued an invitation to the April 15, 2025, COH #2 for the Project.

3.6.13. Niagara Peninsula Conservation Authority

On November 11, 2024, Hydro One emailed the NPCA and issued the combined NoC and invitation to the November 19, 2024, COH #1 for the Project.

On January 10, 2025, the NPCA emailed Hydro One and provided preliminary comments on the NoC to Hydro One. These included standard requirements for infrastructure development, items to include as part of the Environmental Assessment Report, and regulations regarding NPCA-protected wetlands. The NPCA reminded Hydro One to submit a formal Natural Heritage Information request to the NPCA, if not done so already.

On March 14, 2025, Hydro One emailed the NPCA to provide a formal Natural Heritage Information request.

On March 28, 2025, the NPCA emailed Hydro One and acknowledged receipt of the request.

On April 1, 2025, Hydro One emailed the NPCA and provided a Project update and issued an invitation to the April 15, 2025, COH #2 for the Project.

On April 11, 2025, the NPCA emailed Hydro One and informed them they would not be able to attend COH #2. The NPCA requested information regarding the sharing of the presentation and inquired about the deadline to submit comments. The NPCA additionally provided the requested natural heritage information and associated regulated mapping. The NPCA directed Hydro One to its open data portal for further information. On the same day, Hydro One emailed the NPCA and confirmed the COH #2 materials would be posted on the Hydro One website following the event. Hydro One also noted that the draft ESR would be circulated for a 30-day public review period and was anticipated to be released in the next few months. Hydro One indicated they would reach out when work within regulated areas is further refined.

3.6.14. Ontario Provincial Police (OPP)

On April 1, 2025, Hydro One emailed the OPP and provided a Project update and issued an invitation to the April 15, 2025, COH #2 for the Project.

3.7. Municipal Governments

As part of the consultation and engagement program for the Project, the following municipal governments were contacted:

- City of Niagara Falls;
- City of Welland;

- City of Thorold;
- City of Port Colborne; and
- Regional Municipality of Niagara.

The Mayor from each respective municipality was contacted. In addition, Ward Councillors from the City of Welland were informed throughout the Project. Key department staff (e.g., Engineering, Public Works, Planning) were also engaged from the City of Welland and City of Thorold, respectively. Correspondence with Municipal Governments is included in the Record of Consultation (**Appendix B4**).

3.7.1. City of Niagara Falls

On November 4, 2024, Hydro One emailed the Mayor of the City of Niagara Falls and provided information on the Project and proposed scheduling a meeting to address any questions.

On November 6, 2024, Hydro One emailed the CAO of the City of Niagara Falls and provided information on the Project, which included the combined NoC and invitation to the November 19, 2024, COH #1.

On November 11, 2024, Hydro One emailed the City of Niagara Falls and issued the combined NoC and invitation to the November 19, 2024, COH #1 for the Project.

On November 25, 2024, Hydro One emailed the City of Niagara Falls and requested details on any planned developments in the Project study area, offering to arrange a call to discuss further if necessary.

On April 1, 2025, Hydro One emailed the City of Niagara Falls and provided a Project update and issued an invitation to the April 15, 2025, COH #2 for the Project.

3.7.2. City of Welland

On October 24, 2024, Hydro One emailed the Mayor of the City of Welland and provided information on the Project and proposed scheduling a meeting to address any questions.

On November 5, 2024, Hydro One held a meeting with the Mayor of Welland, during which the Mayor inquired about the stakeholders Hydro One was engaging with in the municipality.

OnNovember 5 and 6, 2024, Hydro One emailed the Mayor and City Councillors of the City of Welland and issued the combined NoC and invitation to the November 19, 2024, COH #1 for the Project.

On November 11, 2024, Hydro One emailed the City of Welland and issued the combined NoC and invitation to the November 19, 2024, COH #1 for the Project.

On March 25, 2025, Hydro One emailed the Mayor of the City of Welland and provided a Project update. Hydro One indicated that a Preferred Route Alternative had been selected and additional details would be shared at COH #2, being held on April 15, 2025.

On April 1, 2025, Hydro One emailed the City of Welland and provided a Project update and issued an invitation to the April 15, 2025, COH #2 for the Project.

3.7.3. City of Thorold

On October 24, 2024, Hydro One emailed the Mayor of the City of Thorold to provide information on the Project and proposed scheduling a meeting to address any questions.

On November 11, 2024, Hydro One emailed the City of Thorold and issued the combined NoC and invitation to the November 19, 2024, COH #1 for the Project.

On November 19, 2024, Hydro One met with the Mayor of the City of Thorold to discuss the Project.

On March 25, 2025, Hydro One emailed the Mayor of the City of Thorold and provided a Project update. Hydro One indicated that a Preferred Route Alternative had been selected and additional details would be shared at COH #2, being held on April 15, 2025.

On April 1, 2025, Hydro One emailed the City of Thorold and provided a Project update and issued an invitation to the April 15, 2025, COH #2 for the Project.

3.7.4. City of Port Colborne

On November 4, 2024, Hydro One emailed the Mayor of Port Colborne to provide information on the Project and proposed scheduling a meeting to address any questions. No further comments or concerns were raised by the City of Port Colborne.

3.7.5. Regional Municipality of Niagara

On November 11, 2024, Hydro One emailed the Regional Municipality of Niagara and issued the combined NoC and invitation to the November 19, 2024, COH #1 for the Project. The notice was additionally provided to the Niagara Regional Police Service and the Niagara Emergency Medical Services (EMS).

On April 1, 2025, Hydro One emailed the Regional Municipality of Niagara and provided a Project update and issued an invitation to the April 15, 2025, COH #2 for the Project. The notice was additionally provided to the Niagara Regional Police Service and the Niagara EMS.

No further comments or concerns were raised by the Niagara Regional Police Service or the Niagara EMS department.

3.8. Potentially Affected and Interested Groups, Businesses, School Boards, and Utilities

Consultation and engagement opportunities were provided to potentially affected and interested groups, businesses, school boards, and utilities throughout the Class EA process.

As part of the consultation and engagement program, approximately 35 potentially affected and interested groups, businesses, school boards, and utilities were contacted during the Class EA process. A complete list of the interest groups is provided in **Appendix B1,** with correspondence included in the Record of Consultation (**Appendix B4**).

3.8.1. Bell Canada

On November 11, 2024, Hydro One emailed Bell Canada and issued the combined NoC and invitation to the November 19, 2024, COH #1 for the Project.

On April 1, 2025, Hydro One emailed Bell Canada and provided a Project update and issued an invitation to the April 15, 2025, COH #2 for the Project. No further comments or concerns were raised by Bell Canada.

3.8.2. Enbridge Gas Inc. (Enbridge)

On November 11, 2024, Hydro One emailed Enbridge and issued the combined NoC and invitation to the November 19, 2024, COH #1 for the Project.

On April 1, 2025, Hydro One emailed Enbridge and provided a Project update and issued an invitation to the April 15, 2025, COH #2 for the Project. On the same day, Enbridge emailed Hydro One to request a KMZ file of the Preferred Route Alternative in order to assess potential impacts to existing infrastructure.

On April 2, 2025, Hydro One emailed Enbridge and acknowledged the request. On the same day, Enbridge Gas emailed Hydro One and requested that all future project information be sent directly to an identified individual. Enbridge requested that all other staff be removed from the Project contact list.

On April 3, 2025, Hydro One emailed Enbridge and provided a centreline drawing of the proposed route alignment. Hydro One requested that Enbridge notify them if any potential conflicts are determined. Hydro One noted that tower locations had not yet been identified.

3.8.3. Ontario Federation of Agriculture (OFA)

On November 6, 2024, Hydro One emailed the OFA and issued the combined NoC and invitation to the November 19, 2024, COH #1 for the Project. No further comments or concerns were raised by the OFA.

3.8.4. Rogers Communications

On November 11, 2024, Hydro One emailed Rogers Communication and issued the combined NoC and invitation to the November 19, 2024, COH #1 for the Project.

On April 1, 2025, Hydro One emailed Rogers Communications and provided a Project update and issued an invitation to the April 15, 2025, COH #2 for the Project. On the same day, Rogers Communications emailed Hydro One and noted the email was being directed to the appropriate staff member for handling.

No further comments or concerns were raised by Rogers Communications.

3.8.5. Walker Industries

On December 3, 2024, Walker Industries emailed Hydro One requesting to be added to the contact list for the Project.

On December 6, 2024, Hydro One left a voicemail for Walker Industries, providing a phone number and email address.

On December 9, 2024, Hydro One emailed Walker Industries and suggested scheduling a meeting between the teams, which was accepted by Walker Industries the following day.

On December 18, 2024, Hydro One met with Walker Industries to discuss the Project in further detail and address concerns raised with their proposed quarry project and route alternative 2A for the Project. On this same day, Walker Industries emailed Hydro One and provided links to their application documents and technical studies. Walker Industries requested that their address be added to the Project's mailing distribution list.

On February 14, 2025, Hydro One met with Walker Industries to present the A1 route for the Project. Walker Industries inquired about the Project's impact on their property, including the extent of encroachment and farming operations around the infrastructure. Hydro One clarified that farming operations could continue under the wires with a 15 m setback from the tower base and that tower spacing would range between 200 – 300 m. Hydro One also noted that easements and agreements would be handled through Hydro One's Real Estate team. Hydro One briefly discussed the cemetery near route alternative A1 and addressed concerns about potential overlap of municipal boundaries on the displayed map by noting that the map contained internal layers not relevant to the Project. Walker Industries was then informed of the third-party land assessment/appraisal process and their option to hire their own appraiser. During the meeting, Walker Industries additionally noted the presence of valuable aggregate beneath the land. Walker Industries asked when the final route would be selected, to which Hydro One said they estimate a month and a half. Walker Industries requested additional information and links, including Project details, routing maps, secondary land use guidelines, and an interactive Project map, which Hydro One provided.

On April 1, 2025, Hydro One emailed Walker Industries and provided a Project update and issued an invitation to the April 15, 2025, COH #2 for the Project.

3.8.6. Preservation Agricultural Lands Society

On April 1, 2025, Hydro One emailed the Preservation Agricultural Lands Society and provided a Project update and issued an invitation to the April 15, 2025, COH #2 for the Project.

3.8.7. Northern Mat & Bridge

On April 30, 2025, Northern Mat & Bridge emailed Hydro One and asked to be added to the Project contact list.

On May 12, 2025, Hydro One emailed Northern Mat & Bridge and confirmed they had been added to the Project contact list. Hydro One requested clarification on their inquiries regarding Project communications. Hydro One indicated that emails are not frequently sent following the announcement of the Preferred Route Alternative.

3.8.8. Rankin Renewable Power Inc.

On April 1, 2025, Hydro One emailed Rankin Renewable Power Inc. and provided a Project update and issued an invitation to the April 15, 2025, COH #2 for the Project.

3.8.9. Welland Hydro

On April 1, 2025, Hydro One emailed Welland Hydro and provided a Project update and issued an invitation to the April 15, 2025, COH #2 for the Project.

3.9. Property Owners/Residents/General Members of the Public

As outlined in **Section 3.0**, property owners, residents, and general members of the public within the PSA were provided with Project notifications through email, Canada Post admail (to over 13,000 property owners), advertisements in the local newspaper, radio, and the Project website. Hydro One also received feedback and comments by phone and email to their Community Relations team. In advance of COH #2, Hydro One sent packages to impacted landowners along the Preferred Route Alternative, noting the specific property affected and specific route alternative(s) traversing the property(ies). The packages included an invitation to the open house, tile maps, links to interactive maps, and contact information for any further questions. These were delivered via registered mail campaigns and additional hand deliveries by Hydro One representatives.

Throughout the Class EA process, Hydro One had approximately 69 interactions with property owners, residents, and general members of the public via phone, email, and virtual/in-person meetings.

3.10. Summary of Stakeholder Comments and Concerns

Table 3-9 provides a consolidated summary of the comments and concerns raised from through the Project's interactive Map. the interested parties throughout the Class EA consultation process. Since the selection of the Preferred Route Alternative, Hydro One's real estate representatives have continued to work with directly affected landowners on matters specific to their properties.

Table 3-5: Summary of Stakeholder Comments and Concerns

Theme	Comment Summary	Hydro One Response Summary
Project Routing and Environmental Concerns	Concerns about tree preservation, wildlife, and farmland impacts.	The route alternatives aim to balance environmental, socio-economic, and technical considerations. Potential impacts to trees, wildlife, and agricultural lands will be factored into the route evaluation process.
	Requests to avoid creating new corridors; use existing ones or bury transmission lines.	In accordance with the Provincial Planning Statement, the route alternatives were selected such that they repurpose existing transmission corridors and/or parallel existing transmission corridors where possible. The cost to bury transmission lines is cost prohibitive.
	Concerns about light pollution from strobe lights.	Community feedback will be prioritized, and white strobe lights will be avoided where feasible.
	Protect rare habitats like Tall Grass Prairies and Wetlands.	There are no Tall Grass Prairies within the PSA. Where feasible, the route alternatives have been selected to avoid sensitive natural heritage features.
	Requests to push route alternative B1 further north and consider alternative alignment east of Moyer Road.	As a part of the Project, we are conducting a Class EA. As part of this process, we need to evaluate a diverse set of Route Alternatives. That is why Hydro One conducted a preliminary assessment to identify feasible routes for the new transmission line that will both meet the need of the Project and are technically viable. We mapped out known technical and environmental features such as waterbodies, dense residential areas, environmentally significant areas, areas in close proximity to existing infrastructure, etc., and looked for opportunities to parallel linear infrastructure.
	A preference for route alternative B2 over route alternative B1 was expressed by multiple stakeholders.	As part of the Class EA, Hydro One is collecting information through a variety of sources, including through public consultation and engagement. Preferences for one route over another will be noted in the EA reporting.
	Concerns about protected areas impacting route alternative options and potential impacts to farmers.	Hydro One's goal is to select a Preferred Route Alternative that balances the natural environment, socio-economic environment, and technical considerations. Hydro One will work closely with government agencies to follow all the applicable legislation, and acquire any permits, approvals or authorizations prior to beginning any work that would impact natural habitat. Through the Class EA process, avoidance and mitigation measures will be identified to address potential effects to the natural environment, as applicable. The mitigation measures will be documented and included in the Project's ESR. Effects to agricultural operations are top of mind for the Project team and through the Class EA process, avoidance and mitigation measures will be identified to address potential effects to the socio-economic environment, as applicable. The mitigation measures will be documented and included in the Project's ESR.
	Concern that the proximity of the proposed powerline ROW may impact a private residential groundwater well during construction activities.	During the Project detailed design phase, Hydro One will develop Project-specific mitigation measures for construction, including measures to avoid or reduce impacts to residential groundwater wells

Theme	Comment Summary	Hydro One Response Summary
	Concerns about the risk of soil contamination on the west side of the Welland Canal powerline crossing because of the nearby landfill.	During the Project detailed design phase, Hydro One will develop Project-specific mitigation measures for construction, including measures to avoid or reduce impacts associated with soil contamination. Hydro One will follow all applicable provincial regulations, including *O. Reg 406/19, On-Site and Excess Soil Management (2024).* The active Humberstone Landfill, along with the closed Atlas Landfill remediation Site and the former Union Carbide Landfill are located outside of the Study Area.
Tower Design and Visual Impact	Concerns about tower size, placement, and visual impact near residences.	Tower dimensions and placement will be finalized during detailed design once the Preferred Route Alternative is identified.
	Preference for steel pole towers to minimize visual disturbance.	Tower dimensions and placement will be finalized during detailed design once the Preferred Route Alternative is identified.
	Strong opposition to white strobe lights on towers.	Community feedback will be prioritized, and white strobe lights will be avoided where feasible.
	Requests to place new towers farther from existing homes and closer to Memorial Park boundary; suggestion to use old railway land.	The Project will involve constructing new transmission towers however Hydro One has not yet finalized tower locations. Tower siting will be informed by technical feasibility, safety, and stakeholder input. Further details will be shared with impacted landowners as the Project progresses and more information becomes available.
	Requests for details about where new towers will be placed in the Harrison Avenue area.	The Project will involve constructing new transmission towers however Hydro One has not yet finalized tower locations. Tower siting will be informed by technical feasibility, safety, and stakeholder input. Further details will be shared with impacted landowners as the Project progresses and more information becomes available.
	Concern that higher towers could impact low-flying aircraft; opposition to flashing lights at night.	Tower height and lighting will follow Transport Canada regulations. Community feedback will be considered, and the use of white strobe lighting will be avoided where feasible.
	Requests for clarification on whether existing 115kV towers will be removed or retained.	Whether existing towers will be removed or remain in place depends on the final routing and technical requirements. This will be confirmed during the detailed design stage.
Property and Compensation	Requests for clarity on compensation for property value impacts and agricultural losses.	Compensation will be based on independent third-party appraisals.
	Suggestions for minimizing construction disruptions during critical farming periods.	Flexibility can be applied during construction to minimize disruption to farming operations, where feasible.
	Interest in flexible agreements for land access.	Real estate coordinators will work closely with impacted landowners once a Preferred Route Alternative is identified.
	Concerns about ROW and expropriation near residential areas.	Once we select the Preferred Route Alternative, Hydro One's real estate team will work closely with directly impacted property owners who have the transmission ROW on their property. Each impacted property owner will be presented with a formal offer based upon the information contained in a property specific independent third-party appraisal report. If deemed applicable by the independent third-party appraiser's property specific appraisal report, Hydro One's offer will include compensation for Injurious Affection.

Theme	Comment Summary	Hydro One Response Summary
	Interest in the property acquisition process, allowable secondary land uses and ROW access.	Once we select the Preferred Route Alternative, Hydro One's real estate team will work closely with directly impacted property owners who have the transmission ROW on their property. Each impacted property owner will be presented with a formal offer based upon the information contained in a property specific independent third-party appraisal report. If deemed applicable by the independent third-party appraiser's property specific appraisal report, Hydro One's offer will include compensation for Injurious Affection. Prohibited secondary land uses can be found on the Hydro One website.
Wildlife and Environmental Protection	Concerns about preserving wildlife habitats and mitigating disruption to wildlife species.	Environmental field studies will guide mitigation efforts to minimize impacts on wildlife and wildlife habitats.
	Importance of protecting breeding and migratory habitats, including wetlands.	Environmental field studies will guide mitigation efforts to minimize impacts on wildlife and wildlife habitats.
	Inquiry about presence of SAR toads (Fowler's Toads) or Western Chorus Frogs and any related environmental constraints (referencing Nickel Beach precedent).	Environmental field studies will identify the potential for SAR and SAR habitat, and the team will develop mitigation efforts to minimize impacts on wildlife and wildlife habitats.
Engagement and Transparency	Requests for detailed route selection and decision-making information.	The route selection methodology and decision-making process will be provided in the draft Environment Study Report (ESR), which will be available for a 30-day review and comment period.
	Suggestions for publishing technical assessments and holding additional public consultation sessions.	Evaluations of route alternatives, including environmental, socio-economic, and technical impacts, will be shared transparently with the public. An additional COH will take place once the Preferred Route Alternative is identified.
	Requests for follow-up on tower height and to be notified as tower placement details become available.	Hydro One is committed to ongoing engagement. Residents who provided contact information will be notified as detailed design progresses and specific tower information becomes available.
Operational Impacts and Maintenance	Concerns about power outages for local customers as well as larger energy consumers.	As part of the Class EA, Hydro One evaluated the number of planned outages required in correlation to the energy consumer base within the Study Area. Hydro One's goal is to select a Preferred Route Alternative that balances the natural environment, socio-economic environment, and technical considerations.
	Requests for advance notice of outages to minimize operational disruptions.	Hydro One will notify local residents and business of any planned power outages as part of the Project.
	Complaints regarding lack of vegetation management – long grass, poor cutting practices, and overgrowth around towers leading to increased wildlife activity.	Hydro One acknowledges the feedback and will review current maintenance practices. Efforts will be made to ensure vegetation is maintained to reduce wildlife attraction and ensure property upkeep.
	Concerns raised about dust, road damage, noise, and general disruption during construction.	During the Project detailed design phase, Hydro One will develop Project-specific mitigation measures for construction, including measures to avoid or reduce impacts associated with increased noise and dust emissions.

Theme	Comment Summary	Hydro One Response Summary
Development and Coordination	A stakeholder is concerned about the Project's impact on mixed residential/commercial development near Route Alternative A2.	The Project will involve constructing new transmission towers however Hydro One has not yet finalized tower locations. Tower siting will be informed by technical feasibility, safety, and stakeholder input. Further details will be shared with impacted landowners as the Project progresses and more information becomes available.
	Quarry development proposal associated with route alternative A2 may intersect with tower design plans.	The Project will involve constructing new transmission towers however Hydro One has not yet finalized tower locations. Tower siting will be informed by technical feasibility, safety, and stakeholder input. Further details will be shared with impacted landowners as the Project progresses and more information becomes available.
Health and Safety	Concerns with EMFs and proximity of lines to residences.	Hydro One adheres to Health Canada's guidelines for EMF exposure. Voltage levels and safety considerations are being assessed as part of the Project planning.
	Questions regarding lightning strike protection and safety.	The transmission line design will include measures to mitigate the impact of lightning strikes on the line (e.g., overhead shield wire).
Employment and Local Benefits	Support expressed for hiring local workers during Project construction and maintenance phases.	It is anticipated that there will be opportunities for local employment during the construction of the Project.

3.11. Notice of Completion and Draft ESR Comment Period

Hydro One is providing a comment period, from July 15, 2025, to August 19, 2025, to allow sufficient time for review and comment on this draft ESR. Comments regarding the draft ESR are to be submitted to Hydro One no later than 4:30 P.M. on August 19, 2025, and must be addressed to:

Adam Haulena, Environmental Planner, Hydro One Networks Inc.
483 Bay Street, North Tower,
14th Floor, Toronto, ON M5G 2P5
Phone: 1-877-345-6799 (community relations hotline)
Email: Community.Relations@HydroOne.com

The draft ESR will be available electronically on the Project's website (https://www.hydroone.com/WTPL). Copies of the draft ESR will also be available in print at the following locations:

Thorold Public Library
14 Ormond Street North
Thorold, Ontario
L2V 1Y8
905-227-2581

Welland Public Library - Main Branch
50 The Boardwalk
Welland, Ontario
L3B 6J1
905-734-6210

4.0 Environmental Inventory

The following sections summarize the environmental baseline conditions in the study areas. Information presented below was obtained through published documents, government agency resource databases and mapping tools, municipal websites, government planning and guidance documents, relevant project documents, reports commissioned by Hydro One, primary data collection through targeted field surveys, and input received through consultation with stakeholders and Rights holders.

In accordance with Section 3.3.4 of the Class EA document (Hydro One, 2024), information for the below factors was collected for the purposes of defining existing conditions:

- Agricultural resources;
- Forestry resources;
- Cultural heritage resources (i.e., built heritage resources, cultural heritage landscapes, and archaeological resources);
- Land Use and Communities;
- Mineral resources;
- Natural environment resources (e.g., air, land, water, wildlife, etc.);
- Recreational resources; and,
- Visual and aesthetic resources (i.e., appearance of the landscape).

Natural and Socio-Economic environment baseline conditions are described in the following sections. Desktop information for the Natural and Socio-Economic Environment was generally collected within the LSA, while Natural Environment field surveys were completed within the PSA (see Figure 2-1). Natural environment field surveys were undertaken between October and November 2024 to assess baseline environmental conditions and significant natural features to inform the Class EA. Additional information beyond the PSA is provided for some environmental features (such as the Socio-Economic environment and cultural heritage) where additional context is appropriate.

Where private property access was granted in advance of the field program, field studies occurred within or directly adjacent to natural heritage features. Where private property access was not granted and the property was associated with a natural

feature(s), field data was collected from the public road allowance, Hydro One's existing transmission ROW and/or from property limits where access was granted. Field data collected from adjacent lands was supplemented with information collected through aerial imagery interpretation and secondary data sources. Results of the natural heritage field surveys are summarized in the Natural Environment Existing Conditions Technical Report for the Project (Appendix C1). A summary of the 2024 field program results is provided in **Section 4.6.7**.

4.1. Agricultural Resources

The Canada Land Inventory (CLI) classification system rates agricultural land capability. Class 1 is the highest agricultural capability, and Class 7 is the lowest capability. More specifically, Class 1 to Class 3 lands are considered Prime Agricultural Land. Land capability class descriptions for agriculture are as follows (Government of Canada, 2013):

- Class 0: not rated for agricultural capability;
- Class 1: no significant limitations in use for crops;
- Class 2: moderate limitations that restrict the range of crops or require moderate conservation practices;
- Class 3: moderate to severe limitations that restrict the range of crops or require conservation practices; and,
- Class 4-7: severe limitations that restrict the range of crops and the capability to produce perennial forage crops. Class 7 soils have no capacity for arable culture or permanent pasture.

According to CLI data (1998), most agricultural land crossed by the route alternatives are classified as Class 0, 2 or 3 soil capability. The majority of the lands within the PSA are considered agricultural lands capable of sustained production of cultivated field crops (Class 2 and 3) (**Figure 4-1**).

Some agricultural fields within the PSA have an agricultural field tile drainage system using a random or systematic design (LIO, 2019). Two locations of field tile drains have been identified within the LSA, including one to the west of the Allanburg TS and one to the west of Route Alternative C1. Impacts on field tile drains and associated mitigation measures will be considered as part of the Project's effects assessment.

Agriculture land use comprises the majority of the land base within the LSA along each Route Segment. According to the Agricultural Census from the Ministry of Agriculture, Food and Agribusiness (OMAFA), there were 63 farms in Welland and Thorold and 49 farms in the City of Niagara Falls in 2021 (OMAFA, 2021). The most common farm types in the Niagara Region include fruit and tree nut farming, oilseed and grain farming, and greenhouse, nursery and floriculture (Niagara Economic Development, 2022). Additionally, poultry is the most common form of livestock within the Niagara Region (OMAFA, 2022).

There are no Specialty Crop Areas within the PSA (Government of Canada, 2024).

Figure 4-1: Agricultural Soil Classes

4.2. Forestry Resources

Timber harvesting in Ontario occurs on both Crown and private land. Forest harvesting on Crown land occurs according to the *Crown Forest Sustainability Act*. Private land harvest occurs at the discretion of landowners or municipalities that have tree removal bylaws.

While there are several woodlands located within the PSA, they fall outside of Forestry Management Units, Agreement Forest Areas, Forest Cover Units, Forest Resource Inventory Areas, or Wood Use Areas Forest Resources as identified through the MNR Forest Resource Inventory (MNR, 2022a). As such, there is no potential for the proposed Project to affect the productivity or utilization of the land for timber harvesting.

4.3. Cultural Heritage Resources

Provincial heritage properties include three types of cultural heritage resources: Built Heritage Resources (BHRs), Cultural Heritage Landscapes (CHLs) and archaeological sites (MCM, 2010).

4.3.1. Archaeology

A Stage 1 AA was undertaken by Timmins Martelle Heritage Consultants (TMHC) to assess lands within a 300 m radius of the Route Alternatives (TMHC, 2025a). The majority of the Project Area exhibits potential for the discovery of archaeological sites due to proximity to:

- Registered archaeological sites;
- Watercourses and wetlands (including Thompson's Creek, Welland River, Grassy Brook Creek, Welland Canal, and their tributaries and tributaries of Beaver Dam's Creek and Lyon's Creek);
- Glacial shorelines (Glacial Lake Lundy);
- Mapped 19th-century structures in Stamford, Thorold, and Crowland Townships;
- Known cemeteries (Upper Cemetery); and
- Historic 19th-century transportation routes (including the early settlement roads of Beaverdams Road, Thorold Townline Road, Highway 20, Chippawa Creek Road, Biggar Road, Yokom Road, Buchner Road, Ridge Road, Netherby Road, Welland Railway, Canada Southern Railway, and the Welland Canal).

A Stage 2 AA will be completed along the Preferred Route Alternative for areas where additional assessment is recommended.

A copy of the Stage 1 AA report is provided in **Appendix C2**.

4.3.2. Built Heritage Resources and Cultural Heritage Landscapes

TMHC was retained by Hydro One to provide a Cultural Heritage Report: Existing Conditions (CHREC) report for the Project. The CHREC report was completed following guidance provided by MCM. The CHREC report determined that of the 439 properties, structures, and landscapes identified in the Study Area, 248 were found to require additional review. Following this review, six potential Built Heritage Resources (BHRs) and six potential Cultural Heritage Landscapes (CHLs) were determined to have potential Cultural Heritage Value of Interest (CHVI).

The report determined that Route Alternative B2 has the most known or potential heritage properties within its 50 m buffer (seven properties or landscapes), followed by Route Alternative B1 (six properties or landscapes), Route Alternative A2 (four properties and landscapes), and Route Alternative A1 (four properties and landscapes). Route Segment C and its Alternative Route C2 (including Route variations C1/C2, C2/C3, and C1/C2/C3) had the fewest known or potential heritage properties within their buffers (three properties or landscapes).

4.4. Land Use and Communities

The majority of the PSA is designated as agricultural land or open space as identified in the Niagara Region (2022), the City of Thorold (2016), the City of Welland (2019), and the City of Niagara Falls (2024) Official Plans (OP).

Changes in population and average age for the three municipalities within the PSA from 2016 to 2021 are listed in **Table 4-1** and **Table 4-2**. Population and demographic data are collected from Statistics Canada's census data. Since 2016, the population count has increased between 6% to 27%, and the average age has increased slightly for the Region of Niagara (Statistics Canada, 2017a; Statistics Canada 2021a), City of Welland (Statistics Canada, 2017b; Statistics Canada 2021b) and Niagara Falls (Statistics Canada 2017c; Statistics Canada, 2021c), while it has decreased slightly for the City of Thorold (Statistics Canada, 2017d; Statistics Canada, 2021d).

Table 4-1: Population Change

Census Subdivision	Population		
	2016	2021	Change (%)
Region of Niagara	447,888	477,941	6.7
City of Welland	52,293	55,750	6.6
City of Thorold	18,801	23,816	26.7
City of Niagara Falls	88,071	94,415	7.2

Table 4-2: Change in Average Age

Census Subdivision	Average Age		
	2016	2021	Change (%)
Region of Niagara	43.8	44.4	1.4
City of Welland	43.7	44.1	0.9
City of Thorold	40.7	39.5	-2.9
City of Niagara Falls	43.4	43.9	1.2

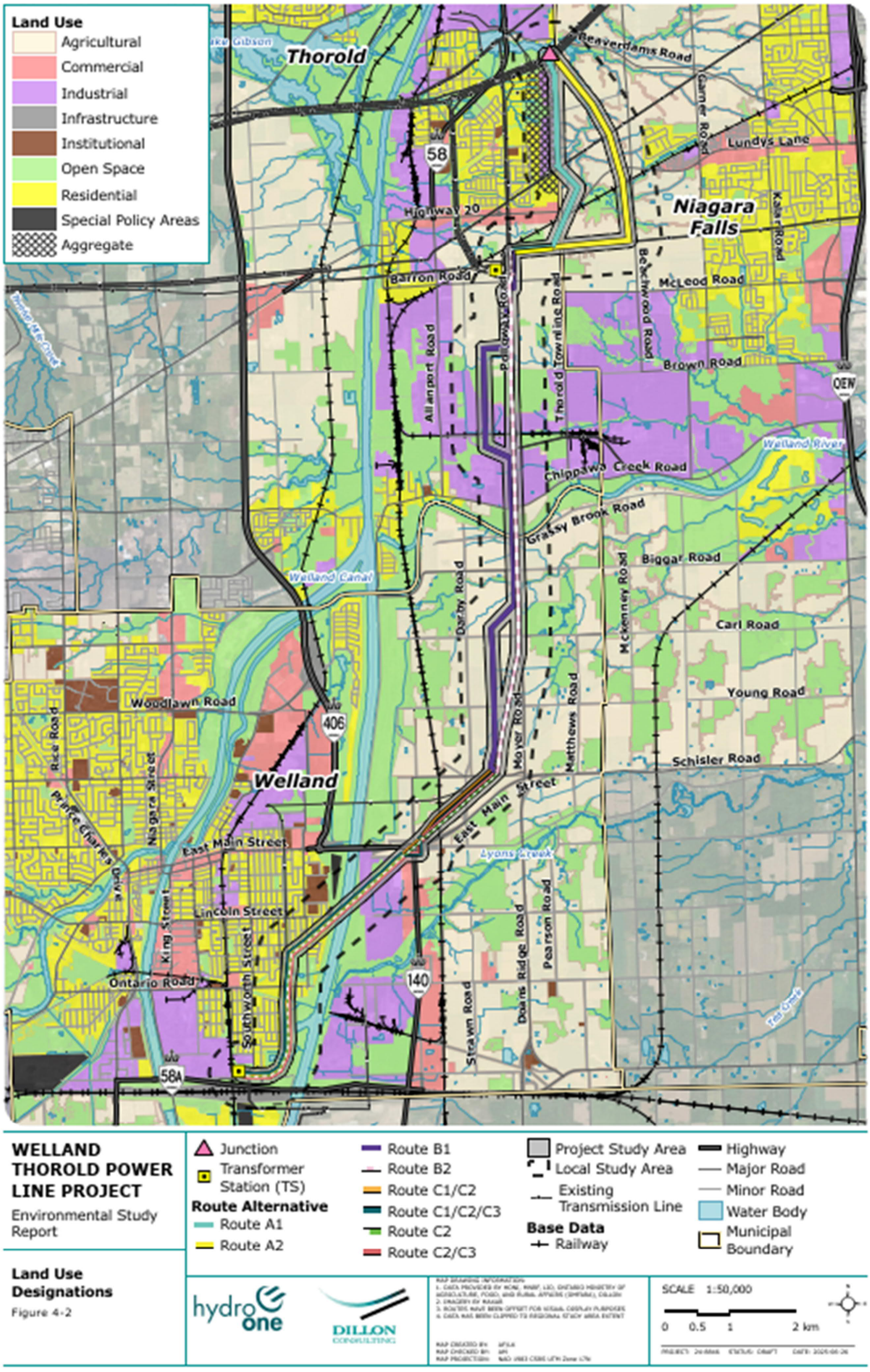
4.4.1. Land Use Planning

Three OPs apply to the PSA, including the City of Thorold, the City of Welland, and the City of Niagara Falls OPs. Land use planning and development in the PSA is also guided by the Provincial Planning Statement (PPS). **Figure 4-2** depict the land use designations within the PSA for each municipality. In addition, the Region of Niagara's OP provides comprehensive land designations that apply to the three second-tier municipal OPs noted above.

The majority of the PSA falls within the municipal boundaries of the City of Welland. The north end of the PSA falls within the City of Thorold municipal boundary, while a small portion of the northeast end lies within the City of Niagara Falls municipal boundary.

Schedules from the OPs are included in **Appendix C3**.

Figure 4-2: Land Use across the PSA



4.4.1.1. Provincial Planning Statement (2024)

The PPS is issued under the authority of Section 3 of the *Ontario Planning Act* and came into effect on October 20, 2024. Section 3 of the *Planning Act* requires that decisions affecting planning matters "shall be consistent with" the PPS. The PPS provides policy direction on matters of Provincial interest, such as infrastructure, employment, and environment (MMAH, 2024). Section 3.3 of the PPS (Transportation and Infrastructure Corridors) and Section 3.8 of the PPS (Energy Supply) include protection and consideration for transmission lines and facilities. The relevant of clauses of the PPS are described below:

- Section 3.3.1: Planning authorities shall plan for and protect corridors and ROWs for infrastructure, including transmission systems, to meet current and projected needs;
- Section 3.3.4: Preservation and reuse abandoned corridors for purposes that maintain the corridor's integrity and continuous linear characteristics should be encouraged, wherever feasible;
- Section 3.3.5: Co-location of linear infrastructure should be promoted, where appropriate; and
- Section 3.8.1: Planning authorities should provide opportunities for the development of energy supply, including electricity generation facilities and transmission and distribution systems, energy storage systems, district energy, renewable energy systems, and alternative energy systems, to accommodate current and projected needs.

Additionally, the PPS includes guidance for development in agricultural areas, including Section 4.3.2, Permitted Uses. Permitted uses in prime agricultural areas include agricultural uses, agriculture-related uses, and on-farm diversified uses based on provincial guidance. The PPS definition of on-farm diversified uses includes electricity generation facilities, transmission systems, and energy storage systems.

4.4.1.2. Niagara Region Official Plan (2022)

The Niagara Region OP provides a land use policy framework to guide growth and development within the region until 2051. This plan is relevant for the City of Welland, City of Thorold, and City of Niagara Falls, as it sets overarching policies that local area municipalities OPs must align with.

The OP emphasizes effective and proactive growth management to confirm that appropriate housing, employment, and infrastructure are available to support Niagara's growth. Key aspects include:

- Prioritizing development in areas with existing or planned municipal water and wastewater systems/services;
- Identifying strategic growth areas to accommodate a significant portion of population growth, higher density housing, and mixed land uses; and
- Promoting transit-supportive development to increase transit usage and decrease automobile dependence.

The plan establishes specific residential intensification targets for municipalities, including:

- Welland: 75% intensification rate (10,440 units);
- Thorold: 25% intensification rate (1,610 units); and
- Niagara Falls: 50% intensification rate (10,100 units).

The OP addresses the region's infrastructure needs relating to drinking water, wastewater, waste, energy, and utility services. Key policies include:

- Directing the efficient provision of Regional and Local municipal water and wastewater systems/services;
- Promoting built forms and land use patterns that minimize land consumption and reduce costs of municipal water and wastewater systems; and
- Prioritizing strategic growth areas for development and intensification, including major public service facilities and high-density mixed-use development.

Section 5.1.5.10 encourages the co-location of linear infrastructure, including utilities, to minimize environmental and aesthetic impacts.

4.4.1.3. City of Welland Official Plan (2019)

The City of Welland OP provides the framework for growth and development within the City of Welland to a planning horizon of 2051. It describes land use types across the city and guides the type of development that can occur within those areas. Schedule B of the OP shows that lands within the PSA are predominantly designated as Agricultural, with some pockets of Open Space and Recreation, and Residential. Lands near the Welland Canal on the east side of the PSA are designated as Light Industrial and General Industrial. Land uses within the PSA for the City of Welland are depicted in

Figure 4-2. The following uses are permitted within each of these land use designations:

- Agricultural (Section 5.1.2.2): Normal farm practices, agriculturally related activities, nurseries, greenhouses, conservation, forestry, and infrastructure of a linear nature. Secondary uses are also permitted, including but not limited to, home occupations, home industries, and uses that produce value-added agricultural products from the farm operation on the property;
- Light Industrial (Section 4.3.2.3.B): Light-manufacturing, light-assembly, research and development, warehouses and wholesaling, indoor storage, offices related to industrial uses, as well as some commercial uses such as heavy equipment sales and services, repair shops and services, and lumber yards;
- General Industrial (Section 4.3.2.2.B): Processing, manufacturing, assembly, fabrication, research and development, laboratories, workshops, training facilities, warehousing, shipping/receiving, major offices, and other similar uses;
- Open Space and Recreation (Section 6.2.2.1.B): Indoor and outdoor active and passive recreational uses including parks, trails, golf courses, arenas, curling rinks, sports fields, and other similar uses as well as open space areas. Compatible uses, such as public and/or private utilities, environmental conservation, and community gardens, may also be allowed; and
- Residential (Section 4.2.2.2.B): Single-detached, semi-detached, triplex, townhouse, duplex housing units, elementary schools, and places of worship.

The OP also includes policies for civic infrastructure, including utilities. Section 6.5.2.6.E states that Utility infrastructure shall be permitted in all land use designations. Section 6.5.2.3 notes that Utility infrastructure is encouraged to be in harmony with the character of the surrounding area and be appropriately landscaped to minimize impacts on the public realm.

In addition to specific land use policies, one of the OP's priorities is to protect agricultural resources and support long-term sustainability for farmland (Section 5.1.1.1).

4.4.1.4. City of Thorold Official Plan (2016)

The City of Thorold OP sets policy guidelines for growth and development in the city, with a planning horizon to 2031. Schedule A of the City of Thorold's OP depicts Agriculture and Specialty Crop as the primary form of land use within the municipality, with some areas of Rural Industrial. Land uses within the PSA for the City of Thorold are

depicted in **Figure 4-2**. All lands designated as Agricultural are considered prime agricultural areas, which have additional protections under the PPS. In addition to Agricultural lands, there are also corridors of Environmental Protection Areas within the PSA. Permitted uses within these land use designations include:

- Agricultural (Section B2.1.2): Agricultural uses, additional agriculture-related and on-farm diversified uses such as accessory residential uses, bed and breakfast establishments, home occupations, large animal veterinary clinics, forestry, resource management, retail commercial uses on farms, passive recreational uses, farm-related exhibitions and tourism establishments, temporary wayside pits, quarries, and portable asphalt and concrete plants for public authority contracts; all aimed at supporting agri-business, farm diversification, and adding value to agricultural products or promoting agri-tourism;
- Speciality Crop (Section B2.2.2): Production of a full range of specialty crops that are capable of being grown in the Niagara Region;
- Rural Industrial (Section B2.4.2): Manufacturing, assembly, processing, fabrication, industrial storage, warehousing and personal storage uses, contractor's yards and construction uses, research establishments, commercial recreation uses, veterinary clinics, recycling facilities, transportation and truck depot and inter-modal shipping areas, wholesaling establishments, agricultural uses which do not involve the keeping of livestock, greenhouses, commercial bulk fuel storage and sales, public utilities and maintenance yards, and existing dwellings and minor expansions thereto; and
- Environmental Protection Areas (Section B1.10.7): Provincially Significant Wetlands (PSW) and Woodlots.

Section A2.5 of the City of Thorold’s OP notes that its goal is to maintain, support, and enhance agricultural opportunities.

Section D6 of the OP outlines policies for implementing utilities within the City of Thorold, while Section D6.1 notes that public and private utilities will be permitted in all land use designations.

There are three active developments within the LSA in the City of Thorold:

- **Upper’s Lane Redevelopment**

  A 39.8-hectare property located north of Upper’s Lane, west of Thorold Townline Road, and west of the existing hydro corridor is undergoing redevelopment.

Parkbridge Lifestyle Communities Inc., Canada's largest operator of land lease homes, is developing a series of subdivisions within the Neighbourhoods of Rolling Meadows Secondary Plan area. This project will extend the existing and planned community to the west and south of the site, transitioning the land use from Agricultural and Greenspace to Residential.

- **Barker Parkway Residential Development**

  Adjacent to the Upper's Lane development, a 19-block residential townhouse project is underway on the east side of Barker Parkway, west of the existing hydro corridor. Upper Canada Consultants is currently seeking zoning amendments to change the land use designation from Future Development to Residential.

- **1914 Glover Road Development**

  In the central part of the study area, South Central Industrial is working to obtain planning approvals for an existing multi-use property at 1914 Glover Road, west of the existing hydro corridor. This application aims to rezone the subject lands from Agriculture-to-Agriculture Special Exception, facilitating the development of a Bridge Crane Building while continuing the existing welding and fabrication operations.

There is one active development in the PSA in the City of Thorold:

- **13030 Lundy's Lane**

  One active development in the PSA is proposed and is a part of the Neighbourhoods of Rolling Meadows Secondary Plan area. This new community will include 76 private development lots and blocks, comprising approximately 2,062 residential units of various built forms, along with new commercial spaces, public roads, and parkland. A proposed standalone mixed-use building will feature approximately 4,556 square metres of commercial gross floor area. The land use will transition to Residential, Commercial, and Open Space & Parks. The northeast corner of this development falls within the PSA in the northern portion of the study area, west of the existing hydro corridor, on the corner of Highway 20 (Lundy's Lane) and Thorold Townline Road.

4.4.1.5. City of Niagara Falls Official Plan (2024)

The City of Niagara Falls OP documents the long-term objectives and policies of the city with respect to the growth and development of urban lands, with a planning horizon of 2031. According to Schedule A of the City of Niagara Falls, lands within the PSA are predominantly designated as Good General Agriculture, with some Environmental Protection Areas (**Figure 4-2**). Permitted uses within these land use designations include:

- Good General Agriculture (Policy 7.1): Agriculture of all types, including crop farming, tender fruit and vineyards, dairy farming, livestock operations including equestrian activities, nurseries, and intensive greenhouse as well as agricultural value retention uses, forestry, conservation uses, and farm-related residential dwellings; and
- Environmental Protection Areas (8.3.2.3): PSWs, NPCA-regulated wetlands greater than 2 ha in size, Provincially Significant Life Areas of Natural and Scientific Interests (ANSIs), significant habitat of threatened and endangered species, floodways and erosion hazard areas, and environmentally sensitive areas.

Section 1.5.38 of the OP speaks to public utilities, stating that utilities shall be designed and located in a way that is compatible with the general character of the surrounding uses through the provision of landscaping, screening, buffering, siting of structures, height control, and any other measures as may be deemed to be appropriate by Council. Section 1.5.40 of the OP outlines policies for electric power while noting that the infrastructure should be permitted in any land use designation. Section 1.5.41 also notes that utility facilities should only be permitted within Good General Agriculture and Environmental Protection Areas if no other reasonable location is available.

There is one active application for an aggregate license within the PSA in the City of Niagara Falls:

- **Uppers Quarry**

  The active application for an aggregate pit is being pursued by Walkers Aggregates, a division of Walker Industries that supplies stone, sand, and gravel products to the Niagara Region. The proposed aggregate pit is referred to as “Uppers Quarry” and is located on 266 acres of land owned by Walker Industries

in the area between Thorold Townline Road and Beechwood Road, south of Beaverdams Road, in the City of Niagara Falls (Walker Industries, 2025). The proposed quarry is located within the PSA and is bisected by Route Alternative A2, while Route Alternative A1 is proposed along the west limit of the site. Hydro One has engaged with Walker Industries to understand the potential impacts on the quarry as a result of the Project.

4.4.2. Commercial and Industrial Operations

There are some existing industrial uses at the southern limits of the LSA in the City of Welland; however, none are in conflict with the Route Alternatives. Among these uses is the 500,000 square foot INNIO Group's Waukesha manufacturing facility, which was opened in 2018. The plant specializes in engine manufacturing and provides approximately 240 jobs at full capacity (Innio, 2024).

Within the broader PSA, the industrial landscape features several manufacturing facilities. Winoa Canada, a prominent supplier of abrasives, operates a manufacturing facility with a production capacity of nearly 50,000 tons annually (Winoa, 2025). This facility is located just south of the southern boundary of the LSA. In close proximity to the other facilities, Panels.ca, a construction company, has a factory spanning 100,000 square feet. This facility specializes in the production of construction panels and materials (Panels.ca, 2025). Welded Tube Canada, a steel manufacturer, operates a steel mill in the same area. With an annual capacity of 170,000 tons, the mill supplies steel products for construction, automotive, and infrastructure development (Welded Tube, 2025). Another steel making facility, Valbruna ASW Inc, is located northwest of the southern portion of the LSA, west of the Welland Canal. With approximately 76 acres of land and approximately 1 million square feet under roof, Valbruna ASW Inc is major industrial company within the broader PSA. Steel refining activities here include argon oxygen decarburization, vacuum oxygen decarburization, vacuum degassing, and ladle metallurgical station (Valbruna ASW Inc., 2025).

4.4.3. Transportation

The PSA comprises of local and regional road networks. Highway 140 is aligned in a north-south direction through the south end of the PSA. **Table 4-3** summarizes the types of road classifications within the PSA based on each municipality's OP.

Table 4-3: Road Classifications Within the PSA

Municipality	Road Classification(s)
City of Welland	• Arterial Road • Provincial Highway • Local Road
City of Thorold	• Local Road • Arterial Road • Highway
City of Niagara Falls	• Arterial Road • Local Road • Scenic Road

There are four rail lines that intersect the LSA. A rail line operated by CN Rail runs east-west within the northern boundary of the LSA, intersecting areas near Thorold Stone Road and crossing Route Alternatives A1 and A2. Another CN Rail line traverses the central region of the LSA, running east-west near Chippawa Creek Road and crossing Route Alternatives B1 and B2. A third CN Rail line primarily follows the western boundary of the LSA, closely aligning with Airport Road and intersecting Route Alternatives C1 and C2. Additionally, a rail line operated by CPKC runs east-west along the southernmost boundary of the LSA, adjacent to Highway 58A and intersecting Route Alternative C2 (Government of Ontario, 2017; CN Rail, 2023).

There are regional and local bus routes within the LSA near the urban areas. However, in the more rural areas, public transit routes are limited. Construction of the Preferred Route Alternative may temporarily disrupt transit routes and/or schedules.

There are regional and local bus routes within the LSA near the urban areas. However, in the more rural areas, public transit routes are limited. Construction of the Preferred Route Alternative may temporarily disrupt transit routes and/or schedules.

4.4.4. First Nations Lands and Interests

As outlined in **Section 3.4**, several Indigenous Communities were consulted as part of the Class EA process. There are no First Nation reserve lands situated within the PSA or LSA. Of the Indigenous Communities identified by the Crown, the closest communities to the PSA are Six Nations of the Grand River and Mississaugas of the

Credit First Nations (Government of Canada, 2025), each located approximately 60 km west of the LSA.

As identified in the Ministry of Energy and Electrification's letter confirming Indigenous communities to be consulted on the Project, Indigenous communities were consulted on the basis that they have or may have constitutionally protected Aboriginal and/or treaty rights that may be adversely affected by the Project.

Section 3.4 provides additional information regarding consultation with Indigenous communities.

4.5. Mineral Resources

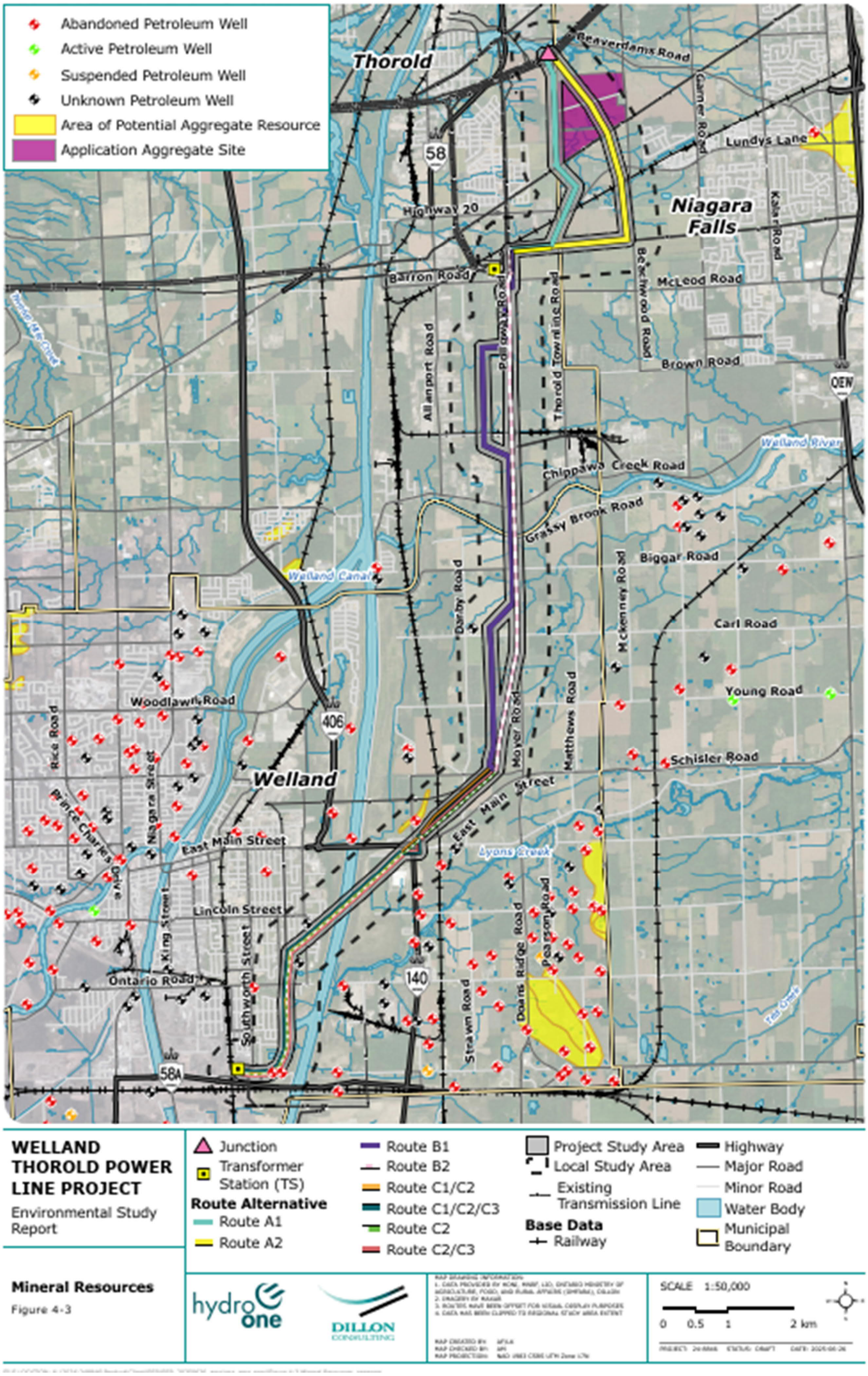
Based on the Ministry of Natural Resources' Pits and Quarries database, there is one active application for an aggregate pit located within the northern boundaries of the PSA in association with route Alternatives A1 and A2 in the City of Niagara Falls (**Figure 4-3**). One area of Potential Aggregate Resource was identified within the LSA and adjacent to the west side of Route Alternative C1 in the City of Welland. The database also identified two connected active aggregate pits within the northern boundary of the PSA, located at Taylor Road and Mountain Road in the City of Niagara Falls (MNR, 2019).

The active application for an aggregate pit is being pursued by Walkers Aggregates, a division of Walker Industries that supplies stone, sand, and gravel products to the Niagara Region. The proposed aggregate pit is referred to as "Uppers Quarry" and is located on 266 acres of land owned by Walker Industries in the area between Thorold Townline Road and Beechwood Road, south of Beaverdams Road, in the City of Niagara Falls (Walker Industries, 2025). The proposed quarry is located within the PSA and is bisected by Route Alternative A2, while Route Alternative A1 is proposed along the west limit of the site. Hydro One has engaged with Walker Industries to understand the potential impacts on the quarry because of the Project.

4.5.1. Petroleum

Two abandoned petroleum wells are located within the PSA, while four unknown petroleum wells and two abandoned petroleum wells are located in the broader LSA. An unknown petroleum well can be defined as a well for which there is no available information on file in the Ministry of Natural Resources records.

Figure 4-3: Mineral Resource



4.6. Natural Environment Resources

Natural environment features including air, land, water, wildlife and wildlife habitat resources and features were factors considered within the PSA.

This section addresses physical and biological features in the PSA including baseline information for the following:

- Physical environment;
- Atmospheric environment;
- Surface and groundwater resources;
- Designated or special natural areas; and,
- Natural heritage features.

4.6.1. Physical Environment

Bedrock Geology of the PSA is illustrated on **Figure 4-4** (MEM, 2025). Bedrock deposits within the PSA are characterized as sandstone, shale, dolostone, limestone, gypsum, salt, and siltstone (ENDM, 1991). The PSA's bedrock geology originates from both the Lower Silurian period, found across the Lockport Formation in the north, and the Upper Silurian period, found across the Guelph and Salina Formations in the central and southern regions (ENDM, 1991). **Table 4-4** outlines the bedrock geology of the PSA in further detail.

Table 4-4: Bedrock Geology within the PSA

Region within the PSA	Bedrock Deposits	Formation	Period
Northern	• Sandstone • Shale • Dolostone • Siltstone	Lockport Formation	Lower Silurian
Central	• Sandstone • Shale • Dolostone • Siltstone	Guelph Formation	Upper Silurian

Region within the PSA	Bedrock Deposits	Formation	Period
Southern	• Sandstone • Shale • Dolostone • Limestone • Gypsum • Salt	Salina Formation	Upper Silurian

Quaternary geology of the PSA is depicted on Figure 4-5 (MEM, 2025). The PSA consists entirely of fine-textured glaciolacustrine deposits from the Pleistocene (MEM, 2012).

The overburden thickness varies and is generally thinner in the northern portion of the PSA (~7.6m), becomes thicker near the centre, leading to the Welland Canal (~27.37 m), and is approximately 32.4 m thick closer to the southern portion of the PSA. The deepest point in the PSA is 35.4m along the southern portion of the PSA, which crosses all Route Alternatives. The shallowest point in the PSA is 5.8 m along Route Alternative A2.

The till in this area is described as clay to silt-textured till derived from the glaciolacustrine deposits. The fine-textured glaciolacustrine deposits within this section of the PSA consist of silt-clay layers with minor sand and gravel and quiet water deposits. The till is classified as massive to well laminated.

The bedrock and quaternary geology described for the PSA is consistent with the physiographic region described for the Niagara Region. The entirety of the PSA extends across the Haldimand Clay Plains physiographic region of Ontario as defined by Chapman and Putnam (1984).

The topography of the PSA and the surrounding region varies in bedrock elevation (MNR, 2023). The northern section of the PSA consists of higher bedrock elevation, with a gradual decrease towards the southernmost portion of the PSA.

Figure 4-4: Bedrock Geology

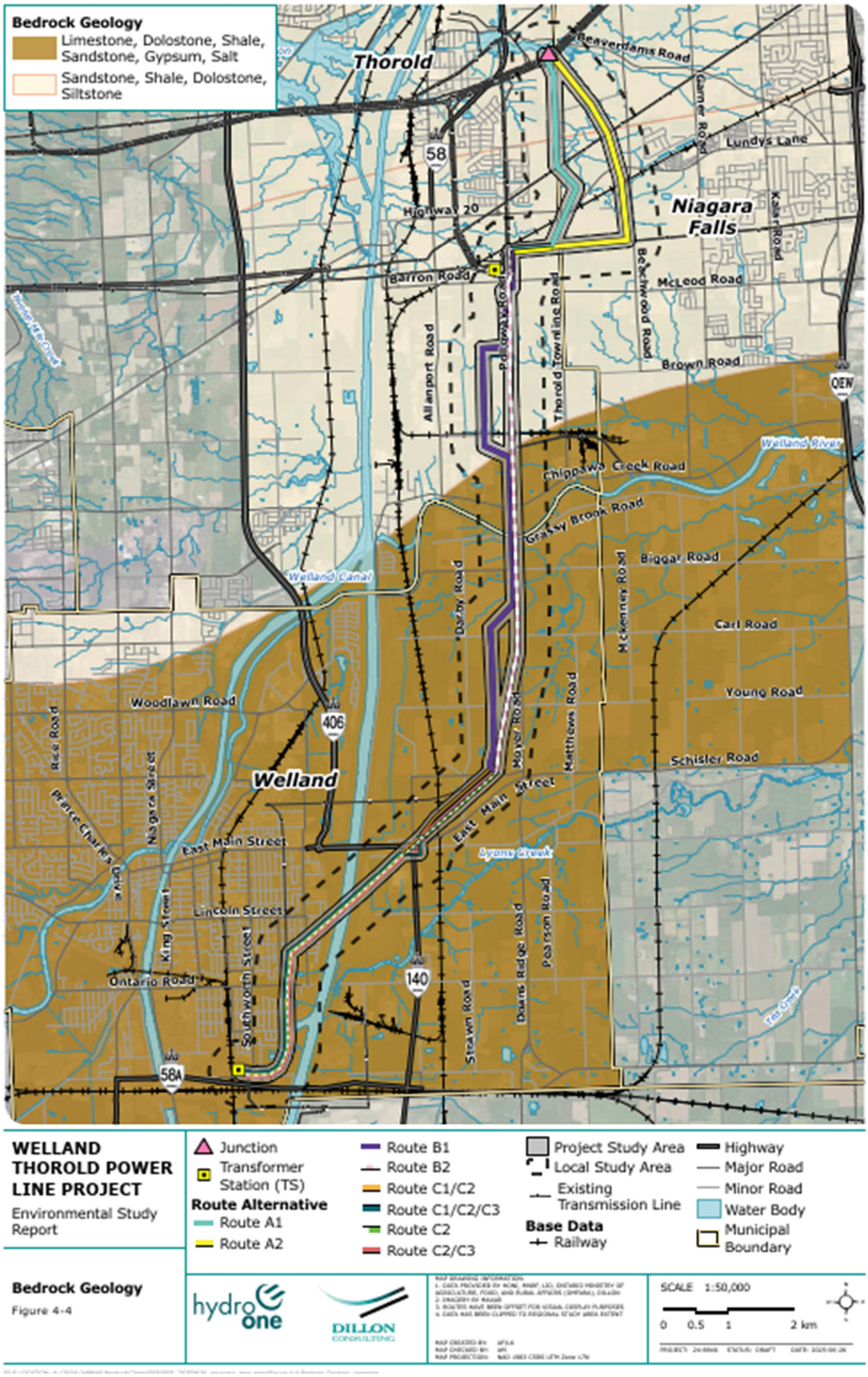
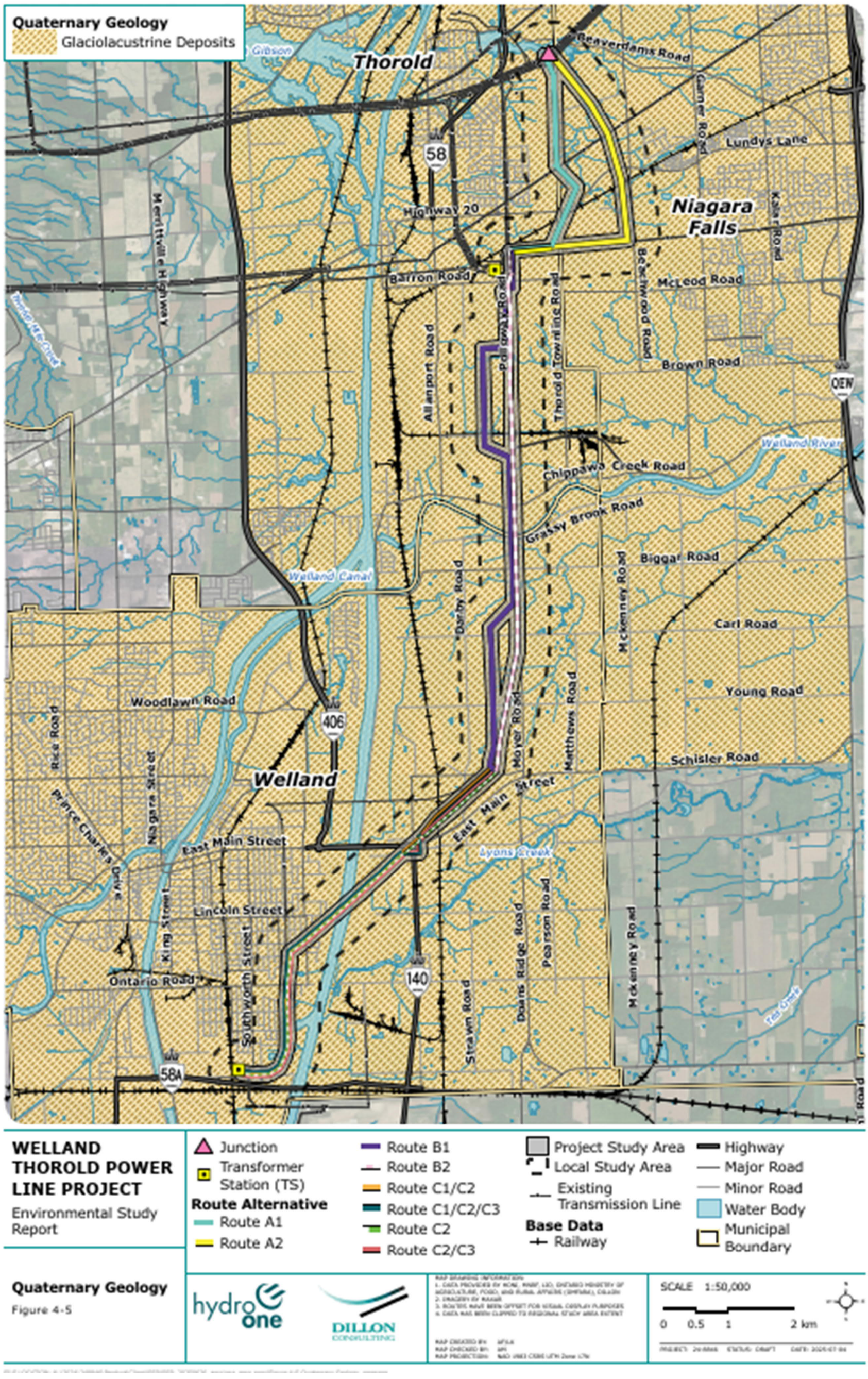


Figure 4-5: Quaternary Geology



4.6.2. Atmospheric Environment

4.6.2.1. Climate

The Region of Niagara, including the City of Thorold, the City of Welland, and the City of Niagara Falls, is located within the Humid High Moderate Temperature Ecoclimatic Region. Climate in this region is mild and moist, with a growing season of approximately 205-230 days (Crins et al., 2009). Meteorological stations with sufficient long-term data for the general region of the PSA have been identified in Welland (Welland, Climate Identifier [ID] 6139445) and Port Colborne (Port Colborne, Climate Identifier [ID] 6136606), Ontario (Government of Canada, 2023). The meteorological stations are located approximately 2.9 km west and 8.7 km southwest of the PSA, respectively. Temperature and precipitation data presented in this section are based on annual Climate Normals data available from 1981 and 2010 (Government of Canada, 2023). **Table 4-5** outlines temperature and precipitation data for the selected meteorological stations in further detail.

Table 4-5: Summary of Published Annual Climate Normals for the 1981 to 2010 Period for the Welland and Port Colborne Stations

Parameter	Welland (Station ID: 6139445): 2.9 km west of PSA	Port Colborne (Station ID: 6136606): 8.7 km southwest of PSA
Daily average (degrees Celsius [°C])	8.8	9.2
Daily maximum (°C)	13.6	13.0
Daily minimum (°C)	3.9	5.3
Rainfall (mm)	855.8	846.8
Snowfall (cm)	141.6	137.7
Precipitation (mm)	997.4	984.6
Days with maximum temperature >35°C	0.08	0.0
Days with minimum temperature <-30°C	0.0	0.0
Days with rainfall ≥ 25 mm	5.5	5.3

Parameter	Welland (Station ID: 6139445): 2.9 km west of PSA	Port Colborne (Station ID: 6136606): 8.7 km southwest of PSA
Days with snowfall ≥ 25 mm	0.25	0.24
Days with precipitation ≥ 25 mm	5.8	5.6

Source: Government of Canada, 2023

4.6.2.2. Temperature

The climate normal mean annual temperature recorded at the Welland and Port Colborne meteorological stations is 8.8 and 9.2 degrees Celsius (ºC), respectively (Government of Canada, 2023). For these two stations, the climate normal daily average temperature varies between 3.9 to 5.3 ºC and 13.6 to 13 ºC. The climate normal frost-free period is from May 9 to October 9 (151 days) and from April 25 to October 26 (182 days), respectively (Government of Canada, 2023).

4.6.2.3. Precipitation

Precipitation is distributed throughout all four seasons, with snowfall typically limited to between November to April, and rainfall occurring throughout the year. Climate normal days with precipitation (equal to or over 0.2 millimetres [mm]) range between 158.1 and 153.2 days per year for the Welland and Port Colborne meteorological stations, respectively (Government of Canada, 2023). Similarly, climate normal monthly precipitation varies between 61.3 mm (February) and 98.5 mm (November) at Welland station, and between 57.0 mm (February) and 100.9 mm (November) at Port Colborne station (Government of Canada, 2023). For the two meteorological stations, the climate normal total annual precipitation is 997.4 mm (Welland) and 984.6 mm (Port Colborne), where 141.6 mm and 137.7 mm are associated with snowfall, and 855.8 mm (Welland) and 846.8 mm (Port Colborne) occur as rainfall.

Extreme daily rainfall for the Welland meteorological station varies from 36.8 mm (December) to 141.0 mm (July) and is considered climatically normal. Extreme snow depths for the Welland station range from 0.0 to 28.0 centimetres (cm) (January; Government of Canada, 2023). On the other hand, extreme daily rainfall climate normal

data for the Port Colborne meteorological station vary from 29.5 mm (February) to 108.7 mm (June), while extreme snow depth ranges from 0.0 to 35.0 cm (January; Government of Canada, 2023).

4.6.2.4. Wind

Wind data was not provided in the climate normal data set for the Welland or Port Colborne meteorological station.

4.6.2.5. Air Quality

In Ontario, air quality is monitored through a network of air quality monitoring stations operated by the MECP and Environment and Climate Change Canada (MECP, 2022; ECCC 2025); the MECP monitors air quality throughout the province as part of the Air Quality Monitoring System (MECP, 2022). The nearest station is located approximately 7.83 km northwest (St. Catherines) of the PSA. Through hourly monitoring, an Air Quality Health Index (AQHI) reading summarizes background air quality levels for ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), sulphur dioxide (SO_2) and particulate matter ($PM_{2.5}$). O_3, NO_2 and $PM_{2.5}$ are measured at the St. Catherines station.

The AQHI creates a score (i.e., 1 to10+) totalling the overall risk associated with levels recorded for the parameters measured. A score of 1 to 3 indicates a low risk, a score of 4 to 6 indicates a moderate risk, while a score of 7+ indicates a high risk to ambient air quality. Air monitoring data summarized to provide AQHI scores from the St. Catherines station represents the combined effect of emissions from nearby sources, as well as the effect of emissions transported into the region. AQHI readings are recorded hourly. Based on averaged daily AQHI readings recorded over the 2019, 2020, and 2021 monitoring years, a low score (1 to 3) and, therefore a low risk to air quality, are indicated for the St. Catherines area (MECP, 2022).

4.6.2.6. Noise

In accordance with the MECP (formerly Ministry of the Environment and Climate Change [MOECC]) publication NPC-300 “Environmental Noise Guideline – Stationary and Transportation Sources – Approval and Planning” noise-sensitive receptors, or points of reception, are defined as sensitive land uses, which include dwellings; institutional use (educational, nursery, hospital, health care facility, community centre,

place of worship or detention centre); and commercial use (hotel or motel) (MOECC, 2016). Based on a desktop review, points of reception were identified within the LSA to represent the noise-sensitive receptors in the vicinity, all being rural residential dwellings, commercial operations, places of worship, and/or cemeteries adjacent to active agricultural lands.

Ambient noise conditions within the LSA were established through a review of publicly available information and the professional perspective of Hydro One based on experience with existing transmission line and station projects. Ambient noise conditions within the LSA are generally expected to be dominated by anthropogenic activities. These activities include, but are not limited to, transportation (roads), agricultural activities, and residential activities. The actual ambient noise levels at a given point of reception depend on a number of factors, including the type of noise source, distance to the noise source, and influences from intervening areas (e.g., structures, vegetation, as applicable) that could provide shielding between the noise source and point of reception. Ambient noise levels are expected to vary throughout the various periods of the day (i.e., Daytime [07:00 to 19:00], Evening [19:00 to 23:00], and Night-time [23:00 to 07:00]), days of the week, and seasons of the year. Ambient noise levels are expected to be at their highest during the agricultural planting and harvest seasons.

Ambient noise levels in the LSA are likely influenced by the following noise emissions:

- Local and distant road traffic;
- Railway activities; and,
- Agricultural (seasonal) and residential activities.

4.6.3. Surface Water Resources

For the purposes of field studies conducted in 2024 in support of the Class EA, surface aquatic features were defined using two categories: 1. watercourses and 2. waterbodies. Watercourses were considered rivers, streams/creeks, tributaries and constructed drains (including agricultural drains and roadside ditches), whereas waterbodies were considered natural or man-made ponds or pools that were land-locked within the landscape. A total of 33 mapped watercourses and 19 mapped waterbodies were identified in the PSA during background review.

Of the 33 mapped watercourses identified within 30 m of the PSA, 12 are classified by the MNR as permanent watercourses (continual flow), and 21 are classified as intermittent (seasonal or precipitation-dependent flow). As summarized in the Natural Environment Existing Conditions Technical Report (**Appendix C1**), watercourse features within 30 m of the Route Alternatives were surveyed (where access permitted) in support of the 2024 field program to assess the presence of and characterize watercourse features in the PSA.

The 19 mapped waterbodies in the PSA are classified by the Ontario Hydrological Network (OHN) as a “pond”. The majority of the ponds appear to be located on agricultural, residential and industrial properties, or connected to OHN mapped watercourses. Additionally, one waterbody in the PSA is classified by OHN as a “lake”. The lake is located immediately north of the origin point (north-starting point) of the transmission line, south of Beaverdams Road. This lake is fed by several tributaries of Beaver Dams Creek to the east (**Appendix C1; Figure 2-A**) and is connected to the Welland Canal to the north (**Appendix C1; Figure 2-C&D**).

Physical conditions of watercourses assessed in 2024 were summarized in Section 3.1 of the Natural Environment Existing Conditions Technical Report (**Appendix C1**). The majority of features within the PSA flow into two Quaternary Watersheds, both of which overlap with each Route Alternative: Welland Canal Watershed and Niagara River Watershed. Two large watercourse features, the Welland Canal and the Welland River, are present within the PSA. The Welland Canal receives flow from several tributaries and rivers within the PSA and conveys flows northerly through the PSA. The Welland Canal originates at Lake Erie to the south, and outlets into Lake Ontario to the north. The Welland River intersects the Welland Canal at the PSA and continues easterly until emptying into the Niagara River outside of the PSA. The Welland River is also fed by several headwater streams and watercourses within the PSA. Both watersheds are located within the Carolinian Zone, which is one of Canada’s most ecologically diverse regions.

A list of watercourses surveyed in association with each Route Alternative is provided in Appendix C of the Natural Environment Existing Conditions report. (**Appendix C1**).

The topography across the PSA is relatively flat in the central and southern region, with increased elevation in the northern section of the PSA, near Thorold. Sloping across the topography of the northern section of the PSA towards watercourse systems and surface drainage features was frequently noted. In general, flow within the two quaternary watersheds in the area was directed north towards Lake Ontario (i.e., the Welland Canal and Niagara River; MNR Ontario Flow Assessment Tool, 2022b). Surface flow within the PSA is generally directed towards the major watercourses and watercourse systems. Within the northern sections of the PSA, surface flows are directed towards Beaver Dam Creek, eventually outletting to the Welland Canal and Lake Ontario. Surface flows in the central portions of the PSA are directed towards the Lyons Creek, eventually outletting to the Welland Canal and Lake Ontario. Surface flows in the southern portions of the PSA are directed towards the Welland Canal, travelling north-east to outlet to Lake Ontario (MECP, 2025).

One active Provincial Water Quality Monitoring Network (PWQMN) station has been identified within the vicinity of the PSA. The PWQMN station for Welland River (No. 11000100502) is located approximately 2 km west from the PSA. The PWQMN station was mapped in MECP available background source protection data. The Welland River station was last surveyed in 2022 for phosphorus, nitrates, suspended solids, and chlorides. These parameters were measured in order to document the health of subwatersheds within the regulated area of the NPCA. As identified in the NPCA 2023 Watershed Assessment Report, surface water quality for the subwatersheds identified within, and in the general vicinity of the PSA, was classified as excellent to poor. According to the NPCA watershed report, conditions of the subwatersheds are likely attributed to faulty septic systems, agricultural and livestock runoff, and combined sewer overflow and urban stormwater (NPCA, 2023).

4.6.4. Groundwater Resources

Groundwater resources were evaluated within the PSA to capture potential effects on groundwater resources from the proposed Project. Well records mapped for the province of Ontario were reviewed to determine groundwater quality (MECP, 2021). Background review determined that many water wells are located within the extent of the PSA; mapping identifying the extent of well records for the PSA and the general vicinity are illustrated in **Figure 4-3**. The majority of the well records within the PSA were

recorded prior to the last 40 years. However, recent well records dating back to 1990 within the PSA were selected to identify the approximate groundwater and overburden depths for areas associated with the Route Alternatives. The summary of the water wells chosen for review is listed in **Table 4-6**.

Table 4-6: Water Well Records Selected for Review within the PSA

Well ID	Date Complete	UTM Coordinates (Zone 17 T) Eastings	UTM Coordinates (Zone 17 T) Northings	Depth to Water (m)	Overburden
6601351	8/22/1959	648966.0086	4773056.845	7.31	Clay, limestone
6601352	4/8/1963	648965.9085	4773078.845	9.14	Clay, limestone
6601353	4/10/1963	648506.9107	4773405.844	9.14	Clay, limestone
6601354	4/6/1963	648916.9091	4773005.844	9.14	Clay, limestone
6601358	12/7/1953	649492.9035	4772198.847	8.84	Clay, clay, fine sand, limestone
6601783	9/4/1953	647814.9079	4770303.842	17.98	Clay, clay, limestone
6601785	8/5/1960	647860.9066	4770079.843	16.76	Clay, clay, gravel
6601787	10/27/1965	647839.9038	4769603.842	16.46	Topsoil, medium sand, clay, limestone
6601835	6/20/1955	647729.9021	4768928.841	19.81	Topsoil, clay, clay, medium sand, stones, limestone
6602493	10/22/1969	647884.9093	4764332.84	36.88	Clay, clay, gravel, medium sand, hardpan, limestone
6602538	8/8/1970	647714.902	4768942.84	18.59	Clay, clay, gravel, clay, limestone
6602600	7/5/1971	647824.9039	4769672.842	17.37	Clay, clay, clay, medium sand, limestone

Well ID	Date Complete	UTM Coordinates (Zone 17 T) Eastings	UTM Coordinates (Zone 17 T) Northings	Depth to Water (m)	Overburden
6603240	9/30/1977	647854.903	4769242.841	N/A	Clay, clay, clay, gravel, clay, coarse gravel, rock
6603264	5/11/1978	648554.906	4771082.844	17.07	Clay, stones, packed, clay, packed, shale, layered, limestone, layered
6603268	5/31/1978	647754.9027	4769142.841	17.68	Clay, topsoil, clay, clay, gravel, rock
6603313	11/30/1978	649614.901	4771462.847	12.19	Clay, rock
6603353	7/15/1978	647794.908	4770302.842	17.98	Clay, stones, stones
6603367	11/15/1979	647951.9104	4770828.842	12.50	Topsoil, soft clay, packed, clay, soft, clay, gravel, packed, gravel, stones, packed, shale, layered, limestone, layered
6603382	1/1/1979	647874.9035	4769422.842	17.07	Clay, topsoil, clay, clay, gravel, clay, sand, stones
6603646	4/18/1985	647834.9036	4769382.841	20.42	Clay, packed, clay, soft, clay, gravel, packed, sand, gravel, packed, limestone, layered

Well ID	Date Complete	UTM Coordinates (Zone 17 T) Eastings	UTM Coordinates (Zone 17 T) Northings	Depth to Water (m)	Overburden
6603647	4/9/1985	647394.9003	4767802.839	24.69	Clay, packed, clay, soft, clay, soft, clay, gravel, packed, stones, gravel, packed, gravel, sand, packed, limestone, layered
604066	10/18/1991	649043.4076	4772823.845	11.28	Clay, topsoil, clay, clay, gravel, limestone
6604234	2/24/1996	647952.0137	4765216.841	36.88	Topsoil, loose, clay, packed, clay, packed, clay, packed, clay, coarse gravel, packed, clay, fine gravel, packed, fine sand, clay, dense, fine sand, fine gravel, dense, shale, layered
6604653	5/8/2002	649328.0043	4772129.846	11.89	Clay, packed, clay, dense, stones, clay, packed, gravel, clay, packed, limestone, layered
6604756	2/16/2002	647924.6096	4764421.841	31.00	Topsoil, clay, gravel, clay, gravel, sand, gravel, limestone
7118141	N/A	648524.0111	4773428.844	N/A	N/A

Well ID	Date Complete	UTM Coordinates (Zone 17 T) Eastings	UTM Coordinates (Zone 17 T) Northings	Depth to Water (m)	Overburden
7136718	12/1/2009	647966.0135	4765840.842	N/A	Clay, silt, loose
7147004	5/27/2010	647966.0135	4765840.842	N/A	N/A
7147005	5/27/2010	647956.0137	4765848.842	N/A	N/A
7147006	5/27/2010	647960.0141	4765872.842	N/A	N/A
7147007	5/27/2010	647944.0136	4765847.842	N/A	N/A
7152884	N/A	644420.9942	4758725.825	0.80	Topsoil, clay, clay, till, boulders, rock, limestone, shale
7171093	10/1/2011	648502.0112	4773353.844	N/A	N/A
7184889	7/19/2012	644690.9932	4760104.828	6.10	Clay, silt
7189007	7/24/2012	643621.9936	4758142.823	N/A	N/A
7194083	11/30/2012	648557.0117	4772377.843	N/A	N/A
7194086	11/30/2012	648547.011	4773460.844	N/A	N/A
7258351	2/15/2016	648389.0094	4773864.846	11.00	Topsoil, clay, clay, clay, gravel, limestone
7261454	3/22/2016	646013.9937	4761376.836	N/A	Clay, sand, loose
7261612	3/20/2016	646041.9934	4761294.836	5.18	Clay, silt, dense, clay, silt, dense
7269069	7/13/2016	647137.9953	4762630.839	30.17	Topsoil, clay, dense, sand, silt, gravel, clay, stones, soft, rock, fractured
7277452	10/26/2016	648513.0116	4772936.843	10.67	Silt, clayey, limestone, fractured, limestone
7348899	10/21/2019	643750.9939	4758120.823	N/A	Sand, silt, fill, clay, silt

Well ID	Date Complete	UTM Coordinates (Zone 17 T) Eastings	UTM Coordinates (Zone 17 T) Northings	Depth to Water (m)	Overburden
7382369	2/10/2021	643584.993	4758245.824	N/A	N/A
7389286	4/20/2021	643748.9939	4758130.824	1.22	N/A
7391716	5/31/2021	648506.0108	4771997.843	4.57	Other, silt, sand, clay
7398353	8/31/2021	643635.9939	4758170.824	N/A	Clay
7401321	8/12/2021	645614.9934	4761198.835	N/A	N/A

Source: MECP, 2021

Well log records are consistent amongst the water wells: dating back to 1990 and onwards, groundwater is typically found approximately 37 m below the ground surface, below a thick layer of clay soil. Excerpted summary water well records listed in **Table 4-6** are presented in **Appendix C4**.

No municipal drinking water supplies were identified within the PSA or the general vicinity. The PSA does not cross any intake protection zones. The aquifers in the PSA and vicinity have been mapped by the MECP as having a high vulnerability index (Vulnerability Score: 6; MECP, 2025). Highly vulnerable aquifers within the PSA are illustrated in **Figure 4-6**.

4.6.5. Groundwater Hydrogeology

The Route Alternatives are located in the Niagara Peninsula Source Protection Area (SPA).

Each of the Route Alternatives are east of Thorold's surface water source Intake Protection Zone (IPZ) 1 and Zone 2 (higher risk zones), and east of Welland's IPZ 1. It is important to note that the Project will cross the Welland Canal, upstream of the Thorold IPZs. There are no Wellhead Protection Areas (WPA) along the Route Alternatives.

The PSA extends across the Haldimand Clay Plains physiographic region of Ontario as defined by Chapman and Putnam (1984). The surficial geology of the Haldimand Clay Plain consists of thick (~20 to 30 m) low-permeability clay overburden.

Shallow groundwater flow generally follows surface topography towards Lake Ontario, the Welland Canal, and the Niagara River. Generally, the depth to the water table is shallow, between 10 m and 20 m, and represents water contained within the low-permeability clay till associated with the Haldimand Clay Plain as described above.

4.6.6. Source Water Protection

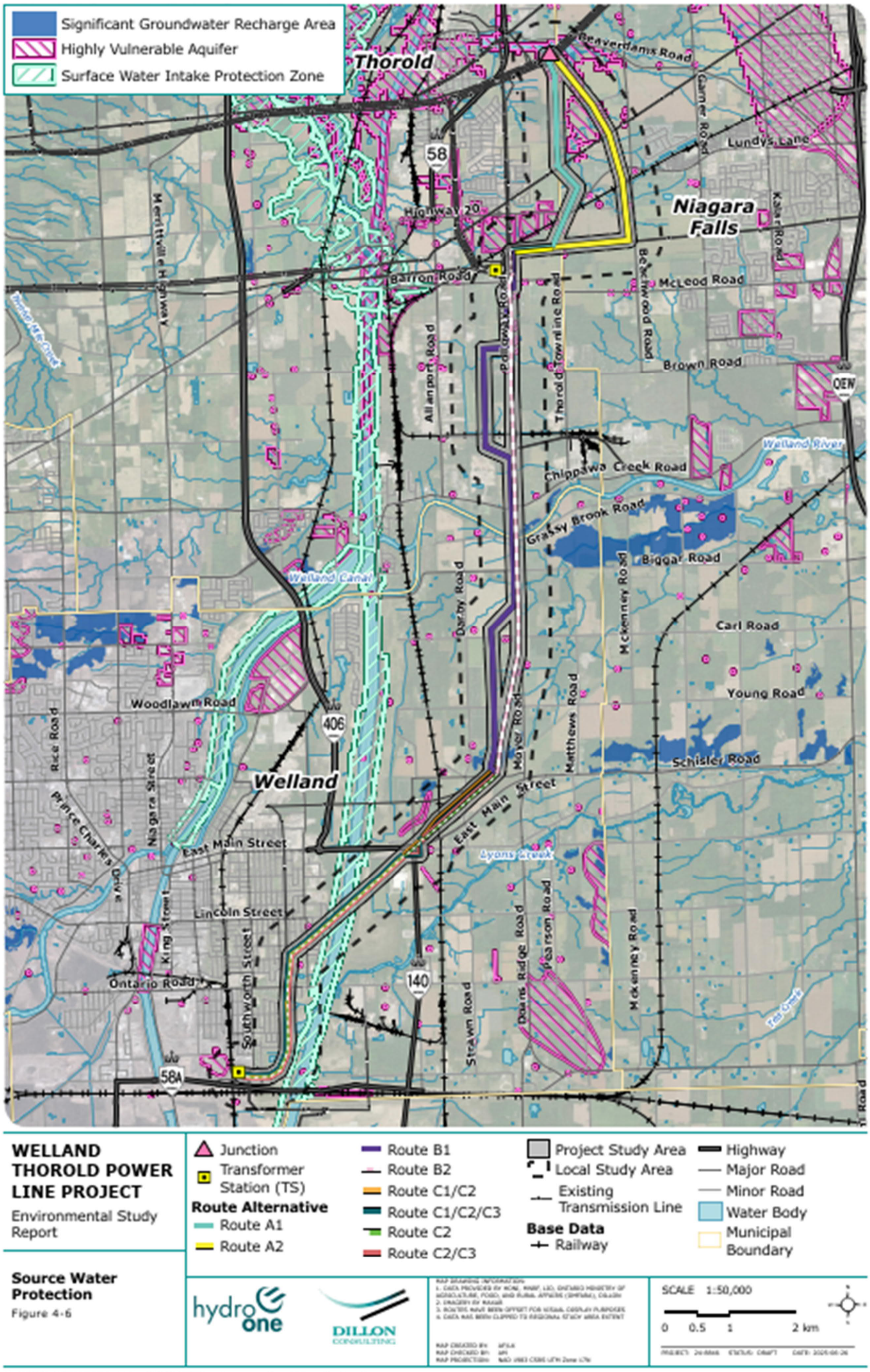
The PSA falls within the Niagara Peninsula SPA, a designated region established to safeguard the quality and quantity of drinking water sources (**Figure 4-6**).

The *Clean Water Act, 2006* outlines requirements for protecting existing and future drinking water sources, including the development and implementation of Source Protection Plans (SPPs). SPPs provide a policy framework for protecting source water by addressing the Prescribed Drinking Water Threats (PDWTs) under Section 1.1 of the *Clean Water Act*. The Niagara Peninsula SPP applies to the Niagara Peninsula SPA, which encompasses the Project PSA. Policies in the Niagara Peninsula SPP related to the Handling and Storage of Fuel apply to IPZs associated with municipal water treatment plants. However, no IPZs are located within the LSA. Wellhead Protection Areas are not delineated within the Niagara Peninsula SPA. No decommissioned backup water wells are currently identified within the SPA. As such, relevant significant threat policies under the Niagara Peninsula SPP continue to apply.

A review of the Assessment Report for the SPA indicated that the PSA extends across mapped Highly Vulnerable Aquifers (HVA) and Significant Groundwater Recharge Areas (SGRA) in the Niagara Peninsula SPA (Niagara Peninsula Source Protection Committee, 2013). SGRAs are areas where groundwater recharge of source water aquifers is locally significant. HVAs are aquifers that are susceptible to contamination from land use activities. The SGRAs and HVAs within the PSA are listed below:

- Niagara Peninsula SPA
  - SGRAs are located predominantly in the north end of the PSA, intersecting four of the route alternatives, including Route Alternatives B1, B2, C1, and C2.
  - HVAs are located in the central portion of the PSA, intersecting two of the Route Alternatives, including alternatives A1 and A2.

Figure 4-6: Source Water Protection



4.6.7. Designated or Special Natural Areas

Designated or special natural areas are identified by federal or provincial agencies and municipalities through legislation, policies, or approved management plans. These areas typically have special or unique values that result in conservation land initiatives. Such areas may have a variety of ecological, recreational, and aesthetic features and functions that are highly valued. Designed or special natural areas within the LSA are outlined below. Significant wetlands and woodlands are discussed below in **Sections 4.6.8.2** and **4.6.8.4,** respectively.

Areas of Natural and Scientific Interest

ANSIs are contiguous lands and waters officially designated by the province for their geological or ecological features, which hold significant provincial, regional, or local representation. These features are important and valued for natural heritage protection, appreciation, scientific study, or education.

No ANSIs were identified through MNR background review overlapping with the PSA; ANSIs overlapping with the PSA were not mapped in the upper-tier and lower-tier OPs.

4.6.8. Natural Heritage Features

As defined in the PPS (2024), natural heritage features and areas include “features and areas, including, significant wetlands, significant coastal wetlands, other coastal wetlands in Ecoregions 5E, 6E and 7E, fish habitat, significant woodlands and significant valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River), habitat of endangered species and threatened species, significant wildlife habitat (SWH), and significant ANSIs, which are important for their environmental and social values as a legacy of the natural landscapes of an area”.

The key natural heritage features that are defined in the PPS are considered below. Information on natural heritage features was collected from the following sources:

- Species at Risk Ontario (SARO) (Ontario Regulation [*O. Reg.] 230/08*);
- *Species at Risk Act* (SARA) database (2025);
- Aquatic Species at Risk Interactive Mapping (2025) (DFO);
- List of Migratory Birds (Migratory Birds Convention Act, 1994 [MBCA]);
- Invasive Species Act (2015) (*O. Reg. 354/16 [General]*);

- OMAFRA Agricultural Information Atlas (OMAFRA, 2020);
- Natural Heritage Information Centre (NHIC) database (NHIC, 2024);
- Ontario Geohub Database (MNR, 2024);
- Natural Heritage Reference Manual (MNR, 2010);
- Significant Wildlife Habitat Technical Guide (SWHTG) (MNR, 2000);
- Significant Wildlife Habitat Ecoregion 7E Criterion Schedules (MNR, 2015);
- Region of Niagara OP (Niagara Region, 2022);
- City of Thorold OP (City of Thorold, 2016);
- City of Welland OP (City of Welland, 2019);
- City of Niagara Falls OP (City of Niagara Falls, 2024);
- NPCA (*O.Reg. 155/06);*
- Central Welland River Watershed Plan (NPCA, 2010);
- Ontario Breeding Birds Atlas (Cadman et al., 2008);
- Christmas Bird Count (Birds Canada, 2021);
- Ontario Butterfly Atlas (Toronto Entomologists Association, 2021);
- Dragonfly and Damselfly (Odonata) Guide (Ontario Nature, 2017);
- Mammals of the Western Hemisphere (Patterson et al., 2007);
- Important Bird Areas (IBAs) – online data (Birds Canada, 2024);
- Early Detection Distribution Mapping System (EDDMaps; Accessed November 2024);
- eBird;
- iNaturalist;
- Aerial imagery; and,
- Ontario Base Map.

In addition to the background information review, Hydro One's environmental consultant (Dillon) conducted natural heritage field surveys within the PSA. As discussed previously in **Section 4.0,** surveys were completed within PSA lands where access was granted, and/or from existing ROW and property boundaries. Field surveys were carried out between October and November of 2024. A summary of the field survey results is provided below. Refer to Figure set 3 in **Appendix C1** for survey locations.

4.6.8.1. Ecological Land Classification & Botanical Assessment

Ecological communities were classified in accordance with Ecological Land Classification (ELC) for southern Ontario, second approximation (Lee et al., 1998; Lee, 2008). ELC communities were mapped based on aerial imagery and subsequently

verified in the field. The PSA is dominated by agricultural lands, constructed uses, residential properties, and municipal roads. Naturally occurring features documented within the PSA were identified as isolated features, typically fragmented by road networks and agricultural practices across the landscape. Natural features in the PSA included treed (forests, swamps, and culturally influenced woodlands), thickets, and marsh vegetation communities.

A total of 22 natural/naturalized communities and 13 cultural communities were observed within the PSA during ELC surveys (**Appendix C1; Figure set 3**). Naturally occurring and culturally influenced community types were distributed in a similar ratio among each of the Route Alternatives. A breakdown of the combined area for each ELC community observed within the PSA by Route Alternative is provided below in **Table 4-7**.

Table 4-7: ELC Communities Identified Within the PSA

ELC Community	Area (hectares) within PSA						
	Route A1	Route A2	Route B1	Route B2	Route C1	Route C2	Route C3
FOC - Coniferous Forest	1.1	1.1	2.9	0.5	N/A	N/A	N/A
FOM - Mixed Forest	N/A	N/A	1.0	N/A	N/A	N/A	N/A
FODM9 - Fresh – Moist Oak – Maple – Hickory Deciduous Forest	4.7	2.8	N/A	N/A	N/A	N/A	N/A
FOD - Deciduous Forest	N/A	N/A	7.1	2.7	0.1	N/A	N/A
FOD / THD Complex	N/A	N/A	N/A	N/A	N/A	3.6	N/A
WOC - Coniferous Woodland	N/A	0.2	N/A	N/A	N/A	N/A	N/A
WOD - Deciduous Woodland	0.8	6.4	0.4	1.3	N/A	4.1	N/A

ELC Community	Area (hectares) within PSA						
	Route A1	Route A2	Route B1	Route B2	Route C1	Route C2	Route C3
WODM5 - Fresh - Moist Deciduous Woodland	<0.1	N/A	N/A	N/A	N/A	N/A	N/A
WOD / THD - Deciduous Woodland / Thicket Complex	4.2	N/A	0.8	0.9	0.4	1.4	N/A
THD - Deciduous Thicket	1.8	3.5	1.8	1.4	6.7	14.4	0.3
THD / MEM - Deciduous Thicket / Mixed Meadow Complex	1.8	2.4	2.2	5.7	8.0	50.0	4.2
MEM - Mixed Meadow	6.7	5.7	7.0	9.6	0.5	15.9	3.8
MEM /OAGM4 – Mixed Meadow / Pasture Complex	N/A	N/A	N/A	N/A	2.7	1.8	N/A
SWD - Deciduous Swamp	N/A	0.7	15.5	13.7	N/A	1.0	N/A
SWD / FOD - Deciduous Swamp / Forest Complex	N/A	N/A	7.0	1.0	N/A	<0.1	N/A
SWT - Thicket Swamp	N/A	N/A	N/A	N/A	N/A	0.3	N/A
SWT / THD - Swamp Thicket / Deciduous Thicket Complex	N/A	N/A	N/A	3.4	N/A	N/A	N/A

ELC Community	Area (hectares) within PSA						
	Route A1	Route A2	Route B1	Route B2	Route C1	Route C2	Route C3
MAM - Meadow Marsh	2.7	2.4	3.2	3.8	0.1	4.3	0.1
MAS - Shallow Marsh	N/A	0.6	N/A	N/A	N/A	2.8	N/A
OAO - Open Water	1.6	1.6	2.0	2.8	N/A	6.9	N/A
TAGM4 - Treed Pasture	N/A	N/A	N/A	N/A	0.4	2.0	N/A
TAGM5 - Fencerow	2.0	3.3	3.7	0.6	N/A	N/A	N/A
IAGM1 - Agricultural Buildings	N/A	N/A	0.3	2.2	0.1	N/A	N/A
OAGM1 - Annual Row-crop	50.8	83.6	137.8	104.8	7.1	6.9	N/A
OAGM2 - perennial Row-crop	N/A	N/A	N/A	N/A	5.5	4.0	N/A
OAGM4 - Pasture	N/A	N/A	0.2	2.6	5.2	4.5	N/A
CGL_2 - Parkland	0.3	N/A	N/A	N/A	N/A	8.3	N/A
CVI_1 - Transportation	8.7	5.4	8.6	17.0	2.8	6.9	2.8
CVI_4 - Power Generation	1.3	3.4	5.8	6.2	N/A	1.9	N/A
CVR_3 - Single Family Residential	N/A	N/A	N/A	N/A	N/A	18.5	<0.1
CVR_4 - Rural Property	0.5	0.9	11.8	17.1	2.6	4.0	1.2
CVC_1 - Business Sector	6.2	N/A	1.3	N/A	N/A	N/A	N/A
CVC_2 - Light Industry	N/A	N/A	0.1	N/A	N/A	1.6	1.5

ELC Community	Area (hectares) within PSA						
	Route A1	Route A2	Route B1	Route B2	Route C1	Route C2	Route C3
CVC_3 - Heavy Industry	0.5	0.3	N/A	N/A	N/A	2.6	1.0
CVC_4 - Extraction	N/A	N/A	0.4	N/A	N/A	N/A	N/A

4.6.8.2. Wetlands

A total of 25 MNR identified wetland features were mapped within the PSA. Of these 25 mapped MNR wetlands, six Provincially Significant Wetland (PSW) complexes and one evaluated wetland complex overlap with the PSA (MNR, 2022c).

The PSW complexes include:

- Thompson Creek Wetland Complex (route alternative A2), where four wetland features captured in this complex overlap with the PSA;
- South Allanburg Slough Forest Wetland Complex (route alternatives B1, B2), where seven wetland features captured in this complex overlap with the PSA;
- Welland River East Wetland Complex (route alternatives B1, B2), where four wetland features captured in this complex overlap with the PSA;
- Upper Grassy Brook Wetland Complex (route alternative B1, B2), where five wetland features captured in this complex overlap with the PSA;
- Lyons Creek North Wetland Complex (route alternative C2), where two wetland features captured in this complex overlap with the PSA; and
- Lyons Creek Wetland Complex (route alternative C2), overlapping with one wetland feature captured in this complex overlap with the PSA.

The mapped MNR evaluated wetland complex (Beaverdams Creek Wetland Complex) overlaps with the PSA, in association with Route Alternative A2. No MNR unevaluated wetlands were identified in the PSA. MNR mapped wetlands are shown on Figure set 2 in **Appendix C1.** Wetlands were associated with Route Alternatives A2, B1, B2, and C2.

Wetland vegetation communities observed within the PSA, and classified through ELC, (**Section 4.6.8.1**) consisted of marsh, swamp (treed, thicket), and areas of open aquatic that were associated with the aforementioned wetland community types (**Table 4-8**).

Table 4-8: Wetland Communities Identified in Each Route Alternative

ELC Community	Area (ha) within PSA						
	Route A1	Route A2	Route B1	Route B2	Route C1	Route C2	Route C3
SWD - Deciduous Swamp	N/A	0.74	15.53	13.72	N/A	1.01	N/A
SWD / FOD - Deciduous Swamp / Forest Complex	N/A	N/A	7.01	N/A	N/A	0	N/A
SWT - Thicket Swamp	N/A	N/A	N/A	N/A	N/A	0.26	N/A
SWT / THD - Deciduous thicket swamp / thicket Complex	N/A	N/A	N/A	3.38	N/A	N/A	N/A
MAM - Meadow Marsh	2.69	2.36	3.15	3.79	0.13	4.29	0.03
MAS - Shallow Marsh	N/A	0.55	N/A	N/A	N/A	2.76	N/A
Total ELC Wetland Community	**2.69**	**3.65**	**25.69**	**20.89**	**0.13**	**8.32**	**0.03**

4.6.8.3. Aquatic and Fish Habitat

As presented in **Section 4.6.3**, 33 OHN mapped watercourses and 19 OHN mapped waterbodies were identified through background mapping in the PSA.

Aquatic features identified in the PSA through background review where fish and fish habitat may be present are illustrated on Figure set 2 (**Appendix C1**), and include:

- Grassie Brook;
- Beaver Dams Creek;
- Thompsons Creek;
- Welland River;
- Welland Canal; and,
- Lyons Creek.

In addition, as per DFO's Drain Classification system (Kavanagh, 2024), Class E and F municipal drains were identified in the PSA. The locations of the DFO Class E (intersects Route Alternative B1) and Class F (intersects Route Alternative B2) municipal drains are shown on Figure 2B in **Appendix C1**, and are defined as:

- Class E (permanent flow, sensitive species present); and,
- Class F (intermittent flow, no sensitive species present).

The most common substrate observed in association with surface aquatic features across Route Segment A consisted of vegetation and grasses; clay, silt, organic materials, boulder, and cobble substrates were also observed. For Route Segment B, the most common substrate consisted of clay and silt; sand and organics were also observed. For Route Segment C, substrates observed consisted of clay, silt, cobble, boulders, and vegetation.

Existing farming practices throughout the PSA have limited the amount of available riparian habitat. In the absence of tree-riparian areas, and where watercourses bisect active agricultural lands, riparian areas are limited and generally degraded, as agricultural fields were observed to be actively farmed as close to watercourses as possible (i.e., little buffer exists between active farmlands and watercourses). Riparian areas play an important role for fish and wildlife habitat, including SAR. In terms of aquatic and fish habitat, riparian areas have the ability to filter and absorb nutrients, sediment and other contaminants from entering the systems; they provide shade and impact water temperatures, as well as provide cover and support the aquatic food cycle. Riparian areas also have the potential to function as wildlife corridors, cover and a source of food for a number of wildlife and SAR. It is also acknowledged that riparian areas support a variety of traditional plant species used for harvesting and medicinal purposes while also contributing to cultural continuity of Indigenous communities.

Watercourses supporting fish habitat were observed in association with each of the Route Alternatives. The majority of watercourses within the PSA are characterized as a combination of open natural watercourses and agricultural drains with permanent or intermittent flow regimes. Direct fish habitat, and seasonal/contributing fish habitat was identified for all Route Alternatives, with the exception of Route C1 and C3.

The number of unique watercourses and associated route crossings assessed as having the potential to provide direct or seasonal fish habitat for each Route Alternative is provided in **Table 4-9** below. Unique watercourses may cross each Route Alternative more than once. As such, **Table 4-9** depicts the number of unique watercourses for each Route Alternative, as well as the number of times the Route Alternative intersects with a watercourse crossing.

Table 4-9: Number of Watercourses and Watercourse Crossings per Route Alternative

Watercourses and Route Crossings	Route A1	Route A2	Route B1	Route B2	Route C1	Route C2	Route C3
Number of Unique Watercourse Features in PSA*	6	11	14	12	0	7	0
Total Number of Watercourse Crossings**	6	9	12	10	0	5	0
Number of Unique Watercourse Crossings***	6	8	11	10	0	5	0

***The total number of watercourses identified within the PSA; these features do not necessarily cross the ROW.

****The total number of times the route alternatives cross over (intersect) a mapped watercourse; if the same watercourse intersects the route alternative multiple times, each point of intersection has been counted.

*****The total number of watercourses (unique feature / named watercourse feature) that intersect the route alternative.

4.6.8.4. Woodlands

Under the PPS, significant woodlands are protected in Ecoregion 7E. A total of 26 woodlands intersecting the PSA were identified through a combination of MNR mapping, the Region of Niagara OP (2022), City of Thorold OP (2016), City of Welland OP (2019), and City of Niagara Falls OP (2024) (**Appendix C1;** Figure set 2),

The City of Thorold OP defines significant woodlands as those with one or more of the following criteria:

- Contain species listed as endangered, threatened, or special concern;
- In size, be equal or greater than 2 ha if located within or overlapping the Urban Area Boundary or 10 ha, if located within the Agricultural and Rural Area;
- Contain interior woodland habitat at least 100 m from the woodland boundaries;
- Contain older growth forest and be 2 ha in size or greater;
- Overlap or contain one or more of the other significant natural heritage features listed under Policies 6.1.2.1.C; or,
- Abut or be crossed by a watercourse or waterbody and be 2 ha or more in area.

The Niagara Region OP, City of Welland OP, and the City of Niagara Falls OP do not define significant woodlands and defer to the definition provided in the PPS (2024) and NHRM (2005). Section 7.3.1, Table 7.1 of the NHRM provides guidance on identifying

significant woodlands, which includes considerations on size, ecological functions, proximity to other woodlands or other habitats, linkages, water protection, and diversity.

Consideration of significant woodlands in the PSA includes those that have been defined by the City of Thorold OP, as well as woodlands that have the potential to meet the following criteria:

- MNR mapped woodlands over 2 ha in size;
- Potential to provide candidate SWH and/or SAR habitat; and
- Woodlands intersecting watercourses and waterbodies.

Based on these criteria, a total of 8 significant woodlands intersect the Route Alternatives. A detailed breakdown of the identified woodlands per Route Alternative is provided in **Table 4-10**.

Table 4-10: Woodland Background Review Results

Woodland Type	Woodland Intersections per Route Alternative						
	Route A1	Route A2	Route B1	Route B2	Route C1	Route C2	Route C3
MNR Identified Woodlands	1	3	7	3	1	3	N/A
Significant Woodlands*							
City of Thorold	N/A	N/A	3	3	N/A	N/A	N/A
City of Welland	N/A	N/A	N/A	N/A	1	N/A	N/A
City of Niagara Falls	N/A	1	N/A	N/A	N/A	N/A	N/A
Niagara Region*	N/A	1	3	3	1	N/A	N/A
Total Significant Woodlands*	N/A	**1**	**3**	**3**	**1**	N/A	N/A

*Niagara Region OP significant woodlands are also mapped with the lower tier Ops, where feature boundaries are similar, and as such have not been included under 'total woodlands'; N/A indicates the Route Alternative does not overlap with the OP jurisdictions.

Forest and woodland features within the LSA were primarily composed of deciduous forest communities, which were dominated by species such as Sugar Maple (*Acer saccharum*), Red Oak (*Quercus rubra*), Red Maple (*Acer rubrum*), and Shagbark

Hickory (*Carya ovata*). Linear communities of deciduous forest and thicket communities were frequently observed throughout the PSA. Areas of mixed forests and coniferous forests were also present but tended to be confined to smaller, more isolated woodlots. The portion of woodlands overlapping with the PSA showed minor to moderate levels of disturbance and were amongst early successional deciduous species such as poplars (*Populus sp*.), hawthorn (*Crataegus sp*.) ash (*Fraxinus sp*.), elm (*Ulmus sp*.) and American basswood (*Tilia americana*). Overall, the woodland communities identified were often isolated in the landscape and were limited in connectivity to adjacent natural heritage features. Each of the significant woodland communities are considered common or secure in Ontario. Although they are common an/dor secure in Ontario, it is acknowledged that several woodlands in Ontario have been utilized for hunting and trapping, as well as plant and medicinal harvesting by Indigenous communities.

4.6.8.5. Valleylands

Valleylands are not defined or identified in the City of Thorold OP; the City of Thorold OP defers to the NPCA's definition of "valleys". The NPCA (2022) defines valley features as, *"… depressional features associated with a river or stream, which may or may not contain a watercourse. Where a watercourse is present, the watercourse may be either permanent or intermittent. The boundaries of a valley are defined by the primary top of bank on each side of the landform depression"*. Similarly, the City of Welland OP defines valleylands as *"a natural area that occurs in a valley or other landform depression that has water flowing through or standing for some period of the year".* One valleyland area is mapped in the Welland OP within the PSA and is located along the Welland River in association with Route Alternatives B1 and B2 (**Appendix C1;** Figure 2B).

The City of Niagara Falls OP does not provide a definition or mapped features for valleylands.

The Niagara Region OP does not include areas of mapped valleylands; however, the OP provides a definition of significant valleylands as *"those natural areas in a valley or other landform depression that contains flowing or standing water for some period of the year identified as significant under the PPS (2024) through an approved environmental study".* As per Section 8.0 of the Natural Heritage Reference Manual (MNR, 2005),

Table 8-1 provides guidance on criteria of assessment of significance for valley features, which includes: consideration of permanence (holding water for at least 2 months of the year); and catchment area size (>50 ha) of the Welland River.

The valley feature associated with the Welland River was confirmed as present during Dillon's 2024 site assessment. No additional valleyland or valley features were identified in the PSA during the 2024 site assessment.

The location and valleyland boundaries per the City of Welland OP for this feature is provided in **Appendix C1;** Figure 2B.

4.6.8.6. Wildlife and Wildlife Habitat

Wildlife habitat is defined as an area where plants, animals and other organisms live, including areas where species concentrate at a vulnerable point in their life cycle, and areas that are important to migratory and non-migratory species (MNR, 2000). To assist planning authorities, the MNR developed the Significant Wildlife Habitat (SWH) Technical Guide (MNR, 2000) that provides information on the identification, description, and prioritization of SWH in Ontario. To account for the ecological diversity across the province, MNR developed the SWH Ecoregional Criteria Schedules to support the SWH Technical Guide. These schedules are specific to each geographic area of each ecoregion. The PSA is located in Ecoregion 7E (Carolinian Zone; MNR, 2015). Under the Criteria Schedule for Ecoregion 7E (MNR, 2015), SWH is divided into four broad categories consisting of:

1. Seasonal Concentration Areas;
2. Rare Vegetation Communities or Specialized Habitats for Wildlife;
3. Animal Movement Corridors; and
4. Habitats of Species of Conservation Concern Excluding the Habitats of Endangered and Threatened Species.

Species of Conservation Concern (SCC) are defined as:

- Species listed as Special Concern, Threatened, or Endangered under SARA;
- Species that are provincially rare/tracked (i.e., have a Sub-national (provincial) Rank of S1 – Critically Imperiled, S2 – Imperiled, or S3 – Vulnerable); and
- Species that are designated as Special Concern under the ESA.

Seasonal Concentrations of Animals

Seasonal concentration areas are sites that support large numbers of a species to gather together at one time of the year, or where several species congregate. Six candidate and one confirmed SWH for seasonal concentrations of animals were identified in the PSA and are described below.

Waterfowl Stopover and Staging (Aquatic)

Includes areas of suitable open water features with an abundant food supply for waterfowl. Areas that have the potential to support waterfowl stopover and staging identified in the PSA includes mapped waterbodies (Welland Canal, Welland River and Beaverdams Creek), and open aquatic and wetland communities in the PSA (i.e., OAO, SWD, and MAS). Candidate SWH for waterfowl stopover and staging areas (aquatic) were identified in association with Route Alternatives A1, A2, B1, B2, and C2.

Raptor Wintering Area

Includes areas where woodlands and meadows and/or fields exceeding 20 ha were identified in the PSA. Deciduous woodland and deciduous swamp communities adjacent to meadow or hayfields, including areas adjacent to large rivers, potentially suitable for Bald Eagle (i.e., FOD, FOM, SWD, MEM, and OAGM4), were identified in the PSA. Candidate SWH for raptor wintering areas was identified in association with Route Alternatives A1, B1, B2, and C2.

Reptile Hibernacula

May be found in/under rock piles, slopes, stone fences, or crumbling foundations. Areas in the PSA that may have the potential to support reptile hibernacula include areas of undisturbed and naturalized community types (i.e., SWD, FOD, WOD, FODM9, FOD/SWD, MEM, MEM/THD). Candidate SWH for reptile hibernacula were identified in association with Route Alternatives A1, A2, B1, B2, C1 and C2.

Bat Maternity Colonies

Supported by mixed and deciduous forests and swamps with large diameter trees with cavities, crevices and/or loose or peeling bark. Areas that have the potential to support bat maternity habitat include treed communities in the PSA (i.e., FOD, FODM9,

WODM5, FOM, FOD/SWD, and SWD). Candidate SWH for bat maternity habitat was identified in association with Route Alternatives A1, A2, B1, B2, and C2.

Deer Wintering Congregation Areas

These areas are identified by MNR; one area in the PSA has been identified by MNR as a deer congregation area (**Appendix C1;** Figure set 2), and as such, has conservatively been carried forward as confirmed SWH. Confirmed SWH for deer winter congregation areas are in association with Route Alternatives A1, B1, B2, and C2.

Turtle Wintering Areas

Occur in permanent waterbodies and large wetlands with sufficient dissolved oxygen. Areas that have the potential to support turtle wintering in the Study Area include areas of open water (OA), deep, permanent watercourses (i.e., Beavers Dam Creek, Welland River, and Welland Canal) and some wetland communities (MAS, SWD, SWT). Candidate SWH for turtle wintering areas were identified in association with Route Alternatives A1, A2, B1, B2, C2.

Colonially – Nesting Bird Breeding Habitat (Tree/Shrubs)

Includes areas associated with the swamp (SWD, WOD/SWD) community types identified in the PSA. Candidate SWH for colonially-nesting bird breeding habitat (tree/shrubs) were identified in association with Route Alternatives A2, B1, B2, and C2.

Rare Vegetation Communities or Specialized Habitat for Wildlife

This category consists of two separate components: rare vegetation communities, and specialized habitats. Rare are those with vegetation communities that are considered rare (S-Ranks of S1 to S3; Extremely Rare to Rare-Uncommon, respectively) in the province. S-Ranks are rarity rankings applied to species at the provincial level. Generally, S-Ranks of S1 to S3, as defined by the NHIC, would qualify. Specialized habitats are microhabitats that are critical to some wildlife species.

No rare vegetation communities were identified in the PSA. Eight candidate specialized habitat types have the potential to occur in the PSA and are described below.

Waterfowl Nesting Area

These areas require upland habitats adjacent to wetlands, including areas adjacent to PSWs. Potentially suitable features were identified in the MAS and SWD ecosites in the PSA, including the MNR PSWs and evaluated wetland complexes. Candidate SWH for waterfowl nesting areas were identified in association with Route Alternatives A2, B1, B2 and C2.

Bald Eagle and Osprey Nesting, Foraging and Perching Habitat

Bald Eagle nesting, foraging, and perching habitat is associated with forested areas along lakes, ponds, rivers, or wetlands where nesting can occur. Bald Eagle and Osprey have the potential to occur in the PSA and have been documented in the PSA by the Ontario Breeding Bird Atlas (OBBA) (17TPH47, 17TPH46). The surrounding forested habitat may provide suitable nesting, foraging, and perching habitat. Though no nesting or breeding evidence was observed during the site assessments, the forest communities (FOD, FOM, SWD) within the PSA associated with the Welland River, Welland Canal, Lyons Creek, and Beavers Dam Creek are considered candidate SWH for Bald Eagle and Osprey Nesting, Foraging and Perching Habitat. The communities identified as candidate SWH are associated with Route Alternatives A1, A2, B1, B2, and C2.

Woodland Raptor Nesting Habitat

Woodland raptors require forest stands >30 ha in size with >4 ha of interior habitat for nesting. Areas potentially suitable for woodland raptor nesting in the PSA were identified in the SWD, FOD, WOD, FOM, and FOC ecosites. Candidate SWH for woodland raptor nesting habitat was identified in association with Route Alternatives A2, B1, and B2.

Turtle Nesting Areas

Nesting habitat for turtles requires open areas of sand and gravel where substrate can be dug in. Areas suitable for turtle nesting are located in open, sunny areas, such as sand and gravel banks adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers (MNR, 2018b). Sand and gravel areas observed to have the potential to provide suitable habitat for turtle nesting were observed along the shores of watercourses associated with the Welland Canal, Welland River, Beavers Creem Dam,

Thompson's Creek, Lyons Creek, and the six MNR-mapped PSWs. Potential SWH for Turtle Nesting Areas may also be present in areas adjacent to the MNR-mapped waterbodies (i.e., lakes and ponds). The habitat associated with the aforementioned aquatic and wetland habitats in association with Route Alternatives A1, A2, B1, B2, and C2 are considered candidate SWH for turtle nesting areas.

Woodland Area-Sensitive Bird Breeding Habitat

Includes habitats where interior forest breeding birds are breeding, typically large mature forest stands or woodlots >30 ha in size. Candidate SWH for woodland area-sensitive birds was identified in the PSA in the SWD, WOD, FOD, and FOM ecosites >30 ha in size. Candidate SWH for woodland area-sensitive breeding bird habitat was identified in association with Route Alternatives A1, B1 and B2.

Seeps and Springs

May occur within forested areas associated with meadows, pasture, or fields within the headwater area of a stream or river system. Though no seeps or springs were observed during the field investigations, the forested areas within the PSWs and the HDFs within the PSA may provide candidate SWH for seeps and springs in association with all Route Alternatives.

Amphibian Breeding Habitat (Woodland and Wetland)

Several woodland and wetland features within the PSA have the potential to provide amphibian breeding habitat. Candidate SWH for amphibian breeding habitat (woodland and wetland) is conservatively assumed present within the PSA in the FOD, FOM, and FOC communities, as well as the SW, MA, and OAO communities, with the exception of the OAO communities that provide fish habitat. As such, candidate SWH for amphibian breeding habitat has the potential to occur for Route Alternatives A1, A2, B1, B2 and C2.

Amphibian Movement Corridors

Animal movement corridors are elongated, naturally vegetated parts of the landscape used by animals to move from one habitat to another. Candidate SWH for amphibian movement corridors are determined following the confirmation of SWH for amphibian breeding habitat (woodland and/or wetland). Until confirmatory surveys can confirm SWH for amphibian breeding habitat (woodland and/or wetland), it has been

conservatively assumed candidate SWH for animal movement corridors has the potential to occur in the PSA in areas identified to support candidate SWH for amphibian breeding habitat (woodland/wetland) (Route Alternatives A1, A2, B1, B2 and C2). As such, candidate SWH for amphibian movement corridors has the potential to occur for all Route Alternatives, and would include naturalized vegetated areas, such as vegetated areas on both sides of a waterway and/or woodland habitat (FOD, FOM, SWD).

Habitat for Species of Conservation Concern

Three categories of candidate habitat for species of conservation concern have the potential to occur in the PSA and are described below.

Marsh Breeding Bird Habitat

Wetland habitats with shallow water and emergent vegetation may provide suitable marsh breeding bird habitat. Candidate SWH for marsh breeding bird habitat, including wetland and woodland/swamp or swamp/thicket complex communities within the PSA (i.e., FOD, WOD, SWD, SWT and MAS) were identified in the PSA. Candidate SWH for waterfowl nesting areas were identified in association with Route Alternatives A2, B1, B2 and C2.

Terrestrial Crayfish

Wet meadows and edges of shallow marshes and swamps can support habitat for terrestrial crayfish. Potentially suitable habitat for candidate SWH for terrestrial crayfish was identified in the PSA within the SWD, SWT, MAS, MEM ecosites. Candidate SWH for terrestrial crayfish was identified in association with Route Alternatives A1, A2, B1, B2, C1 and C2.

Special Concern and Rare Wildlife Species

Potential presence for 20 SCC and their habitat was identified in the PSA. Potential presence and habitat requirements for these 20 species are detailed in **Table B-1** of **Appendix C1**.

4.6.8.7. Species at Risk

Through background data review, occurrence records of SAR were reviewed for the PSA (Dillon, 2024), and potential habitat for SAR was identified through a review of

aerial imagery. Applicable federal and provincial policy for the Project as they relate to the protection of SAR and SAR habitat is described below.

Species at Risk Act

The federal *Species at Risk Act* (SARA; 2002) applies to species listed as endangered or threatened under Schedule 1 of the Act on federal lands and/or aquatic species, as well as migratory birds listed under both the *Migratory Birds Convention Act*, 1994, as well as endangered or threatened under Schedule 1 of the Act. Under SARA, species listed on Schedule 1 as endangered or threatened receive species protection (Section 32) and residence protection (Section 33). *SARA* defines a 'residence' as "a dwelling place, such as a den, nest or other similar area or place, that is occupied or habitually occupied by one or more individuals during all or part of their life cycle, including breeding, rearing, staging, wintering, feeding, or hibernating". Critical Habitat is defined under Section 2 of SARA as "the habitat that is necessary for the survival or recovery of a listed wildlife species and that is identified as the species' critical habitat in the recovery strategy or in an action plan for the species".

Endangered Species Act

It is acknowledged that the Government of Ontario's proposed amendments to the ESA (ERO#025-0380) received Royal Assent as of June 5, 2025. These changes include repealing the ESA and enacting the Species Conservation Act, expected to be in effect prior to project construction. Details pertaining to the Species Conservation Act are still being developed and have not yet been released to the public. As such, the ESR has been prepared to address those species afforded protection under the ESA, as this is the current legislation in effect at the time of preparation of the report. Hydro One will continue to assess the regulatory requirements and pathway as details evolve on the implementation and enactment of the Species Conservation Act.

The provincial *Endangered Species Act* (ESA; 2007) applies to species listed as extirpated, endangered, or threatened under Ontario Regulation (O. Reg.) 230/08 on private and public lands and provides both species protection (Section 9) and habitat protection (Section 10). Under the ESA, habitat is defined as either General Habitat or Regulated Habitat. General Habitat is defined as the area a species currently depends on, either directly or indirectly, to carry out its life processes. General Habitat does not

include areas where a species once lived and/or where it may be reintroduced. General Habitat protection is in place until a regulation is made prescribing an area as Regulated Habitat. Regulated Habitat is the area prescribed for a species in a habitat regulation (under clause 56(1)(a) of the ESA) and may include: specific features/boundaries and areas where the species lives, used to live, or is believed to be capable of living.

As extirpated species are no longer thought to exist in the wild (natural occurrence) in Ontario, they were not included as having the potential to occur within the general vicinity of the PSA.

Background Screening Results

Twenty SAR were identified as having the potential to occur within the general vicinity of the PSA based on the background review. The list of SAR includes four vascular plants, six birds, six mammals, one reptile (turtle), one fish and two mollusc (mussel). Further description and discussion of SAR with the potential to occur within the general vicinity of the PSA based on desktop review is provided in Table B-2 of the Natural Environment Existing Conditions Report (**Appendix C1**).

Results of the screening and field investigations were summarized in the Natural Environment Existing Conditions Technical Report (**Appendix C1**). Throughout the 2024 field season, no SAR were observed. Potential habitat for 17 SAR was identified in the PSA (**Table 4-11**).

Table 4-11: Potential SAR Occurrence and/or SAR Habitat Per Route Alternatives

Common Name	Scientific Name	SARA Status[1]	ESA Status[2]	SRank[3]	Route Alternatives						
					A1	A2	B1	B2	C1	C2	C3
Eastern Flowering Dogwood	*Cornus florida*	END	END	S2?	Yes	Yes	Yes	Yes	Yes	Yes	No
Butternut	*Juglans cinerea*	END	END	S2?	Yes	Yes	Yes	Yes	Yes	Yes	No
Black Ash	*Fraxinus nigra*	END	END	S3	Yes	Yes	Yes	Yes	Yes	Yes	No
Round-leaved Greenbrier	*Smilax rotundifolia*	THR	THR	S2	Yes	Yes	Yes	Yes	Yes	Yes	No
Bobolink	*Dolichonyx oryzivorus*	THR	THR	S4B	No	No	Yes	Yes	Yes	Yes	No
Eastern Meadowlark	*Strurnella magna*	THR	THR	S4B	No	No	Yes	Yes	Yes	Yes	No
Red-headed Woodpecker	*Melanerpes erythrocephalus*	END	END	S3	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Acadian Flycatcher	*Empidonax virescens*	END	END	S2S3B	Yes	Yes	Yes	Yes	Yes	Yes	No
Barn Swallow	*Hirundo rustica*	THR	SC	S4B	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wood Thrush	*Hylocichla mustelinal*	THR	SC	S4B	Yes	Yes	Yes	Yes	Yes	Yes	No
Little Brown Myotis	*Myotis lucifugus*	END	END	S4	Yes	Yes	Yes	Yes	Yes	Yes	No
Northern Myotis	*Myotis septentrionalis*	END	END	S3	Yes	Yes	Yes	Yes	Yes	Yes	No
Tri-colored Bat	*Pipistrellus subflavus*	END	END	S3?	Yes	Yes	Yes	Yes	Yes	Yes	No
Eastern Red Bat	*Lasiurus borealis*	---	END	S4	Yes	Yes	Yes	Yes	Yes	Yes	No
Hoary Bat	*Lasiurus cinereus*	---	END	S4	Yes	Yes	Yes	Yes	Yes	Yes	No
Silver-haired Bat	*Lasionycteris noctivagans*	---	END	S4	Yes	Yes	Yes	Yes	Yes	Yes	No
Blanding's Turtle	*Emydoidea blandingii*	THR	THR	S3	Yes	Yes	Yes	Yes	No	Yes	No
Lake Chubsucker	*Erimyzon sucetta*	END	END	S2	No	No	No	No	No	Yes	No
Round Hickorynut	*Obovaria subrtundo*	END	END	S1	No	No	Yes	Yes	No	Yes	No
Lilliput	*Taxoplasma parvum*	THR	THR	S1	No	No	Yes	Yes	No	Yes	No
Total # SAR					**12**	**12**	**16**	**16**	**13**	**17**	**2**

[1] Federal Species at Risk Act, 2002; END = Endangered, THR = Threatened. [2] Provincial Endangered Species Act, 2007; END = Endangered, THR = Threatened, SC = Special Concern. [3]Provincial Conservation Ranking (SRank) where S4 = common and apparently secure, S3 = rare to uncommon and vulnerable, S2 = very rare and imperiled, S1 = extremely rare and critically imperiled, SH = possibly extirpated (historical), SU or ? = uncertain due to insufficient information, B = breeding, N = non-breeding.

One SAR fish (Lake Chubsucker) was identified through DFO aquatic SAR mapping (DFO, 2025) as being present within the PSA. The PSA was also found to cut through habitat for two species of concern (Grass Pickerel and Spotted Sucker). One SAR mussel (Lilliput) and two species of concern (Mapleleaf [*Quadrula quadrula*] and Eastern Pondmussel [*Ligumia nasuta*]) mussel habitats are found 2.3 km west of the southernmost part of the PSA.

4.6.8.8. Non-Native and Invasive Species

The Invasive Priority for Control represents the threat level to Ontario botanical communities which provides additional information on the nature of the botanical communities within the PSA (Urban Forest Associates, 2002). The Invasive Priority Control values range between Category 1 (C1; Top priority) and Category 5 (C5; Potential Invasive Species). The invasive species identified during the 2024 site assessments belong to four categories of control, including:

- Category 1 (C1) – widespread invasive species that are top priority for control;
- Category 2 (C2) – less widespread invasive species that are medium priority;
- Category 3 (C3) – species that spread locally or persist and reproduce from initial introductions and are therefore of local priority; and,
- Category 4 (C4) – species to watch that spread locally or regionally but have minimal effects on biodiversity.

Due to the seasonality of the ELC survey, vascular plant species that could be identified were recorded. A total of 13 invasive species were recorded in the PSA (**Appendix C1**) and are detailed below in **Table 4-12**.

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Table 4-12: Invasive Priority for Control Category for Invasive Species Observed Within the PSA

Scientific Name	Common Name
Category 1	
Phragmites australis ssp. australis	European Common Reed
Rhamnus cathartica	Common Buckthorn
Phalaris arundinacea	Reed Canary Grass
Lythrum salicaria	Purple Loosestrife
Category 2	
Acer negundo	Manitoba Maple
Viburnum opulus ssp. opulus	Cranberry Viburnum
Poa pratensis spp. pratensis	Kentucky Bluegrass
Category 3	
Bromus inermis	Awnless Brome
Cirsium arvense	Canada Thistle
Dactylis glomerata	Orchard Grass
Typha angustifolia	Narrow-leaved Cattail
Pinus sylvestris	Scotch Pine
Category 4	
Daucus carota	Wild Carrot

Physical site disturbance may increase the likelihood for the introduction and spread of non-native and/or invasive flora species to the surrounding vegetation communities. Invasive flora can establish in disturbed sites more efficiently than native flora and can then encroach into adjacent undisturbed and/or more sensitive areas. Although the majority of naturally occurring communities observed show a moderate to high amount of anthropogenic alteration or disturbance, appropriate mitigation measures are recommended during construction to control the spread and introduction of invasives as a mechanism to maintain ecological integrity within the area.

4.7. Recreational Resources

There are limited outdoor recreational areas within the general vicinity of the LSA, including four community parks and three public golf courses.

Outdoor cricket and rugby pitches are located within the northern boundaries of the PSA. The Welland Minor Baseball Association and its four baseball diamonds are located in the southern boundaries of the PSA. Additionally, a paintball facility is located in the northern portion of the PSA, beside the cricket pitch. Directly across from the paintball facility is also the Niagara Region Model Flying Club.

The region overall is managed by the NPCA as part of Conservation Ontario's network, with a mandate to protect, enhance, and sustain natural resources. The NPCA specifically manages and conserves wetlands, forests, and watersheds, maintaining the ecological health and biodiversity of the Niagara Peninsula while also providing recreational and educational opportunities for the community (Conservation Ontario, 2024).

No ATV trails or snowmobile trails are located within the vicinity of the LSA.

4.8. Visual and Aesthetic Resources

This factor considers the change to physical appearances across the landscape and their susceptibility to change as a result of the Project.

The Project is located within predominantly flat agricultural lands, providing open and expansive views. Natural elements include isolated woodlots, tree canopies of rural communities, as well as forest cover and other successional riparian vegetation adjacent to waterways. Existing vertical elements include traffic and light standards, existing transmission lines, and wind turbines. The majority of sensitive receptors are residences with wide views of the horizon.

5.0 Identification and Evaluation of Alternative Routes

This section describes the identification and evaluation of the alternative methods for carrying out the proposed Project. “Alternative methods” refer to different means of carrying out the same task to achieve the purpose of the undertaking, which in this case involves the construction of a new double-circuit 230 kV transmission line extending from an existing Hydro One corridor in Thorold and connecting into the Crowland TS in Welland. Following the identification of the “alternative methods” for the undertaking, evaluation criteria are established, through which a comparative evaluation results in the selection of the Preferred Route Alternative.

Hydro One’s Class EA for Transmission Facilities process (**Section 1.4)** requires the identification of feasible and reasonable route alternatives that can be compared and evaluated on the basis of Natural Environment, Socio-economic Environment, Technical and Cost factors, and Indigenous, Culture, Values, and Land Use to determine a Preferred Route Alternative. Quantitative and qualitative assessment of the potential effects associated with each of the route alternatives identified are considered. For this undertaking, a weighted Multi-Criteria Decision-Making Analysis (MCDA) was used.

A weighted MCDA is a common decision-making approach involving a five-step process outlined below (**Figure 5-1**).

Figure 5-1: Multi-Criteria Decision-Making Process

5.1. Step 1: Establish Need

As outlined in **Section 1.1**, the IESO identified the need for a new double-circuit 230 kV transmission line in the Niagara Region. Hydro One received direction from the IESO to initiate work on development activities, including seeking relevant approvals to construct the line extending from an existing Hydro One corridor in Thorold and connecting into the Crowland TS in Welland (**Appendix A**).

5.2. Step 2: Identify Route Alternatives

The Class EA process requires the identification of technically feasible and reasonable alternatives to address the need of the Project.

Following direction from the IESO in the "Niagara Integrated Regional Resource Plan" (December 22, 2022), and the "Niagara Regional Infrastructure Plan" (July 12, 2023), Hydro One conducted an internal preliminary assessment to identify viable routes (the "route alternatives") for the new double-circuit 230 kV transmission line. Using readily available secondary source information, the Project team researched and mapped clear Technical, Socio-Economic, Natural Environment, and Indigenous Culture, Value, and Land Use constraints and, where possible, identified potential opportunities to parallel linear infrastructure, such as existing transmission lines and highways, and potential opportunities to repurpose existing transmission corridors.

Technical and environmental constraints were identified from desktop data and orthophotos, and were generally categorized as high, medium or low constraints, and mapped. High constraints included features that would likely preclude technical or economic feasibility. Medium and low constraints included features which may not individually render an alternative not viable; however, they represented an important, early consideration, which would be best to avoid, to the extent practical.

Using this constraint mapping, the Hydro One Project team applied technical transmission line engineering principles and best practices to identify viable route alternatives which would meet the need for the Project. Based on the preliminary assessment, three route segments were identified with their respective route alternatives (**Figure 2-1**). The three route segments for the Project and their corresponding route alternatives include the following:

- **Route Segment A** begins at the existing 230 kV transmission line connection, located approximately 300 m south of Beaverdams Road, in the City of Thorold, and proceeds south towards the Allanburg TS. There are two alternative routes proposed for this segment:
  - **Route Alternative A1** is a net-new corridor (greenfield) and proceeds south from the 230 kV connection to the existing transmission line parallel to Thorold Townline Road along the existing transmission line corridor for approximately 1.75 km before crossing Thorold Townline Road to the east, proceeding for 0.9 km, and crossing the Thorold Townline Road to the west for the duration of the line; and,
  - **Route Alternative A2** is a net-new corridor (greenfield) and proceeds south-easterly from the existing 230 kV transmission line connection for approximately 3.17 km, then directly east for approximately 1.1 km to Thorold Townline Road where it meets Route Alternative A1 near the Allanburg TS.
- **Route Segment B** begins near the Allanburg TS and proceeds southerly along Moyer Road for approximately 8 km. There are two Route Alternatives proposed for this segment:
  - **Route Alternative B1** is a net-new corridor (greenfield) and largely parallels Route Alternative B2 with the exception of two bump-outs around residential homes; and,
  - **Route Alternative B2** proceeds south near the Allanburg TS along Moyer Road for 8 km along the existing 115 kV transmission line corridor until reaching Route Segment C. Route Alternative B2 includes repurposing an existing 115 kV transmission line within the existing transmission corridor with some minor off-corridor additions.
- **Route Segment C** begins approximately at the end of Route Segment B north of Schisler Road and proceeds southwesterly for approximately 6.6 km before reaching the Crowland TS. There is one main Route Alternative (C2) and three corresponding Route variations (C1/C2, C2/C3 and C1/C2/C3) associated with this segment:
  - **Route Alternative C1** is a net-new corridor (greenfield) located north of the existing 115 kV corridor and begins north of Schisler Road at the southern limit of Route Segment B and proceeds southwesterly for approximately 1.5 km before joining Route Alternative C2. Generally, it runs west of, and parallels, Route Alternative C2. Alternative C1 is included in two Route variations; C1-C2 and C1-C2-C3, respectively;
  - **Route Alternative C2** proceeds southwesterly from the southern limit of Route segment B along the existing transmission line corridor for approximately 6.6 km before terminating at the Crowland TS. Route Alternative C2 includes

repurposing an existing 115 kV transmission line within the existing transmission corridor. Route Alternative C2 is included in all three Route variations; C1-C2, C2-C3 and C1-C2-C3, respectively; and,

- **Route Alternative C3** is a net-new corridor (greenfield) and begins north of East Main Street at its intersection with Route Alternative C2 and proceeds south for 0.2 km crossing Silverthorn Court, then immediately west for approximately 0.25 km crossing both Silverthorn Court and Highway 140 until rejoining Route Alternative C2. It provides an alternative that crosses these roads at right angles, eliminating the diagonal crossing of the intersection in C2. Route Alternative C3 is included in two Route variations; C2-C3 and C1-C2-C3, respectively.

5.3. Step 3: Define Criteria

The next step in the weighted MCDA, following the identification of Route Alternatives, was the establishment of criteria (with associated quantitative and qualitative metrics) that were then used to assess and compare Route Alternatives.

The development of the evaluation criteria was based on input and comments provided throughout the Project's consultation process (see **Section 3.0**). The criteria for the Project were grouped into four key Evaluation Categories, as follows:

5.3.1. Natural Environment Category

The Natural Environment category consists of six criteria, as show in **Table 5-1**. The criteria aim to measure the potential effects of the Route Alternatives on the Natural Environment features within the study area.

Table 5-1: Natural Environment Category Criteria

Criteria	Measure
Surface Water Resources and Aquatic Habitat	Effects on aquatic habitat, including the total number of watercourse crossings and the length of watercourse within the ROW.
Vegetation and Vegetation Communities	Effects on vegetation, particularly the removal of incompatible vegetation within the ROW.
Wildlife and Wildlife Habitat	Effects on significant wildlife habitat, including footprint effects from the ROW (potential removal, disturbance and/or alteration of habitat), and potential disturbance to wildlife movement/habitat fragmentation within the ROW and PSA, where applicable.
Species at Risk	Effects on Species at Risk (SAR) and their habitats, including temporary and permanent habitat disturbance and/or alteration within the ROW and PSA, where applicable.
Wetlands, Natural Hazards, and Floodplain Areas	Effects on wetlands, floodplains, and Conservation Authority-regulated areas within the ROW.
Designated Natural Areas and Identified Habitat Restoration Areas	Effects on designated natural areas such as Significant Woodlands, PSWs, and Significant Valleylands within the ROW.

The following data sets were used to evaluate Natural Environment criteria:

Field surveys and Geographic Information System (GIS) analysis and interpretation, including:

- Aquatic habitat assessments;
- Ecological Land Classification (ELC);
- Botanical assessment;
- SAR habitat assessments;

- Publicly accessible Land Information Ontario (LIO) geographic datasets; and,
- Aerial photography.

5.3.2. Socio-Economic Environment Category

The Socio-Economic environment category consists of 10 criteria, as shown **in Table 5-2**. The criteria generally aim to measure the potential effects of the Project on the social and economic features within the study area, which includes portions of the City of Welland, City of Thorold, City of Niagara Falls and the Niagara Region.

Table 5-2: Socio Economic Environment Category Criteria

Criteria	Measure
Co-Location and Repurpose of Existing Infrastructure	Alignment with Transportation and Infrastructure Corridors policies as defined by the PPS, largely reflected as the ability to parallel or utilize (repurpose) existing transmission corridors.
Future Land Use Designations	Alignment with identified future land use designations, including potential future settlement area expansion plans, growth areas and development boundaries, as defined by the PPS and local County/Municipal OPs (does not include Designated Natural Areas or Natural Environment designations under the PPS, which are captured in the Natural Environment evaluation category).
Agricultural Resources and Operations	Effects on agricultural resources and operations, including temporary construction and future maintenance effects to farmland, movement of farm machinery and agricultural building removal within the ROW.
Residential Properties	Effects on existing residential properties, including proximity to existing homes within the ROW and PSA.
Petroleum Resources and Operations	Effects on petroleum resources and operations, including access to petroleum pools and wells within the ROW.

Criteria	Measure
Commercial, Industrial, Institutional, Recreational Business and Facilities	Effects on existing commercial, industrial, institutional, and recreational businesses and properties traversed by the ROW.
Source Water Protection and Groundwater Wells	Effects on source water protection policy areas and water wells within the ROW and PSA.
Cultural Heritage	Effects on properties or landscapes with known or potential built heritage resources or cultural heritage landscapes within the ROW.
Archaeological Resources	Effects on areas of archaeological potential within the ROW.
Aggregate Resources Extraction Areas	Effects on aggregate resources and extraction operations within the ROW.

To evaluate the Socio-Economic Environment criteria, a wide range of data was used, including:

- CLI information;
- Field data collection and GIS analysis, and interpretation of ELC;
- Local OPs and policies;
- Ontario PPS (2024);
- Publicly accessible LIO geographic datasets;
- Aerial photography;
- SWP Mapping and Policy documents;
- CHREC completed for the Project; and,
- Stage 1 Archaeological Assessment completed for the Project.

5.3.3. Indigenous Culture, Values and Land Use Evaluation Category

The Indigenous Culture, Values and Land Use evaluation category consists of six criteria, as shown in **Table 5-3**. As described in **Section 3.4**, Hydro One invited Indigenous communities to participate in the 2024 field assessment, route evaluation process, and the provision of Project data (such as results of environmental field

surveys and Archaeological and Cultural Heritage reports) which could help inform the route evaluation.

Table 5-3: Indigenous Culture, Values and Land Use Category Criteria

Criteria	Measure
Areas of Interest	Effects on features of historical/cultural significance identified by Indigenous communities.
Areas that Support Hunting/Trapping/Harvesting Grounds	Effects on lands with habitat or vegetation types that support or have the potential to support hunting/trapping/harvesting activities and medicinal plants within the ROW.
Areas that Support Fish Bearing Waters	Effects on aquatic habitat, including the total number and length of watercourse crossings within ROW, as well as new effects on rivers.
Effects on Rare/Undisturbed Native Habitats/Ecosystems	Effects on rare habitats in the Niagara Region, including native woodlands, natural wetlands, etc., within the ROW.
Effects on Rare/Sensitive Species Regeneration Potential	Long-term effects on species at risk and their regeneration potential within the ROW and PSA. This includes both SAR habitat and Candidate SWH.
Co-Location and Repurpose of Existing Infrastructure	Length of the proposed transmission line that parallels existing infrastructure or repurposes existing transmission line corridors.

Evaluation of criteria in the Indigenous Culture, Values and Land Uses category was based on similar data sources to other criteria but adapted to suit the intent of Indigenous interests as discussed with these communities, where possible. Data included:

Field surveys and GIS analysis and interpretation, including:

- ELC focusing on vegetation communities that support hunting/trapping and harvesting;
- Aquatic habitat assessments with a focus on watercourses and waterbodies that support fisheries;
- Botanical assessment;
- SAR habitat assessments;
- Publicly accessible LIO geographic datasets;

- Aerial photography;
- CHREC Report completed for the Project;
- Stage 1 Archaeological Assessment completed for the Project; and,
- Preliminary engineering and system planning information on the Route Alternatives.

5.3.4. Technical and Cost Category

The Technical and Cost category consists of nine criteria, as shown in **Table 5-4.** The criteria aim to measure the Technical and Cost considerations of the route alternatives including total transmission line length and angles, land acquisition in support of the ROW, construction complexity and transmission system benefits and impacts.

Table 5-4: Technical and Cost Category Criteria

Criteria	Measure
Line Length	Total length of each Route Alternative.
Light and Heavy Angle Structures	Number of light and heavy angle structures, including the possibility to optimize the ruling span and the number of suspension structures.
Non-Transmission Line Crossings	Total number of crossings of rivers, railways, highways, pipelines, distribution lines, and large watercourses.
Transmission Line Crossings	Total number of crossings of existing 115 kV and 230 kV transmission lines.
Co-Location and Repurpose of Existing Infrastructure & Roads	Length of the proposed transmission line that parallels existing infrastructure or repurposes existing transmission line corridors.
Non-Transmission Infrastructure Parallel	Length of parallel from pipelines and railroads.
Other Facilities/Infrastructure Considered	Proximity to existing battery storage facilities, airstrips, wind turbines, gas and brine wells, pipeline stations, and commercial/industrial facilities, including the number of large agricultural buildings within the ROW.
Real Estate Considerations	Real Estate and land acquisition considerations and associated Project costs.
Overall Constructability	Anticipated transmission circuit outages during construction which increase the complexity of construction planning.

Data used to evaluate criteria in the Technical and Cost category area included:

- Datasets associated with property parcel fabric;
- Publicly accessible LIO geographic datasets;
- Engineering standards and best practices; and,
- Preliminary engineering and system planning information on the route alternatives.

5.4. Step 4: Weight Criteria

Following the identification of the evaluation criteria and their measures, the Project team, using input provided by members of the public, assigned weights for the criteria within each evaluation category. The higher the weighting, the more important the factor or criterion was considered in the outcome of the evaluation. For the environmental categories, criteria weights generally reflected the importance as communicated through the consultation process (e.g., input received at COHs, etc.), while for the Technical and Cost category, weights were allocated by the Hydro One Project team based on the anticipated overall cost impact of each criterion (e.g., criteria with greater potential cost impacts received a higher weighting).

At the outset of this step, the Project team determined that the importance of each of the four evaluation categories (Natural Environment, Socio-Economic Environment, Indigenous Culture, Values, and Land Use, and Technical and Cost) was equal. This was reflected in each of the four evaluation categories being assigned a weight of 25% of the overall route evaluation, and ensured that no one evaluation category had more influence over the results of the evaluation than any others. However, the criteria weights within each category were differentiated to reflect their relative importance within a given category.

To complete the weighting of the criteria, each category was given an assigned value of 100% to be distributed amongst the criteria within said category. Input from public consultation was also considered.

Table 5-5 through **Table 5-8** summarizes the weights applied to each criterion within a factor grouping.

Table 5-5: Natural Environment Category Criteria Weighting

Criteria	Measure	Weight
Surface Water Resources and Aquatic Habitat	Effects on aquatic habitat, including the total number of watercourse crossings and the length of watercourse within the ROW.	15%
Vegetation and Vegetation Communities	Effects on vegetation, particularly the removal of incompatible vegetation within the ROW.	15%
Wildlife and Wildlife Habitat	Effects on significant wildlife habitat, including footprint effects from the ROW (potential removal, disturbance and/or alteration of habitat), and potential disturbance to wildlife movement/habitat fragmentation within the ROW and PSA, where applicable.	15%
Species at Risk	Effects on Species at Risk (SAR) and their habitats, including temporary and permanent habitat disturbance and/or alteration within the ROW and PSA, where applicable.	20%
Wetlands, Natural Hazards, and Floodplain Areas	Effects on wetlands, floodplains, and Conservation Authority-regulated areas within the ROW.	20%
Designated Natural Areas and Identified Habitat Restoration Areas	Effects on designated natural areas such as Significant Woodlands, PSWs, and Significant Valleylands within the ROW.	15%
Factor Area Total		**100%**

Table 5-6: Socio-Economic Environment Category Criteria Weighting

Criteria	Measure	Weight
Co-Location and Repurpose of Existing Infrastructure	Alignment with Transportation and Infrastructure Corridors policies as defined by the PPS, largely reflected as the ability to parallel or utilize (repurpose) existing transmission corridors.	7.5%
Future Land Use Designations	Alignment with identified future land use designations, including potential future settlement area expansion plans, growth areas, and development boundaries, as defined by the PPS and local County/Municipal OPs (does not include Designated Natural Areas or Natural Environment designations under the PPS, which are captured in the Natural Environment evaluation category).	5%
Agricultural Resources and Operations	Effects on agricultural resources and operations, including temporary construction and future maintenance effects to farmland, movement of farm machinery, and agricultural building removal within the ROW.	10%
Residential Properties	Effects on existing residential properties, including proximity to existing homes within the ROW and PSA.	30%
Petroleum Resources and Operations	Effects on petroleum resources and operations, including access to petroleum pools and wells within the ROW.	2.5%
Commercial, Industrial, Institutional, Recreational Business and Facilities	Effects on existing commercial, industrial, institutional, and recreational businesses and properties traversed by the ROW.	7.5%
Source Water Protection and Groundwater Wells	Effects on source water protection policy areas and water wells within the ROW and PSA.	10%
Cultural Heritage	Effects on properties or landscapes with known or potential built heritage resources or cultural heritage landscapes within the ROW.	5%

Criteria	Measure	Weight
Archaeological Resources	Effects on areas of archaeological potential within the ROW.	15%
Aggregate Resource Extraction Areas	Effects on aggregate resources and extraction operations within the ROW.	7.5%
Factor Area Total		**100%**

Table 5-7: Indigenous Culture, Values and Land Use Category Criteria Weighting

Criteria	Measure	Weight
Areas of Interest[1]	Effects on features of historical/cultural significance identified by Indigenous communities.	0%
Areas that Support Hunting/Trapping/Harvesting Grounds	Effects on lands with habitat or vegetation types that support or have the potential to support hunting/trapping/harvesting activities and medicinal plants within the ROW.	20%
Areas that Support Fish Bearing Waters	Effects on aquatic habitat, including the total number and length of watercourse crossings within ROW, as well as new effects on rivers.	20%
Effects on Rare/Undisturbed Native Habitats/Ecosystems	Effects on rare habitats in the Niagara Region, including native woodlands, natural wetlands, etc., within the ROW.	20%
Effects on Rare/Sensitive Species Regeneration Potential	Long-term effects on species at risk and their regeneration potential within the ROW and PSA. This includes both SAR habitat and Candidate SWH.	20%

[1] Areas of Interests was provided a weight of 0% because indigenous communities must identify such areas where applicable. Although Hydro One recognizes that the study area includes areas of interest, such as the Welland Canal and River, the weighting was removed and re-assigned to other criteria as the Project will not affect these identified features.

Criteria	Measure	Weight
Co-Location and Repurpose of Existing Infrastructure	Length of the proposed transmission line that parallels existing infrastructure or repurposes existing transmission line corridors.	20%
Factor Area Total		**100%**

Table 5-8: Technical and Cost Category Criteria Weighting

Criteria	Measure	Weight
Line Length	Total length of each Route Alternative.	5%
Light and Heavy Angle Structures	Number of light and heavy angle structures, including the possibility to optimize the ruling span and the number of suspension structures.	15%
Non-Transmission Line Crossings	Total number of crossings of rivers, railways, highways, pipelines, distribution lines, and large watercourses.	5%
Transmission Line Crossings	Total number of crossings of existing 115 kV and 230 kV transmission lines.	15%
Co-Location and Repurpose of Existing Infrastructure & Roads	Length of the proposed transmission line that parallels existing infrastructure or repurposes existing transmission line corridors.	15%
Non-Transmission Infrastructure Parallel	Length of parallel from pipelines and railroads.	5%
Other Facilities/Infrastructure Considered	Proximity to existing battery storage facilities, airstrips, wind turbines, gas and brine wells, pipeline stations, and commercial/industrial facilities, including the number of large agricultural buildings within the ROW.	5%
Real Estate Considerations	Real Estate and land acquisition considerations and associated Project costs.	25%
Overall Constructability	Anticipated transmission circuit outages during construction which increase the complexity of construction planning.	10%
Factor Area Total		**100%**

Step 5: Evaluate and Select

Following identification and weighting of the evaluation criteria, the Project team completed a GIS analysis of the measures identified for each applicable criterion for each Route Alternative based on available data sources and results of the 2024 field assessment. This provided quantitative information such as area metrics, length of line, and numerical counts. The information was then fed into a comparative evaluation matrix where numerical weighted scores were provided per criterion and totalled for each evaluation category per Route segment. The analysis for each criterion was rationalized with a reasoned argument statement that identified the measured differences and similarities between the Route Alternatives within each Route segment. Route segments A (A1 and A2), B (B1 and B2) and C (C1/C2, C2, C2/C3 and C1/C2/C3) were evaluated as individual segments. When aggregately combined, the Preferred Route Alternative combined the highest scoring Route alternatives within each Route segment.

Following the completion of the comparative evaluation matrix, a summary was provided for each factor area, and a reasoned argument was prepared for the overall technically Preferred Route Alternative. The results of the weighted MCDA are found in **Table 5-9** through **Table 5-12.**

Table 5-9: Natural Environment Category Comparative Evaluation Results

			Segment A		Segment B		Segment C			
Criteria	**Measure**	**Criteria Weight (%)**	**Route Alternative A1**	**Route Alternative A2**	**Route Alternative B1**	**Route Alternative B2**	**Route Alternative C1/C2**	**Route Alternative C1/C2/C3**	**Route Alternative C2**	**Route Alternative C2/C3**
Surface Water Resources and Aquatic Habitat	Effects on aquatic habitat, including the total number of watercourse crossings and the length of watercourse within the ROW.	15.0	Traverses 0.05 km of watercourse (surface flow), crossing 1 watercourse in total, with potential to affect fish, fish habitat and riparian vegetation. **Weighted Score: 15.00**	Traverses 0.34 km of watercourse (surface flow), crossing 7 watercourses in total, with potential to affect fish, fish habitat and riparian vegetation. **Weighted Score: 2.14**	Traverses 0.88 km of watercourse (surface flow), crossing 16 watercourses in total, with potential to affect fish, fish habitat and riparian vegetation. **Weighted Score: 9.01**	Traverses 0.48 km of watercourse (surface flow), crossing 10 watercourses in total, with potential to affect fish, fish habitat and riparian vegetation. **Weighted Score: 15.00**	Traverses 0.42 km of watercourse (surface flow), crossing 4 watercourses in total, with potential to affect fish, fish habitat and riparian vegetation. **Weighted Score: 15.00**	Traverses 0.42 km of watercourse (surface flow), crossing 4 watercourses in total, with potential to affect fish, fish habitat and riparian vegetation. **Weighted Score: 15.00**	Traverses 0.42 km of watercourse (surface flow), crossing 4 watercourses in total, with potential to affect fish, fish habitat and riparian vegetation. **Weighted Score: 15.00**	Traverses 0.42 km of watercourse (surface flow), crossing 4 watercourses in total, with potential to affect fish, fish habitat and riparian vegetation. **Weighted Score: 15.00**
Vegetation and Vegetation Communities	Effects on vegetation, particularly the removal of incompatible vegetation within the ROW.	15.0	Traverses 9.7 ha of vegetation communities. 1.05 ha (11%) are incompatible with transmission lines (long-term effects) while 8.65 ha (or 89%) are compatible (short-term effects). **Weighted Score: 10.85**	Traverses 14.46 ha of vegetation communities. 0.76 ha (5%) are incompatible with transmission lines (long-term effects) while 13.7 ha (or 95%) are compatible (short-term effects). **Weighted Score: 15.00**	Traverses 39.33 ha of vegetation communities. 7.46 ha (19%) are incompatible with transmission lines (long-term effects) while 31.87 ha (or 81%) are compatible (short-term effects). **Weighted Score: 0.10**	Traverses 21.68 ha of vegetation communities. 0.05 ha (0.2%) are incompatible with transmission lines (long-term effects) while 21.64 ha (or 99.8%) are compatible (short-term effects). **Weighted Score: 15.00**	Traverses 20.73 ha of vegetation communities. 0.24 ha (1%) are incompatible with transmission lines (long-term effects) while 20.49 ha (or 99%) are compatible (short-term effects). **Weighted Score: 15.00**	Traverses 21.76 ha of vegetation communities. 0.24 ha (1%) are incompatible with transmission lines (long-term effects) while 21.52 ha (or 99%) are compatible (short-term effects). **Weighted Score: 15.00**	Traverses 17.77 ha of vegetation communities. 0.24 ha (1%) are incompatible with transmission lines (long-term effects) while 17.53 ha (or 99%) are compatible (short-term effects). **Weighted Score: 15.00**	Traverses 18.81 ha of vegetation communities. 0.24 ha (1%) are incompatible with transmission lines (long-term effects) while 18.56 ha (or 99%) are compatible (short-term effects). **Weighted Score: 15.00**
Wildlife and Wildlife Habitat	Effects on significant wildlife habitat, including	15.0	Affects 14.39 ha of SWH and candidate SWH	Affects 14.58 ha of SWH and candidate SWH	Affects 125.92 ha of SWH and candidate SWH	Affects 37.04 ha of SWH and candidate SWH	Affects 76.71 ha of SWH and candidate SWH	Affects 82.17 ha of SWH and candidate SWH	Affects 71.29 ha of SWH and candidate SWH	Affects 76.74 ha of SWH and candidate SWH

			Segment A		Segment B		Segment C			
Criteria	**Measure**	**Criteria Weight (%)**	**Route Alternative A1**	**Route Alternative A2**	**Route Alternative B1**	**Route Alternative B2**	**Route Alternative C1/C2**	**Route Alternative C1/C2/C3**	**Route Alternative C2**	**Route Alternative C2/C3**
	footprint effects from the ROW (potential removal, disturbance and/or alteration of habitat), and potential disturbance to wildlife movement/habitat fragmentation within the ROW and PSA, where applicable.		within the ROW, including 3.43 ha of SWH for reptile hibernacula and confirmed deer winter congregation area, and eight special concern species (Swamp Rose-Mallow, Common Nighthawk, Grasshopper Sparrow, Barn Swallow, Woodland Vole, Eastern Milksnake, Eastern Ribbonsnake and Monarch). Affects and/or potentially affects 168.03 ha of SWH or candidate SWH within the PSA, including 61.43 ha of SWH for waterfowl stopover and staging areas, bat maternity colonies, turtle wintering areas, reptile	within the ROW, including 3.96 ha of SWH for bat maternity colonies, reptile hibernacula, amphibian breeding habitat (wetland), marsh breeding bird and terrestrial crayfish, and 12 special concern species (Swamp Rose-Mallow, Black Gum, White Wood Aster, Common Nighthawk, Barn Swallow, Wood Thrush, Eastern Wood-pewee, Woodland Vole, Snapping Turtle, Eastern Milksnake, Eastern Ribbonsnake and Monarch). Affects and/or potentially affects 177.31 ha of SWH or candidate SWH within the PSA,	within the ROW, including 72.63 ha of SWH for waterfowl stopover and staging areas, raptor wintering areas, bat maternity colonies, turtle wintering areas, reptile hibernacula, colonially nesting bird breeding habitat (tree/shrub), confirmed deer winter congregation areas, bald eagle and osprey nesting, foraging and perching habitat, woodland raptor, turtle nesting areas, seeps and springs, amphibian breeding habitat (woodland and wetland), woodland area-sensitive bird breeding, amphibian movement	within the ROW, including 16.1 ha of SWH for waterfowl stopover and staging areas, raptor wintering areas, bat maternity colonies, turtle wintering areas, reptile hibernacula, colonially nesting bird breeding habitat (tree/shrub), bald eagle and osprey nesting, foraging and perching habitat, woodland raptor, turtle nesting areas, seeps and springs, amphibian breeding habitat (woodland and wetland), woodland area-sensitive bird breeding, amphibian movement corridors, marsh breeding bird and terrestrial crayfish, and 16	within the ROW, including 24.91 ha of SWH for waterfowl stopover and staging areas, bat maternity colonies, turtle wintering areas, reptile hibernacula, waterfowl nesting area, bald eagle and osprey nesting, foraging and perching habitat, turtle nesting areas, seeps and springs, amphibian breeding habitat (wetland), marsh breeding bird and terrestrial crayfish, and 14 special concern species (Swamp Rose-Mallow, Black Gum, White Wood Aster, Common Nighthawk, Grasshopper Sparrow, Barn Swallow, Wood Thrush, Eastern Wood-pewee,	within the ROW, including 25.91 ha of SWH for waterfowl stopover and staging areas, bat maternity colonies, turtle wintering areas, reptile hibernacula, waterfowl nesting area, bald eagle and osprey nesting, foraging and perching habitat, turtle nesting areas, seeps and springs, amphibian breeding habitat (wetland), marsh breeding bird and terrestrial crayfish, and 14 special concern species (Swamp Rose-Mallow, Black Gum, White Wood Aster, Common Nighthawk, Grasshopper Sparrow, Barn Swallow, Wood Thrush, Eastern Wood-pewee,	within the ROW, including 25.25 ha of SWH for waterfowl stopover and staging areas, bat maternity colonies, turtle wintering areas, reptile hibernacula, waterfowl nesting area, bald eagle and osprey nesting, foraging and perching habitat, turtle nesting areas, seeps and springs, amphibian breeding habitat (wetland), marsh breeding bird and terrestrial crayfish, and 14 special concern species (Swamp Rose-Mallow, Black Gum, White Wood Aster, Common Nighthawk, Grasshopper Sparrow, Barn Swallow, Wood Thrush, Eastern Wood-pewee,	within the ROW, including 26.25 ha of SWH for waterfowl stopover and staging areas, bat maternity colonies, turtle wintering areas, reptile hibernacula, waterfowl nesting area, bald eagle and osprey nesting, foraging and perching habitat, turtle nesting areas, seeps and springs, amphibian breeding habitat (wetland), marsh breeding bird and terrestrial crayfish, and 14 special concern species (Swamp Rose-Mallow, Black Gum, White Wood Aster, Common Nighthawk, Grasshopper Sparrow, Barn

			Segment A		Segment B		Segment C			
Criteria	**Measure**	**Criteria Weight (%)**	**Route Alternative A1**	**Route Alternative A2**	**Route Alternative B1**	**Route Alternative B2**	**Route Alternative C1/C2**	**Route Alternative C1/C2/C3**	**Route Alternative C2**	**Route Alternative C2/C3**
			hibernacula, confirmed deer winter congregation area, bald eagle and osprey nesting, foraging and perching habitat, turtle nesting areas, seeps and springs, amphibian breeding habitat (woodland and wetland), amphibian movement corridors, marsh breeding bird and terrestrial crayfish, and 14 special concern species (Swamp Rose-Mallow, Black Gum, White Wood Aster, Common Nighthawk, Grasshopper Sparrow, Barn Swallow, Wood Thrush, Eastern Wood-pewee, Woodland Vole, Snapping Turtle, Northern Map Turtle, Eastern	including 68.03 ha of SWH for waterfowl stopover and staging areas, bat maternity colonies, turtle wintering areas, reptile hibernacula, colonially nesting bird breeding habitat (tree/shrub), confirmed deer winter congregation area, waterfowl nesting area, bald eagle and osprey nesting, foraging and perching habitat, turtle nesting areas, seeps and springs, amphibian breeding habitat (woodland and wetland), amphibian movement corridors, marsh breeding bird and terrestrial crayfish, and 14 special	corridors, marsh breeding bird and terrestrial crayfish, and 15 special concern species (Swamp Rose-Mallow, Weak Stellate Sedge, Black Gum, White Wood Aster, Common Nighthawk, Barn Swallow, Wood Thrush, Eastern Wood-pewee, Woodland Vole, Snapping Turtle, Northern Map Turtle, Eastern Milksnake, Eastern Ribbonsnake, Spotted Sucker and Monarch). Affects and/or potentially affects 668.27 ha of SWH or candidate SWH within the PSA, including 375.93 ha of SWH for waterfowl stopover and staging areas, raptor wintering areas, bat	special concern species (Swamp Rose-Mallow, Weak Stellate Sedge, Black Gum, White Wood Aster, Common Nighthawk, Grasshopper Sparrow, Barn Swallow, Wood Thrush, Eastern Wood-pewee, Woodland Vole, Snapping Turtle, Northern Map Turtle, Eastern Milksnake, Eastern Ribbonsnake, Spotted Sucker and Monarch). Affects and/or potentially affects 565.08 ha of SWH or candidate SWH within the PSA, including 292.03 ha of SWH for waterfowl stopover and staging areas, raptor wintering areas, bat maternity colonies, turtle	Woodland Vole, Snapping Turtle, Northern Map Turtle, Eastern Milksnake, Eastern Ribbonsnake, and Monarch). Affects and/or potentially affects 511.72 ha of SWH or candidate SWH within the PSA, including 191.67 ha of SWH for waterfowl stopover and staging areas, bat maternity colonies, turtle wintering areas, reptile hibernacula, colonially nesting bird breeding habitat (tree/shrub), confirmed deer winter congregation area, waterfowl nesting area, bald eagle and osprey nesting, foraging and perching habitat, turtle nesting areas,	Woodland Vole, Snapping Turtle, Northern Map Turtle, Eastern Milksnake, Eastern Ribbonsnake, and Monarch). Affects and/or potentially affects 524.94 ha of SWH or candidate SWH within the PSA, including 193.8 ha of SWH for waterfowl stopover and staging areas, bat maternity colonies, turtle wintering areas, reptile hibernacula, colonially nesting bird breeding habitat (tree/shrub), confirmed deer winter congregation area, waterfowl nesting area, bald eagle and osprey nesting, foraging and perching habitat, turtle nesting	Woodland Vole, Snapping Turtle, Northern Map Turtle, Eastern Milksnake, Eastern Ribbonsnake, and Monarch). Affects and/or potentially affects 500.56 ha of SWH or candidate SWH within the PSA, including 190.61 ha of SWH for waterfowl stopover and staging areas, bat maternity colonies, turtle wintering areas, reptile hibernacula, colonially nesting bird breeding habitat (tree/shrub), confirmed deer winter congregation area, waterfowl nesting area, bald eagle and osprey nesting, foraging and perching habitat, turtle nesting	Swallow, Wood Thrush, Eastern Wood-pewee, Woodland Vole, Snapping Turtle, Northern Map Turtle, Eastern Milksnake, Eastern Ribbonsnake, and Monarch). Affects and/or potentially affects 513.78 ha of SWH or candidate SWH within the PSA, including 192.74 ha of SWH for waterfowl stopover and staging areas, bat maternity colonies, turtle wintering areas, reptile hibernacula, colonially nesting bird breeding habitat (tree/shrub), confirmed deer winter congregation area, waterfowl nesting area, bald eagle and osprey nesting,

			Segment A		Segment B		Segment C			
Criteria	**Measure**	**Criteria Weight (%)**	**Route Alternative A1**	**Route Alternative A2**	**Route Alternative B1**	**Route Alternative B2**	**Route Alternative C1/C2**	**Route Alternative C1/C2/C3**	**Route Alternative C2**	**Route Alternative C2/C3**
			Milksnake, Eastern Ribbonsnake and Monarch) **Weighted Score: 15.00**	concern species (Swamp Rose-Mallow, Weak Stellate Sedge. Black Gum, White Wood Asher, Common Nighthawk, Barn Swallow, Wood Thrush, Eastern Wood-pewee, Woodland Vole, Snapping Turtle, Northern Map Turtle, Eastern Milksnake, Eastern Ribbonsnake and Monarch) **Weighted Score: 14.66**	maternity colonies, turtle wintering areas, reptile hibernacula, colonially nesting bird breeding habitat (tree/shrub), confirmed deer winter congregation area, bald eagle and osprey nesting, foraging and perching habitat, woodland raptor, turtle nesting areas, seeps and springs, amphibian breeding habitat (woodland and wetland), woodland area-sensitive bird breeding, amphibian movement corridors, marsh breeding bird and terrestrial crayfish, and 16 special concern species (Swamp Rose-Mallow, Weak Stellate	wintering areas, reptile hibernacula, colonially nesting bird breeding habitat (tree/shrub), confirmed deer winter congregation area, bald eagle and osprey nesting, foraging and perching habitat, woodland raptor, turtle nesting areas, seeps and springs, amphibian breeding habitat (woodland and wetland), woodland area-sensitive bird breeding, amphibian movement corridors, marsh breeding bird and terrestrial crayfish, and 16 special concern species (Swamp Rose-Mallow, Weak Stellate Sedge. Black Gum, White	seeps and springs, amphibian breeding habitat (woodland and wetland), amphibian movement corridors, marsh breeding bird and terrestrial crayfish, and 16 special concern species (Swamp Rose-Mallow, Weak Stellate Sedge. Black Gum, White Wood Asher, Common Nighthawk, Grasshopper Sparrow, Barn Swallow, Wood Thrush, Eastern Wood-pewee, Woodland Vole, Snapping Turtle, Northern Map Turtle, Eastern Milksnake, Eastern Ribbonsnake, Grass Pickerel and Monarch) **Weighted Score: 14.12**	areas, seeps and springs, amphibian breeding habitat (woodland and wetland), amphibian movement corridors, marsh breeding bird and terrestrial crayfish, and 16 special concern species (Swamp Rose-Mallow, Weak Stellate Sedge. Black Gum, White Wood Asher, Common Nighthawk, Grasshopper Sparrow, Barn Swallow, Wood Thrush, Eastern Wood-pewee, Woodland Vole, Snapping Turtle, Northern Map Turtle, Eastern Milksnake, Eastern Ribbonsnake, Grass Pickerel and Monarch) **Weighted Score: 13.34**	areas, seeps and springs, amphibian breeding habitat (woodland and wetland), amphibian movement corridors, marsh breeding bird and terrestrial crayfish, and 16 special concern species (Swamp Rose-Mallow, Weak Stellate Sedge. Black Gum, White Wood Asher, Common Nighthawk, Grasshopper Sparrow, Barn Swallow, Wood Thrush, Eastern Wood-pewee, Woodland Vole, Snapping Turtle, Northern Map Turtle, Eastern Milksnake, Eastern Ribbonsnake, Grass Pickerel and Monarch) **Weighted Score: 15.00**	foraging and perching habitat, turtle nesting areas, seeps and springs, amphibian breeding habitat (woodland and wetland), amphibian movement corridors, marsh breeding bird and terrestrial crayfish, and 16 special concern species (Swamp Rose-Mallow, Weak Stellate Sedge. Black Gum, White Wood Asher, Common Nighthawk, Grasshopper Sparrow, Barn Swallow, Wood Thrush, Eastern Wood-pewee, Woodland Vole, Snapping Turtle, Northern Map Turtle, Eastern Milksnake, Eastern Ribbonsnake, Grass Pickerel

			Segment A		Segment B		Segment C			
Criteria	**Measure**	**Criteria Weight (%)**	**Route Alternative A1**	**Route Alternative A2**	**Route Alternative B1**	**Route Alternative B2**	**Route Alternative C1/C2**	**Route Alternative C1/C2/C3**	**Route Alternative C2**	**Route Alternative C2/C3**
					Sedge. Black Gum, White Wood Asher, Common Nighthawk, Grasshopper Sparrow, Barn Swallow, Wood Thrush, Eastern Wood-pewee, Woodland Vole, Snapping Turtle, Northern Map Turtle, Eastern Milksnake, Eastern Ribbonsnake, Spotted Sucker and Monarch) **Weighted Score: 6.48**	Wood Asher, Common Nighthawk, Grasshopper Sparrow, Barn Swallow, Wood Thrush, Eastern Wood-pewee, Woodland Vole, Snapping Turtle, Northern Map Turtle, Eastern Milksnake, Eastern Ribbonsnake, Spotted Sucker and Monarch) **Weighted Score: 15.00**				and Monarch) **Weighted Score: 14.10**
Species at Risk	Effects on Species at Risk (SAR) and their habitats, including temporary and permanent habitat disturbance and/or alteration within the ROW and PSA, where applicable.	20.0	Affects 6.67 ha of potential SAR and/or SAR habitat within the ROW, associated with potential Black Ash, Eastern Flowering Dogwood, Butternut, Bobolink, Eastern Meadowlark, Red-headed Woodpecker and Barn Swallow	Affects 4.01 ha of potential SAR and/or SAR habitat within the ROW, associated with potential Black Ash, Eastern Flowering Dogwood, Butternut, Red-headed Woodpecker, Barn Swallow, Wood Thrush and SAR Bats habitat.	Affects 47.94 ha of potential SAR and/or SAR habitat within the ROW, associated with potential Black Ash, Eastern Flowering Dogwood, Butternut, Round-leaved Greenbriar, Red-headed Woodpecker, Acadian Flycatcher, Barn	Affects 3.14 ha of potential SAR and/or SAR habitat within the ROW, associated with potential Black Ash, Eastern Flowering Dogwood, Butternut, Round-leaved Greenbriar, Bobolink, Eastern Meadowlark, Red-headed Woodpecker, Acadian	Affects 10.73 ha of potential SAR and/or SAR habitat within the ROW, associated with potential Black Ash, Eastern Flowering Dogwood, Butternut, Round-leaved Greenbriar, Bobolink, Eastern Meadowlark, Red-headed Woodpecker, Barn Swallow,	Affects 10.71 ha of potential SAR and/or SAR habitat within the ROW, associated with potential Black Ash, Eastern Flowering Dogwood, Butternut, Round-leaved Greenbriar, Bobolink, Eastern Meadowlark, Red-headed	Affects 8.07 ha of potential SAR and/or SAR habitat within the ROW, associated with potential Black Ash, Eastern Flowering Dogwood, Butternut, Round-leaved Greenbriar, Bobolink, Eastern Meadowlark, Red-headed	Affects 8.06 ha of potential SAR and/or SAR habitat within the ROW, associated with potential Black Ash, Eastern Flowering Dogwood, Butternut, Round-leaved Greenbriar, Bobolink, Eastern Meadowlark, Red-headed

			Segment A		Segment B		Segment C			
Criteria	**Measure**	**Criteria Weight (%)**	**Route Alternative A1**	**Route Alternative A2**	**Route Alternative B1**	**Route Alternative B2**	**Route Alternative C1/C2**	**Route Alternative C1/C2/C3**	**Route Alternative C2**	**Route Alternative C2/C3**
			habitat. Of the effects to SAR and/or SAR habitat within the ROW, 3.47 ha are associated with temporary habitat disturbance impacts and 3.20 ha are associated with permanent habitat removal impacts. Affects and/or potentially affects 83.37 ha of SAR and/or SAR habitat within the PSA, associated with potential Black Ash, Eastern Flowering Dogwood, Butternut, Bobolink, Eastern Meadowlark, Red-headed Woodpecker, Barn Swallow, Wood Thrush and SAR Bats habitat. **Weighted**	Of the effects to SAR and/or SAR habitat within the ROW, 0.22 ha are associated with temporary habitat disturbance impacts and 3.79 ha are associated with permanent habitat removal impacts. Affects and/or potentially affects 72.91 ha of SAR and/or SAR habitat within the PSA, associated with potential Black Ash, Eastern Flowering Dogwood, Butternut, Round-leaved Greenbriar, Red-headed Woodpecker, Barn Swallow, Wood Thrush and SAR Bats habitat. **Weighted Score: 16.75**	Swallow, Wood Thrush and SAR Bats habitat. Of the effects to SAR and/or SAR habitat within the ROW, 0.45 ha are associated with temporary habitat disturbance impacts and 47.48 ha are associated with permanent habitat removal impacts. Affects and/or potentially affects 250.80 ha of SAR and/or SAR habitat within the PSA, associated with potential Black Ash, Eastern Flowering Dogwood, Butternut, Round-leaved Greenbriar, Bobolink, Eastern Meadowlark, Red-headed Woodpecker, Acadian Flycatcher, Barn	Flycatcher, Barn Swallow, Wood Thrush and SAR Bats habitat. Of the effects to SAR and/or SAR habitat within the ROW, 2.83 ha are associated with temporary habitat disturbance impacts and 0.31 ha are associated with permanent habitat removal impacts. Affects and/or potentially affects 188.87 ha of SAR and/or SAR habitat within the PSA, associated with potential Black Ash, Eastern Flowering Dogwood, Butternut, Round-leaved Greenbriar, Bobolink, Eastern Meadowlark, Red-headed Woodpecker, Acadian Flycatcher, Barn Swallow, Wood Thrush and SAR Bats habitat.	Wood Thrush and SAR Bats habitat. Of the effects to SAR and/or SAR habitat within the ROW, 9.27 ha are associated with temporary habitat disturbance impacts and 1.46 ha are associated with permanent habitat removal impacts. Affects and/or potentially affects 106.27 ha of SAR and/or SAR habitat within the PSA, associated with potential Black Ash, Eastern Flowering Dogwood, Butternut, Round-leaved Greenbriar, Bobolink, Eastern Meadowlark, Red-headed Woodpecker, Barn Swallow, Wood Thrush, SAR Bats and Lake Chubsucker habitat. **Weighted Score:**	Woodpecker, Barn Swallow, Wood Thrush and SAR Bats habitat. Of the effects to SAR and/or SAR habitat within the ROW, 9.25 ha are associated with temporary habitat disturbance impacts and 1.46 ha are associated with permanent habitat removal impacts. Affects and/or potentially affects 106.62 ha of SAR and/or SAR habitat within the PSA, associated with potential Black Ash, Eastern Flowering Dogwood, Butternut, Round-leaved Greenbriar, Bobolink, Eastern Meadowlark, Red-headed Woodpecker,	Woodpecker, Barn Swallow, Wood Thrush and SAR Bats habitat. Of the effects to SAR and/or SAR habitat within the ROW, 6.61 ha are associated with temporary habitat disturbance impacts and 1.46 ha are associated with permanent habitat removal impacts. Affects and/or potentially affects 106.01 ha of SAR and/or SAR habitat within the PSA, associated with potential Black Ash, Eastern Flowering Dogwood, Butternut, Round-leaved Greenbriar, Bobolink, Eastern Meadowlark, Red-headed Woodpecker,	Woodpecker, Barn Swallow, Wood Thrush and SAR Bats habitat. Of the effects to SAR and/or SAR habitat within the ROW, 6.60 ha are associated with temporary habitat disturbance impacts and 1.46 ha are associated with permanent habitat removal impacts. Affects and/or potentially affects 106.36 ha of SAR and/or SAR habitat within the PSA, associated with potential Black Ash, Eastern Flowering Dogwood, Butternut, Round-leaved Greenbriar, Bobolink, Eastern Meadowlark,

			Segment A		Segment B		Segment C			
Criteria	**Measure**	**Criteria Weight (%)**	**Route Alternative A1**	**Route Alternative A2**	**Route Alternative B1**	**Route Alternative B2**	**Route Alternative C1/C2**	**Route Alternative C1/C2/C3**	**Route Alternative C2**	**Route Alternative C2/C3**
			Score: 16.83		Swallow, Wood Thrush and SAR Bats habitat. **Weighted Score: 12.72**	**Weighted Score: 16.27**	**18.25**	Barn Swallow, Wood Thrush, SAR Bats and Lake Chubsucker habitat. **Weighted Score: 18.24**	Barn Swallow, Wood Thrush, SAR Bats and Lake Chubsucker habitat. **Weighted Score: 18.84**	Red-headed Woodpecker, Barn Swallow, Wood Thrush, SAR Bats and Lake Chubsucker habitat. **Weighted Score: 18.84**
Wetlands, Natural Hazards and Floodplain Areas	Effects on wetlands, floodplains, and Conservation Authority-regulated areas within the ROW.	20.0	Traverses 0.90 ha of CA-regulated areas. No wetlands or floodplains were identified. **Weighted Score: 20.00**	Traverses 2.76 ha of CA-regulated areas, including 0.36 ha of wetland and 1.88 ha of floodplains. **Weighted Score: 3.42**	Traverses 8.76 ha of CA-regulated areas, including 4.70 ha of wetland and 1.14 ha of floodplains. **Weighted Score: 12.07**	Traverses 4.59 ha of CA-regulated areas, including 2.72 ha of wetland and 0.56 ha of floodplains. **Weighted Score: 20.00**	Traverses 3.32 ha of CA-regulated areas, including 1.28 ha of wetland. No floodplains were identified. **Weighted Score: 19.88**	Traverses 3.32 ha of CA-regulated areas, including 1.27 ha of wetland. No floodplains were identified. **Weighted Score: 20.00**	Traverses 3.32 ha of CA-regulated areas, including 1.28 ha of wetland. No floodplains were identified. **Weighted Score: 19.88**	Traverses 3.32 ha of CA-regulated areas, including 1.27 ha of wetland. No floodplains were identified. **Weighted Score: 20.00**
Designated Natural Areas and Identified Habitat Restoration Areas	Effects on designated natural areas such as Significant Woodlands, PSWs, and Significant Valleylands within the ROW.	15.0	Traverses 0.55 ha of significant woodlands. No ANSIs, PSWs or significant valleylands were identified. **Weighted Score: 15.00**	Traverses 0.57 ha of significant woodlands. No ANSIs, PSWs or significant valleylands were identified. **Weighted Score: 14.87**	Traverses 6.46 ha of significant woodlands, 4.36 ha of PSWs and 0.04 ha of significant valleylands. No ANSIs were identified. **Weighted Score: 5.01**	Traverses 1.82 ha of significant woodlands, 0.65 of PSWs, and 0.03 ha of significant valleylands. No ANSIs were identified. **Weighted Score: 15.00**	Traverses 0.24 ha of significant woodlands, and 0.33 ha of PSWs. No ANSIs or significant valleylands were identified. **Weighted Score: 15.00**	Traverses 0.24 ha of significant woodlands, and 0.33 ha of PSWs. No ANSIs or significant valleylands were identified. **Weighted Score: 15.00**	Traverses 0.24 ha of significant woodlands, and 0.33 ha of PSWs. No ANSIs or significant valleylands were identified. **Weighted Score: 15.00**	Traverses 0.24 ha of significant woodlands, and 0.33 ha of PSWs. No ANSIs or significant valleylands were identified. **Weighted Score: 15.00**
Final Weighted Score			**92.68**	**66.85**	**45.38**	**96.27**	**97.25**	**96.58**	**98.72**	**97.94**

Table 5-10: Socio-Economic Environment Category Comparative Evaluation Results

			Segment A		Segment B		Segment C			
Criteria	**Measure**	**Criteria Weight (%)**	**Route Alternative A1**	**Route Alternative A2**	**Route Alternative B1**	**Route Alternative B2**	**Route Alternative C1/C2**	**Route Alternative C1/C2/C3**	**Route Alternative C2**	**Route Alternative C2/C3**
Co-Location and Repurpose of Existing Infrastructure	Alignment with Transportation and Infrastructure Corridors policies as defined by the PPS, largely reflected as the ability to parallel or utilize (repurpose) existing transmission corridors.	7.5	Co-locates with 0.75 km of existing transmission line infrastructure and 1.39 km of road infrastructure. **Weighted Score: 5.67**	Co-locates with 1.92 km of existing transmission line infrastructure. **Weighted Score: 6.00**	Co-locates with 3.95 km of existing transmission line infrastructure, of which 0.33 km involves repurposing an existing 115 kV transmission line corridor. Co-locates with an additional 0.11 km of road and 0.41 km of pipeline infrastructure. **Weighted Score: 1.65**	Co-locates with 8.05 km of existing transmission line infrastructure, of which 8 km involves repurposing an existing 115 kV transmission line corridor. Co-locates with an additional 3.13 km of road infrastructure. **Weighted Score: 7.50**	Co-locates with 6.61 km of existing transmission line infrastructure, of which 5.11 km involves repurposing an existing 115 kV transmission line corridor. Co-locates with an additional 0.64 km of road infrastructure. **Weighted Score: 6.98**	Co-locates with 6.43 km of existing transmission line infrastructure, of which 4.79 km involves repurposing an existing 115 kV transmission line corridor. Co-locates with an additional 0.86 km of road and 0.12 km of highway infrastructure. **Weighted Score: 7.23**	Co-locates with 6.55 km of existing transmission line infrastructure, of which 5.11 km involves repurposing an existing 115 kV transmission line corridor. Co-locates with an additional 0.74 km of road and 0.06 km of highway infrastructure. **Weighted Score: 7.21**	Co-locates with 6.36 km of existing transmission line infrastructure, of which 4.79 km involves repurposing an existing 115 kV transmission line corridor. Co-locates with an additional 0.86 km of road and 0.12 km of highway infrastructure. **Weighted Score: 7.20**
Future Land Use Designations	Alignment with identified future land use designations, including potential future settlement area expansion plans, growth areas, and development boundaries, as defined by the PPS and local County/Municipal OPs (does not	5.0	Traverses 0.84 ha of land identified for future development within the PSA. Does not traverse land identified for future development within the ROW. **Weighted Score: 2.72**	Does not traverse land identified for future development within the ROW or PSA. **Weighted Score: 5.00**	Does not traverse land identified for future development within the ROW or PSA. **Weighted Score: 5.00**	Traverses 2.90 ha of land identified for future development within the PSA. Does not traverse land identified for future development within the ROW. **Weighted Score: 1.28**	Traverses 2.76 ha of land identified for future development within the PSA. Does not traverse land identified for future development within the ROW. **Weighted Score: 5.00**	Traverses 2.76 ha of land identified for future development within the PSA. Does not traverse land identified for future development within the ROW. **Weighted Score: 5.00**	Traverses 2.76 ha of land identified for future development within the PSA. Does not traverse land identified for future development within the ROW. **Weighted Score: 5.00**	Traverses 2.76 ha of land identified for future development within the PSA. Does not traverse land identified for future development within the ROW. **Weighted Score: 5.00**

			Segment A		Segment B		Segment C			
Criteria	**Measure**	**Criteria Weight (%)**	**Route Alternative A1**	**Route Alternative A2**	**Route Alternative B1**	**Route Alternative B2**	**Route Alternative C1/C2**	**Route Alternative C1/C2/C3**	**Route Alternative C2**	**Route Alternative C2/C3**
	include Designated Natural Areas or Natural Environment designations under the PPS, which are captured in the Natural Environment evaluation category).									
Agricultural Resources and Operations	Effects on agricultural resources and operations, including temporary construction and future maintenance effects to farmland, movement of farm machinery, and agricultural building removal within the ROW.	10.0	Traverses 6.69 ha of prime agricultural land. Does not repurpose existing transmission corridor on agricultural land and/or require the removal of agricultural buildings. **Weighted Score: 10.00**	Traverses 11.78 ha of prime agricultural land. Does not repurpose existing transmission corridor on agricultural land and/or require the removal of agricultural buildings. **Weighted Score: 9.14**	Traverses 30.47 ha of prime agricultural land, of which 1.50 ha is associated with the repurposing of the existing 115 kV transmission line corridor on agricultural land, which requires fewer net new transmission towers within agricultural fields. No agricultural building removal is required. **Weighted Score: 1.81**	Traverses 16.0 ha of prime agricultural land, of which 15.92 ha is associated with the repurposing of the existing 115 kV transmission line corridor on agricultural land, which requires fewer net new transmission towers within agricultural fields. No agricultural building removal is required. **Weighted Score: 10.00**	Traverses 5.0 ha of prime agricultural land. Does not repurpose existing transmission corridor on agricultural land and/or require the removal of agricultural buildings. **Weighted Score: 8.68**	Traverses 5.0 ha of prime agricultural land. Does not repurpose existing transmission corridor on agricultural land and/or require the removal of agricultural buildings. **Weighted Score: 8.68**	Traverses 1.7 ha of prime agricultural land. Does not repurpose existing transmission corridor on agricultural land and/or require the removal of agricultural buildings. **Weighted Score: 10.00**	Traverses 1.7 ha of prime agricultural land. Does not repurpose existing transmission corridor on agricultural land and/or require the removal of agricultural buildings. **Weighted Score: 10.00**
Petroleum Resources and Operations	Effects on petroleum resources and operations,	2.5	No petroleum wells and/or pools were identified within	No petroleum wells and/or pools were identified within	No petroleum wells and/or pools were identified within	No petroleum wells and/or pools were identified within	No active, abandoned or unknown wells	No active, abandoned or unknown wells	No active, abandoned or unknown wells	No active, abandoned or unknown wells

			Segment A		Segment B		Segment C			
Criteria	**Measure**	**Criteria Weight (%)**	**Route Alternative A1**	**Route Alternative A2**	**Route Alternative B1**	**Route Alternative B2**	**Route Alternative C1/C2**	**Route Alternative C1/C2/C3**	**Route Alternative C2**	**Route Alternative C2/C3**
	including access to petroleum pools and wells within the ROW.		the ROW and/or PSA. **Weighted Score: 2.50**	the ROW and/or PSA. **Weighted Score: 2.50**	the ROW and/or PSA. **Weighted Score: 2.50**	the ROW and/or PSA. **Weighted Score: 2.50**	were identified within the ROW. 5.68 ha of petroleum pools were identified within the ROW while 47.46 ha were identified within the PSA. **Weighted Score: 2.50**	were identified within the ROW. 5.68 ha of petroleum pools were identified within the ROW while 47.46 ha were identified within the PSA. **Weighted Score: 2.50**	were identified within the ROW. 5.68 ha of petroleum pools were identified within the ROW while 47.46 ha were identified within the PSA. **Weighted Score: 2.50**	were identified within the ROW. 5.68 ha of petroleum pools were identified within the ROW while 47.46 ha were identified within the PSA. **Weighted Score: 2.50**
Residential Properties	Effects on existing residential properties, including proximity to existing homes within the ROW and PSA.	30.0	One residential property was identified in the PSA. No residential properties/buildings were identified in the ROW. **Weighted Score: 29.25**	No residential properties/buildings were identified in the ROW or PSA. **Weighted Score: 30.00**	One residential building was identified within the ROW. No residential properties were identified within the ROW or PSA. **Weighted Score: 18.75**	No residential properties/buildings were identified in the ROW or PSA. **Weighted Score: 30.00**	One residential building and three residential properties were identified within the ROW. 273 residential properties were identified within the PSA. **Weighted Score: 30.00**	One residential building and three residential properties were identified within the ROW. 273 residential properties were identified within the PSA. **Weighted Score: 30.00**	Four residential buildings and three residential properties were identified within the ROW. 273 residential properties were identified within the PSA. **Weighted Score: 16.50**	Four residential buildings and three residential properties were identified within the ROW. 273 residential properties were identified within the PSA. **Weighted Score: 16.50**
Commercial, Industrial, Institutional, Recreational Business and Facilities	Effects on existing commercial, industrial, institutional, and recreational businesses and	7.5	1.92 ha of the ROW is within 300 m of the Niagara Region Model Flying Club.	1.75 ha of the ROW is within 300 m of the Niagara Region Model Flying Club.	Eight commercial properties are located within the ROW. **Weighted Score: 6.50**	Six commercial properties are located within the ROW. **Weighted Score: 7.50**	0.04 ha of Memorial Park is within the ROW. 33 commercial properties are located within the ROW.	0.04 ha of Memorial Park is within the ROW. 33 commercial properties are located within the ROW.	0.04 ha of Memorial Park is within the ROW. 33 commercial properties are located within the ROW.	0.04 ha of Memorial Park is within the ROW. 33 commercial properties are located within the ROW.

			Segment A		Segment B		Segment C			
Criteria	**Measure**	**Criteria Weight (%)**	**Route Alternative A1**	**Route Alternative A2**	**Route Alternative B1**	**Route Alternative B2**	**Route Alternative C1/C2**	**Route Alternative C1/C2/C3**	**Route Alternative C2**	**Route Alternative C2/C3**
	properties traversed by the ROW.		Nine commercial properties are located within the ROW. **Weighted Score: 4.22**	Two commercial properties are located within the ROW. **Weighted Score: 7.50**			**Weighted Score: 7.50**	**Weighted Score: 7.50**	**Weighted Score: 7.50**	**Weighted Score: 7.50**
Source Water Protection and Groundwater Wells	Effects on source water protection policy areas and water wells within the ROW and PSA.	10.0	Crosses 0.37 ha of Source Water Protection designated areas within the ROW, and nine private water wells within the PSA. **Weighted Score: 10.00**	Crosses 1.98 ha of Source Water Protection designated areas within the ROW. Includes one private water well within the ROW and 10 within the PSA. **Weighted Score: 5.41**	Crosses 2.18 ha of Source Water Protection designated areas within the ROW. Includes three private water wells within the ROW and eight within the PSA. **Weighted Score: 5.60**	Crosses 1.05 ha of Source Water Protection designated areas within the ROW, and 21 private water wells within the PSA. **Weighted Score: 9.11**	Crosses 2.0 ha of Source Water Protection designated areas within the ROW, and 11 private water wells within the PSA. **Weighted Score: 9.12**	Crosses 2.0 ha of Source Water Protection designated areas within the ROW, and 11 private water wells within the PSA. **Weighted Score: 9.12**	Crosses 1.55 ha of Source Water Protection designated areas within the ROW, and 10 private water wells within the PSA. **Weighted Score: 10.00**	Crosses 1.55 ha of Source Water Protection designated areas within the ROW, and 10 private water wells within the PSA. **Weighted Score: 10.00**
Cultural Heritage	Effects on properties or landscapes with known or potential built heritage resources or cultural heritage landscapes within the ROW.	5.0	Potential to affect 2 properties with known or potential cultural heritage value or interest within the ROW. **Weighted Score: 5.00**	Potential to affect 3 properties with known or potential cultural heritage value or interest within the ROW. **Weighted Score: 3.75**	Potential to affect 2 properties with known or potential cultural heritage value or interest within the ROW. **Weighted Score: 5.00**	Potential to affect 2 properties with known or potential cultural heritage value or interest within the ROW. **Weighted Score: 5.00**	Potential to affect 3 properties with known or potential cultural heritage value or interest within the ROW. **Weighted Score: 5.00**	Potential to affect 3 properties with known or potential cultural heritage value or interest within the ROW. **Weighted Score: 5.00**	Potential to affect 3 properties with known or potential cultural heritage value or interest within the ROW. **Weighted Score: 5.00**	Potential to affect 3 properties with known or potential cultural heritage value or interest within the ROW. **Weighted Score: 5.00**
Archaeological Resources	Effects on areas of archaeological potential within the ROW.	15.0	Traverses eight features associated with archaeological	Traverses 12 features associated with archaeological	Traverses 15 features associated with archaeological	Traverses 16 features associated with archaeological	Traverses 12 features associated with archaeological	Traverses 12 features associated with archaeological	Traverses 12 features associated with archaeological	Traverses 12 features associated with archaeological

			Segment A		Segment B		Segment C			
Criteria	**Measure**	**Criteria Weight (%)**	**Route Alternative A1**	**Route Alternative A2**	**Route Alternative B1**	**Route Alternative B2**	**Route Alternative C1/C2**	**Route Alternative C1/C2/C3**	**Route Alternative C2**	**Route Alternative C2/C3**
			potential within the ROW. 88% of the ROW will require a Stage 2 Archaeological Assessment. Nine registered archaeological sites are within 300 m of the ROW. **Weighted Score: 14.64**	potential within the ROW. 74% of the ROW will require a Stage 2 Archaeological Assessment. Three registered archaeological sites are found within the ROW. 18 registered archaeological sites are within 300 m of the ROW. **Weighted Score: 9.11**	potential within the ROW. 94% of the ROW will require a Stage 2 Archaeological Assessment. 13 registered archaeological sites are within 300 m of the ROW. **Weighted Score: 13.77**	potential within the ROW. 86% of the ROW will require a Stage 2 Archaeological Assessment. One registered archaeological site is found within the ROW. 13 registered archaeological sites are within 300 m of the ROW. **Weighted Score: 12.94**	potential within the ROW. 85% of the ROW will require a Stage 2 Archaeological Assessment. One registered archaeological site is within 300 m of the ROW. **Weighted Score: 14.34**	potential within the ROW. 84% of the ROW will require a Stage 2 Archaeological Assessment. One registered archaeological site is within 300 m of the ROW. **Weighted Score: 14.29**	potential within the ROW. 77% of the ROW will require a Stage 2 Archaeological Assessment. One registered archaeological site is within 300 m of the ROW. **Weighted Score: 15.00**	potential within the ROW. 77% of the ROW will require a Stage 2 Archaeological Assessment. One registered archaeological site is within 300 m of the ROW. **Weighted Score: 14.89**
Aggregate Resources Extraction Areas	Effects on aggregate resources and extraction operations within the ROW.	7.5	Does not impact any existing, licensed, aggregate extraction sites. **Weighted Score: 7.50**	The ROW overlaps with 3.05 ha of the proposed Walker Industries planned aggregate site. **Weighted Score: 1.85**	Does not impact any existing, licensed, aggregate extraction sites. **Weighted Score: 7.50**	Does not impact any existing, licensed, aggregate extraction sites. **Weighted Score: 7.50**	Does not impact any existing, licensed, aggregate extraction sites. **Weighted Score: 7.50**	Does not impact any existing, licensed, aggregate extraction sites. **Weighted Score: 7.50**	Does not impact any existing, licensed, aggregate extraction sites. **Weighted Score: 7.50**	Does not impact any existing, licensed, aggregate extraction sites. **Weighted Score: 7.50**
Final Weighted Score			**91.50**	**80.26**	**68.07**	**93.33**	**96.62**	**96.82**	**86.21**	**86.09**

Table 5-11: Indigenous Culture, Values and Land Use Category Comparative Evaluation Results

			Segment A		Segment B		Segment C			
Criteria	Measure	Criteria Weight (%)	Route Alternative A1	Route Alternative A2	Route Alternative B1	Route Alternative B2	Route Alternative C1/C2	Route Alternative C1/C2/C3	Route Alternative C2	Route Alternative C2/C3
Areas of Interest	Effects on features of historical/ cultural significance identified by Indigenous communities.	0.0	No features of historical/cultural significance identified to date. **Weighted Score: 0.0**	No features of historical/cultural significance identified to date. **Weighted Score: 0.0**	No features of historical/cultural significance identified to date. **Weighted Score: 0.0**	No features of historical/cultural significance identified to date. **Weighted Score: 0.0**	No features of historical/cultural significance identified to date. **Weighted Score: 0.0**	No features of historical/cultural significance identified to date. **Weighted Score: 0.0**	No features of historical/cultural significance identified to date. **Weighted Score: 0.0**	No features of historical/cultural significance identified to date. **Weighted Score: 0.0**
Areas that Support Hunting/ Trapping/ Harvesting Grounds	Effects on lands with habitat or vegetation types that support or have the potential to support hunting/trapping/harvesting activities and medicinal plants within the ROW.	20.0	Affects 3.02 ha of land identified as having the potential to support hunting, trapping, and harvesting activities. **Weighted Score: 17.77**	Affects 2.68 ha of land identified as having the potential to support hunting, trapping, and harvesting activities. **Weighted Score: 20.00**	Affects 8.85 ha of land identified as having the potential to support hunting, trapping, and harvesting activities. **Weighted Score: 12.81**	Affects 5.67 ha of land identified as having the potential to support hunting, trapping, and harvesting activities. **Weighted Score: 20.00**	Affects 16.43 ha of land identified as having the potential to support hunting, trapping, and harvesting activities. **Weighted Score: 19.87**	Affects 17.46 ha of land identified as having the potential to support hunting, trapping, and harvesting activities. **Weighted Score: 18.70**	Affects 16.33 ha of land identified as having the potential to support hunting, trapping, and harvesting activities. **Weighted Score: 20.00**	Affects 17.36 ha of land identified as having the potential to support hunting, trapping, and harvesting activities. **Weighted Score: 18.81**
Areas that Support Fish-Bearing Waters	Effects on aquatic habitat, including the total number and length of watercourse crossings within ROW, as well as new effects on rivers.	20.0	Traverses 0.08 ha of watercourse in association with 1 watercourse crossing with the potential to affect fish habitat. Does not result in any new watercourse crossings. **Weighted Score: 20.00**	Traverses 0.59 ha of watercourse in association with 7 watercourse crossings with the potential to affect fish habitat. Does not result in any new watercourse crossings. **Weighted Score: 8.52**	Traverses 0.88 ha of watercourse in association with 16 watercourse crossings with the potential to affect fish habitat. Results in one new crossing of the Welland River. **Weighted Score: 11.13**	Traverses 0.48 ha of watercourse in association with 10 watercourse crossings with the potential to affect fish habitat. Does not result in any new watercourse crossings. **Weighted Score: 20.00**	Traverses 0.42 ha of watercourse in association with 4 watercourse crossings with the potential to affect fish habitat. Does not result in any new watercourse crossings. **Weighted Score: 20.00**	Traverses 0.42 ha of watercourse in association with 4 watercourse crossings with the potential to affect fish habitat. Does not result in any new watercourse crossings. **Weighted Score: 20.00**	Traverses 0.42 ha of watercourse in association with 4 watercourse crossings with the potential to affect fish habitat. Does not result in any new watercourse crossings. **Weighted Score: 20.00**	Traverses 0.42 ha of watercourse in association with 4 watercourse crossings with the potential to affect fish habitat. Does not result in any new watercourse crossings. **Weighted Score: 20.00**

			Segment A		Segment B		Segment C			
Effects to Rare/Undisturbed Native Habitats/Ecosystems	Effects on rare habitats in the Niagara Region, including native woodlands, natural wetlands, etc., within the ROW.	20.0	Affects 2.39 ha of undisturbed native habitat, including 0.03 ha of wetland habitat within the ROW. **Weighted Score: 18.65**	Affects 2.36 ha of undisturbed native habitat, including 0.53 ha of wetland habitat within the ROW. **Weighted Score: 6.70**	Affects 7.06 ha of undisturbed native habitat, including 4.80 ha of wetland habitat within the ROW. **Weighted Score: 10.71**	Affects 3.77 ha of undisturbed native habitat, including 2.72 ha of wetland habitat within the ROW. **Weighted Score: 20.00**	Affects 11.63 ha of undisturbed native habitat, including 1.28 ha of wetland habitat within the ROW. **Weighted Score: 19.83**	Affects 11.85 ha of undisturbed native habitat, including 1.27 ha of wetland habitat within the ROW. **Weighted Score: 19.87**	Affects 11.98 ha of undisturbed native habitat, including 1.28 ha of wetland habitat within the ROW. **Weighted Score: 19.64**	Affects 12.20 ha of undisturbed native habitat, including 1.27 ha of wetland habitat within the ROW. **Weighted Score: 19.68**
Effects to Rare/Sensitive Species Regeneration Potential	Long-term effects on species at risk and their regeneration potential within the ROW and PSA. This includes both SAR habitat and Candidate SWH.	20.0	Affects 14.39 ha of SWH and candidate SWH within the ROW. Affects and/or potentially affects 168.03 ha of SWH or candidate SWH within the PSA. Affects 6.67 ha of potential SAR and/or SAR habitat within the ROW, of which 3.47 ha are associated with temporary habitat disturbance impacts and 3.20 ha are associated with permanent habitat removal impacts. Affects and/or potentially affects 83.37 ha of SAR and/or	Affects 14.58 ha of SWH and candidate SWH within the ROW. Affects and/or potentially affects 177.31 ha of SWH or candidate SWH within the PSA. Affects 4.01 ha of potential SAR and/or SAR habitat within the ROW, of which 0.22 ha are associated with temporary habitat disturbance impacts and 3.79 ha are associated with permanent habitat removal impacts. Affects and/or potentially affects 72.91 ha of SAR and/or SAR habitat within the PSA.	Affects 125.92 ha of SWH and candidate SWH within the ROW. Affects and/or potentially affects 668.27 ha of SWH or candidate SWH within the PSA. Affects 47.94 ha of potential SAR and/or SAR habitat within the ROW, of which 0.45 ha are associated with temporary habitat disturbance impacts and 47.48 ha are associated with permanent habitat removal impacts. Affects and/or potentially	Affects 37.04 ha of SWH and candidate SWH within the ROW. Affects and/or potentially affects 565.08 ha of SWH or candidate SWH within the PSA. Affects 3.14 ha of potential SAR and/or SAR habitat within the ROW, of which 2.83 ha are associated with temporary habitat disturbance impacts and 0.31 ha are associated with permanent habitat removal impacts. Affects and/or potentially affects 188.87 ha of SAR and/or	Affects 76.71 ha of SWH and candidate SWH within the ROW. Affects and/or potentially affects 511.72 ha of SWH or candidate SWH within the PSA. Affects 10.73 ha of potential SAR and/or SAR habitat within the ROW, of which 9.27 ha are associated with temporary habitat disturbance impacts and 1.46 ha are associated with permanent habitat removal impacts. Affects and/or potentially affects 106.27 ha of SAR and/or	Affects 82.17 ha of SWH and candidate SWH within the ROW. Affects and/or potentially affects 524.94 ha of SWH or candidate SWH within the PSA. Affects 10.71 ha of potential SAR and/or SAR habitat within the ROW, of which 9.25 ha are associated with temporary habitat disturbance impacts and 1.46 ha are associated with permanent habitat removal impacts. Affects and/or potentially affects 106.62 ha of SAR and/or	Affects 71.29 ha of SWH and candidate SWH within the ROW. Affects and/or potentially affects 500.56 ha of SWH or candidate SWH within the PSA. Affects 8.07 ha of potential SAR and/or SAR habitat within the ROW, of which 6.61 ha are associated with temporary habitat disturbance impacts and 1.46 ha are associated with permanent habitat removal impacts. Affects and/or potentially affects 106.01 ha of SAR and/or	Affects 76.74 ha of SWH and candidate SWH within the ROW. Affects and/or potentially affects 513.78 ha of SWH or candidate SWH within the PSA. Affects 8.06 ha of potential SAR and/or SAR habitat within the ROW, of which 6.60 ha are associated with temporary habitat disturbance impacts and 1.46 ha are associated with permanent habitat removal impacts. Affects and/or potentially affects 106.36 ha of SAR and/or

			Segment A		Segment B		Segment C			
			SAR habitat within the PSA. **Weighted Score: 15.76**	**Weighted Score: 19.82**	affects 250.80 ha of SAR and/or SAR habitat within the PSA. **Weighted Score: 5.62**	SAR habitat within the PSA. **Weighted Score: 20.00**	SAR habitat within the PSA. **Weighted Score: 17.04**	SAR habitat within the PSA. **Weighted Score: 16.62**	SAR habitat within the PSA. **Weighted Score: 19.98**	SAR habitat within the PSA. **Weighted Score: 19.52**
Co-Location and Repurpose of Existing Infrastructure	Length of the proposed transmission line that parallels existing infrastructure or repurposes existing transmission line corridors.	20.0	Co-locates with 2.14 km of existing transmission line infrastructure and/or other linear ROWs. **Weighted Score: 20.00**	Co-locates with 1.92 km of existing transmission line infrastructure and/or other linear ROWs. **Weighted Score: 18.01**	Co-locates with 4.39 km of existing transmission line infrastructure and/or other linear infrastructure ROWs, of which 0.33 km involves repurposing an existing 115 kV transmission line corridor. **Weighted Score: 4.58**	Co-locates with 19.18 km of existing transmission line infrastructure and/or other linear infrastructure ROWs, of which 8 km involves repurposing an existing 115 kV transmission line corridor. **Weighted Score: 20.00**	Co-locates with 12.36 km of existing transmission line infrastructure and/or other linear infrastructure ROWs, of which 5.11 km involves repurposing an existing 115 kV transmission line corridor. **Weighted Score: 19.83**	Co-locates with 12.20 km of existing transmission line infrastructure and/or other linear ROWs, of which 4.79 km involves repurposing an existing 115 kV transmission line corridor. **Weighted Score: 19.57**	Co-locates with 12.47 km of existing transmission line infrastructure and/or other linear infrastructure ROWs, of which 5.11 km involves repurposing an existing 115 kV transmission line corridor. **Weighted Score: 20.00**	Co-locates with 12.13 km of existing transmission line infrastructure and/or other linear infrastructure ROWs of which 4.79 km involves repurposing an existing 115 kV transmission line corridor. **Weighted Score: 19.46**
Final Weighted Score			**92.18**	**73.04**	**44.85**	**100.00**	**96.56**	**94.76**	**99.61**	**97.47**

Table 5-12: Technical and Cost Category Comparative Evaluation Results

			Segment A		Segment B		Segment C			
Criteria	Measure	Criteria Weight (%)	Route Alternative A1	Route Alternative A2	Route Alternative B1	Route Alternative B2	Route Alternative C1/C2	Route Alternative C1/C2/C3	Route Alternative C2	Route Alternative C2/C3
Line Length	Total length of each route alternative.	5.0	Total line length is 3.80 km. **Weighted Score: 5.0**	Total line length is 4.95 km. **Weighted Score: 3.83**	Total line length is 8.86 km. **Weighted Score: 4.53**	Total line length is 8.03 km. **Weighted Score: 5.00**	Total line length is 6.67 km. **Weighted Score: 4.96**	Total line length is 6.81 km. **Weighted Score: 4.86**	Total line length is 6.62 km. **Weighted Score: 5.00**	Total line length is 6.76 km. **Weighted Score: 4.90**
Light and Heavy Angle Structures	Number of light and heavy angle structures, including the possibility to optimize ruling span and the number of suspension structures.	15.0	Requires 6 heavy angle structures with a 50% possibility to optimize the span/number of suspension structures. **Weighted Score: 8.14**	Requires 4 light angle structures and 2 heavy angle structures, with a 50% possibility to optimize the span/number of suspension structures. **Weighted Score: 13.80**	Requires 3 light angle structures and 11 heavy angle structures, with a 75% possibility to optimize the span/number of suspension structures. **Weighted Score: 8.00**	Requires 3 light angle structures and 4 heavy angle structures, with a 25% possibility to optimize the span/number of suspension structures. **Weighted Score: 14.00**	Requires 11 light angle structures and 3 heavy angle structures, with a 25% possibility to optimize the span/number of suspension structures. **Weighted Score: 14.88**	Requires 11 light angle structures and 6 heavy angle structures, with a 25% possibility to optimize the span/number of suspension structures. **Weighted Score: 9.73**	Requires 10 light angle structures and 3 heavy angle structures, with a 25% possibility to optimize the span/number of suspension structures. **Weighted Score: 15.00**	Requires 10 light angle structures and 6 heavy angle structures, with a 25% possibility to optimize the span/number of suspension structures. **Weighted Score: 9.86**
Non-Transmission Line Crossings	Total number of crossings of rivers, railways, highways, pipelines, distribution lines and large watercourses.	5.0	Crosses 2 distribution lines, 1 pipeline, 1 railway and 1 watercourse. **Weighted Score: 4.13**	Crosses 1 distribution line, 1 pipeline, 1 railway and 7 watercourses. **Weighted Score: 4.36**	Crosses 1 major waterbody, 7 distribution lines,1 pipeline, 1 railway and 15 watercourses. **Weighted Score: 4.70**	Crosses 1 major waterbody, 8 distribution lines, 1 pipeline, 1 railway and 9 watercourses. **Weighted Score: 4.78**	Crosses 1 major waterbody, 14 distribution lines, 1 highway, 1 railway and 3 watercourses. **Weighted Score: 5.0**	Crosses 1 major waterbody, 14 distribution lines, 1 highway, 1 railway and 3 watercourses. **Weighted Score: 5.0**	Crosses 1 major waterbody, 14 distribution lines, 1 highway, 1 railway and 3 watercourses. **Weighted Score: 5.0**	Crosses 1 major waterbody, 14 distribution lines, 1 highway, 1 railway and 3 watercourses. **Weighted Score: 5.0**

			Segment A		Segment B		Segment C			
Transmission Line Crossings	Total number of crossings of existing 115 kV, 230 kV and 500 kV transmission lines.	15.0	Crosses 1 existing 115 kV transmission line and 1 existing 230 kV transmission line. **Weighted Score: 15.00**	Crosses 1 existing 115 kV transmission line and 1 existing 230 kV transmission line. **Weighted Score: 15.00**	Crosses 6 existing 115 kV transmission lines. **Weighted Score: 7.00**	Crosses 2 existing 115 kV transmission lines. **Weighted Score: 15.00**	Crosses 2 existing 115 kV transmission lines. **Weighted Score: 15.00**	Crosses 2 existing 115 kV transmission lines. **Weighted Score: 15.00**	Crosses 2 existing 115 kV transmission lines. **Weighted Score: 15.00**	Crosses 2 existing 115 kV transmission lines. **Weighted Score: 15.00**
Co-Location and Repurpose of Existing Infrastructure & Roads	Length of the proposed transmission line that parallels existing infrastructure or repurposes existing transmission line corridors.	15.0	Co-locates with 2.14 km of existing transmission line infrastructure and/or other linear infrastructure ROWs. **Weighted Score: 15.00**	Co-locates with 1.92 km of existing transmission line infrastructure and/or other linear infrastructure ROWs **Weighted Score: 14.25**	Co-locates with 4.06 km of existing transmission line infrastructure and/or other linear infrastructure ROWs, and repurposes 0.33 km of an existing 115 kV transmission line corridor. **Weighted Score: 3.03**	Co-locates with 11.19 km of existing transmission line infrastructure and/or other linear infrastructure ROWs, and repurposes 8.0 km of an existing 115 kV transmission line corridor. **Weighted Score: 15.00**	Co-locates with 7.25 km of existing transmission line infrastructure and/or other linear infrastructure ROWs, and repurposes 5.11 km of an existing 115 kV transmission line corridor. **Weighted Score: 14.95**	Co-locates with 7.29 km of existing transmission line infrastructure and/or other linear infrastructure ROWs, and repurposes 4.79 km of an existing 115 kV transmission line corridor. **Weighted Score: 14.53**	Co-locates with 7.29 km of existing transmission line infrastructure and/or other linear infrastructure ROWs, and repurposes 5.11 km of an existing 115 kV transmission line corridor. **Weighted Score: 15.00**	Co-locates with 7.22 km of existing transmission line infrastructure and/or other linear infrastructure ROWs, and repurposes 4.79 km of an existing 115 kV transmission line corridor. **Weighted Score: 14.46**
Non Transmission Infrastructure Parallel	Length of pipeline and railroad parallelism within 500 m of centreline.	5.0	Parallels 1,281.19 m of pipelines, and 2,263.62 m of railroads. **Weighted Score: 4.52**	Parallels 1,036.02 m of pipelines, and 2,636.87 m of railroads. **Weighted Score: 4.65**	Parallels 1,642.93 m of pipelines, and 2,229.46 m of railroads. **Weighted Score: 4.19**	Parallels 1,271.55 m of pipelines, and 2,008.19 m of railroads. **Weighted Score: 5.00**	Parallels 3,709.77 m of railroads. **Weighted Score: 4.95**	Parallels 3,917.07 m of railroads. **Weighted Score: 4.82**	Parallels 3,639.27 m of railroads. **Weighted Score: 5.00**	Parallels 3,846.57 m of railroads. **Weighted Score: 4.87**
Other Facilities/Infrastructure Considered	Proximity to existing battery storage facilities, airstrips, wind	5.0	One gas well was identified within 50 m of	Total of 3 large agricultural buildings are located within 250	Total of 11 large agricultural buildings are located within	Total of 19 large agricultural buildings are located within 250 m of the	One gas well was identified within 50 m of centreline, while a total of 248	One gas well was identified within 50 m of centreline, while a total of 246	One gas well was identified within 50 m of centreline, while a total of 248	One gas well was identified within 50 m of centreline, while a total of 246

			Segment A		Segment B		Segment C			
	turbines, gas and brine wells, pipeline stations, and commercial/industrial facilities. This includes the number of large agricultural buildings within the ROW.		centreline. **Weighted Score: 3.13**	m of the ROW. **Weighted Score: 4.06**	250 m of the ROW. **Weighted Score: 5.00**	ROW. **Weighted Score: 4.47**	large agricultural buildings are located within 250 m of ROW. **Weighted Score: 4.99**	large agricultural buildings are located within 250 m of ROW. **Weighted Score: 5.00**	large agricultural buildings are located within 250 m of ROW. **Weighted Score: 4.99**	large agricultural buildings are located within 250 m of ROW. **Weighted Score: 5.00**
Real Estate Considerations	Real Estate and land acquisition considerations and associated project costs.	25.0	Includes a total of 14 impacted properties, and a total of 8.6 ha of net new encumbered land. **Weighted Score: 25.00**	Includes a total of 21 impacted properties, of which 1 residence (or 2.7 ha of the property) is located within 100 m of centreline. Includes a total of 8.7 ha of net new encumbered land. **Weighted Score: 20.93**	Includes a total of 19 impacted properties and 1 technical buyout (or 0.4 ha of buyout land). Includes 1 residence (or 0.4 ha of property) within 100 m of centreline, as well as 38.10 ha of encumbered land, of which 34.4 ha is net new encumbered land. **Weighted Score: 16.68**	Includes a total of 28 impacted properties, of which 13 residence (or 44.60 ha of the property) is located within 100 m of centreline. Includes a total of 19.9 ha of encumbered land, of which 1.0 ha is net new encumbered land. **Weighted Score: 19.80**	Includes a total of 31 impacted properties and 1 technical buyout (or 0.27 ha of buyout land). Includes 1 residence (or 3.20 ha of property) within 100 m of centreline, as well as 13.0 ha of encumbered land, of which 7.4 ha is net new encumbered land. **Weighted Score: 20.75**	Includes a total of 29 impacted properties and 2 technical buyouts (or 1.12 ha of buyout land). Includes 12.8 ha of encumbered land, of which 7.5 ha is net new encumbered land. **Weighted Score: 20.84**	Includes a total of 34 impacted properties and 3 technical buyout (or 3.47 ha of buyout land). Includes 3 residence (or 3.50 ha of property) within 100 m of centreline, as well as 11.1 ha of encumbered land, of which 5.2 ha is net new encumbered land. **Weighted Score: 17.11**	Includes a total of 32 impacted properties and 4 technical buyout (or 4.32 ha of buyout land). Includes 2 residence (or 0.3 ha of property) within 100 m of centreline, as well as 11.1 ha of encumbered land, of which 5.2 ha is net new encumbered land. **Weighted Score: 17.95**
Overall Constructability	Anticipated transmission circuit outages during	10.0	Located mainly in parallel with the road and/or existing	This route mainly transects farmland with no existing access	This route mainly transects farmland and	This route would replace the existing D3A/A3C line	Access is located within the existing	New access is required for the greenfield work on segment C3	Access is located within the existing	New access is required for the greenfield work

			Segment A		Segment B		Segment C			
	construction, which increase complexity of construction planning. This also includes new access roads needed [1-5 qualitative scoring system used, with1 being the best].		transmission line corridor. Construction access would be easier and less expensive compared to route A2. **Weighted Score: 10.00**	available. Therefore, the cost of construction access and the effect on landowner would be higher compared to route A1. **Weighted Score: 8.40**	there is no existing access available. Therefore, the cost of building construction access, and the effect on landowners, would be high No outage required for ASW Steel supply. A temporary bypass line is not required Removing the existing line is not required **Weighted Score: 8.80**	and would also run parallel to the exiting A6C/A7C transmission line. As a result, construction access will be easier and less expensive compared to route B1. Outage required for connecting a temporary bypass line to ASW Steel supply A new temporary bypass line of approximately 8km is required to feed ASW Steel supply. This would add cost and complication to the project. This route requires demolishing the existing D3A/A3C line. **Weighted Score: 3.60**	HONI ROW. A short outage may be required for crossing circuits A6C/A7C on segment C1 A temporary bypass line is not required Removing the existing line is not required **Weighted Score: 10.00**	A short outage may be required for crossing circuits A6C/A7C on segment C1 A temporary bypass line is not required Removing the existing line is not required **Weighted Score: 9.00**	HONI ROW. No outages required. A temporary bypass line is not required Removing the existing line is not required **Weighted Score: 10.00**	on segment C3 No outages required. A temporary bypass line is not required Removing the existing line is not required **Weighted Score: 9.00**
Final Weighted Score			**89.91**	**89.28**	**61.93**	**86.66**	**95.48**	**88.79**	**92.10**	**86.02**

Table 5-13: Final Overall Weighted Scores

	Segment A		Segment B		Segment C			
Criteria	**Route Alternative A1**	**Route Alternative A2**	**Route Alternative B1**	**Route Alternative B2**	**Route Alternative C1/C2**	**Route Alternative C1/C2/C3**	**Route Alternative C2**	**Route Alternative C2/C3**
Natural Environment Category Total Weighted Score	92.68 Most Preferred	66.85 Least Preferred	45.38 Least Preferred	96.27 Most Preferred	97.25 Less Preferred	96.58 Least Preferred	98.72 Most Preferred	97.94 Preferred
Socio-Economic Category Total Weighted Score	91.50 Most Preferred	80.26 Least Preferred	68.07 Least Preferred	93.33 Most Preferred	96.62 Most Preferred	96.82 Preferred	86.21 Less Preferred	86.09 Least Preferred
Technical and Cost Category Total Weighted score	89.91 Most Preferred	89.28 Least Preferred	61.93 Least Preferred	86.66 Most Preferred	95.48 Most Preferred	88.79 Less Preferred	92.10 Preferred	86.02 Least Preferred
Indigenous Culture, Values and Land Use Category Total Weighted Score	92.18 Most Preferred	73.04 Least Preferred	44.85 Least Preferred	100.00 Most Preferred	96.56 Less Preferred	94.76 Least Preferred	99.61 Most Preferred	97.47 Preferred
Final Overall Weighted Score	366.27 Most Preferred	309.43 Least Preferred	220.23 Least Preferred	376.26 Most Preferred	385.91 Most Preferred	376.95 Preferred	376.64 Less Preferred	367.52 Least Preferred

5.5. Summary of Comparative Evaluation

5.5.1. Natural Environment Category Summary

Route Alternatives A1, B2 and C2 make up the technically preferred from a Natural Environment perspective. Combined, these Routes have the least potential effect on each of the criterion within the Natural Environment category. Within Route segment C, Route Alternatives C1/C2, C1/C2/C3 and C2/C3 all ranked similarly to C2 in terms of total weighted score.

5.5.2. Socio-Economic Environment Category Summary

Route Alternative A1, B2, and C1/C2 make up the technically preferred in the Socio-Economic category overall. Combined, these routes consistently score at or near the top, giving them the most balanced, low-impact profile. They maximize the amount of co-location and repurposing of existing infrastructure, avoid future growth areas, minimize impacts on productive farmland and residential buy-outs, while conforming with source-water protection and cultural/archaeological safeguards. The technically preferred also avoids impacts to the proposed Walker Industries aggregate extraction site.

5.5.3. Indigenous Culture, Values and Land Use Category Summary

Route Alternative A1, B2 and C2 make up the technically preferred from the Indigenous Culture, Values and Land Use perspective. Overall, these Routes minimize impacts to native habitats and natural or naturalized areas which support fish bearing waters as well as rare, undisturbed native habitats and ecosystems. Although A2 scored better than A1 for potential effects on areas that support hunting, trapping and harvesting grounds as well as potential effects to rare, sensitive species regeneration potential, when aggregately combined across the category, A1 still had more advantages than disadvantages when compared to A2.

Finally, the technically Preferred Route Alternative maximizes the amount of co-location and repurposing of existing infrastructure.

5.5.4. Technical and Cost Category Summary

Overall, for Technical and Cost, Route Alternative A1, B2, and C1/C2 is technically preferred as they offer the most advantageous when balancing constructability and overall cost. Collectively, they have the fewest angled structures (light and heavy), they minimize the amount of existing transmission line crossings, the length of pipeline and railroad parallelism, and reuses an existing area of crossing of the Welland River. These routes also maximize the amount of co-location with existing linear infrastructure and repurposing of an existing transmission corridor which improves land-acquisition efficiency while minimizing the need for net new ROW, and impacts on residences.

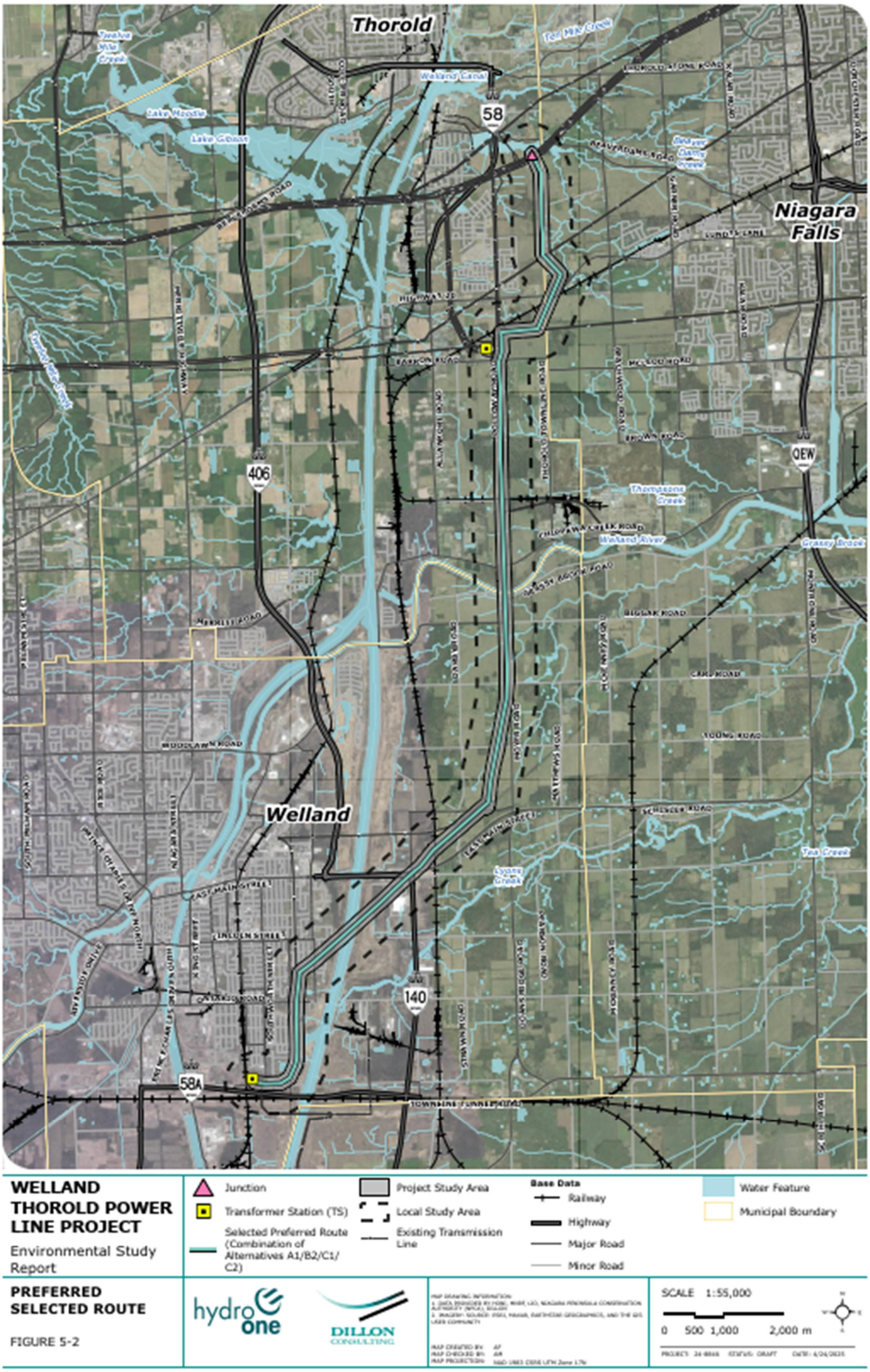
5.5.5. Technically Preferred Route Alternative

Overall, Route Alternative A1, B2 and C1/C2 (**Figure 5-2**) emerged as the technically Preferred Route Alternative. This Route combination minimizes environmental impacts, avoids sensitive natural and cultural features, and reduces disruption to productive farmland, future growth areas, and residential communities.

The alternatives also reflect a focus on avoiding culturally sensitive areas and minimizing potential impacts on traditional land use and values. Leveraging existing infrastructure corridors, the Preferred Route Alternative reduces the need for new ROWs, thereby further limiting effects on the natural environment and cultural landscapes.

Technically, A1, B2, and C1/C2 represent the most constructible and cost-effective solution, avoiding a new major watercourse crossing of the Welland River, minimizing the number of angled structures, and reducing engineering complexity. Collectively, the Preferred Route Alternative offers a balanced solution that is environmentally responsible, culturally respectful, socio-economically considerate, and technically practical.

Figure 5-2: Technically Preferred Route Alternative



6.0 Project Description

The proposed Project is similar to many other projects completed by Hydro One. Based on the need identified by the IESO on the electrical load forecast for the Niagara Region and surrounding area, the IESO requested Hydro One to construct a new double-circuit 230 kV transmission line extending from an existing Hydro One corridor in Thorold and connecting into the Crowland Transformer Station (TS) in Welland. The purpose of the new double-circuit 230 kV transmission line is to:

- Ensure sufficient bulk transfer capabilities to supply the forecast load in the Niagara region and surrounding area in the near- to mid-term; and,
- Address asset replacement needs for the Crowland TS.

As the Preferred Route Alternative will repurpose approximately 13 km of an existing 115 kV transmission line corridor, the Project will involve dismantling and removal of the existing transmission structures, conductor and associated components and equipment along this stretch of the existing transmission line to be replaced with the new 230 kV double-circuit transmission structures, conductors and associated components.

The Project will also involve the expansion of the Crowland TS to facilitate connection of the new transmission circuits into the station. The expansion will occur at the eastern end of the TS. Works will involve extending half the station fence 20.0 m east to accommodate new line exit structures, and the construction of a new 230 kV Dual Element Spot Network (DESN) south of the existing yard.

6.1. Design Phase

Following completion of the Class EA process, detailed engineering and design for the proposed Project will be undertaken. The final design plans will be based on necessary surveys and consultation with stakeholders. During the design phase, additional studies and surveys (e.g., Stage 2 Archaeological Assessment, geotechnical investigations) will be conducted as required. Concurrent with finalization of the design, required permits, licences and approvals, as listed in **Section 1.4.2**, will be obtained.

Hydro One recognizes a changing climate is likely to result in an increase of unusual weather patterns and severe weather events, which could potentially damage or adversely affect infrastructure and other public facilities. Hydro One is confident the facilities being planned for this Project will be engineered to adequately withstand effects of climate change throughout the duration of their planned lifespan.

6.2. Construction Phase

Construction activities will be guided by Hydro One standards and guidelines as well as Project-specific documents; these are to be adhered to by all construction personnel including contractors and sub-contractors. In addition, a project-specific Environmental Management Plan will be prepared, outlining specific requirements to be followed for the proposed Project.

Prior to construction, a detailed construction plan will be developed. Construction activities will be restricted to designated work areas to protect features from construction related effects.

Throughout the construction period, an Environmental Specialist will be available to address unforeseen environmental effects and mitigation requirements. The Environmental Specialist will monitor activities to ensure conformance with the requirements set out in the Environmental Management Plan.

Should any archaeological finds be uncovered during construction, work in the vicinity will stop immediately pending assessment by the Project archaeologist and further consultation with the MCM – Heritage Program Unit, as well as the appropriate Indigenous communities.

Documents covering ongoing commitments, including monitoring and notification requirements will be prepared, and operation and maintenance staff will be briefed, as necessary.

Construction of the new double-circuit 230 kV transmission line will involve the following activities:

- Site preparation including clearing, demolition and removal of existing structures (including dismantling and removal of the existing transmission line structures, conductors and associated equipment) as required, and grading;
- Installation of foundations at the new structure locations;
- Assembly and construction of the transmission structures;
- Stringing new transmission conductors (wires) on the structures and installation of associated equipment; and,
- Clean up and site restoration.

Expansion of the Crowland TS will involve the following activities:

- Site preparation including clearing and grading;
- Expansion of the station grounding grid;
- Expansion of any sub-grade station drainage systems;
- Installation of a new portion of station fence;
- Installation of foundations at the new structure locations;
- Connection of new bus work, switchgear and associated equipment; and,
- Clean up and site restoration.

Temporary facilities will be required prior to, and during, the construction period. Temporary facilities for the purpose of the proposed Project may include equipment staging areas and temporary stockpile areas, temporary rider poles or similar protective measures required during conductor stringing, and temporary structures near the transmission stations for the staging of outages, and temporary bypass transmission lines within and near route ROWs. Access for temporary routing variations off-corridor may require the contractor to obtain site access permission. Temporary facilities will be required prior to, and during, the construction period. The location of the temporary facilities will be determined by the Project team and their contractor(s) during detailed design/construction planning.

6.3. Maintenance, Operation and Retirement Phases

The proposed Project is planned to be in service by 2029 or earlier. The new double-circuit 230 kV transmission line and the new expanded portions of the Crowland TS will undergo regular maintenance in adherence with Hydro One's maintenance standards and regulatory requirements to maintain a safe and reliable electricity transmission system.

When transmission facilities become obsolete or unserviceable and/or deemed to be at end-of-life, the equipment is retired from service. Transmission facilities retired from service are often left in place (idle) for potential future use. The facilities may eventually be removed, and the site made suitable for other purposes. The foundations are typically cut back 1.0 m below ground surface when transmission structures are removed.

If a station site is suspected to be environmentally contaminated, the decommissioning of facilities will follow the guidance provided by O. Reg. 153/04 of the *Environmental Protection Act*.

6.4. Project Schedule

The anticipated schedule for the proposed Project activities is provided below in **Table 6-1**. This schedule shows key steps remaining in the Class EA process and subsequent anticipated timing of the start of construction.

Table 6-1: Project Schedule

Activity	Period
Draft ESR comment period	July 15-August 19, 2025
Comment integration and response	August-September, 2025
Filing of final ESR and Class EA Statement of Completion with the MECP	Fall 2025
Submission of Section 92 application to the Ontario Energy Board	Fall 2025
Ontario Energy Board Section 92 Approval	2026 or earlier
Construction Start	Winter 2027 or earlier
Planned in-service date	Summer 2029 or earlier

7.0 Potential Environmental Effects and Mitigation Measures

This section describes the potential environmental effects and mitigation measures associated with both the short-term (construction) and long-term (operation/maintenance) activities of the proposed Project. The assessment of potential environmental effects for the proposed Project considered the baseline information on the environmental features collected for the PSA, as presented in **Section 4.0**.

The potential environmental effects resulting from the construction and operation/maintenance of the proposed Project are similar to other projects undertaken by Hydro One and are well understood by the Project team. Hydro One has a strong track record of environmental compliance and stewardship and is committed to the completion of comprehensive environmental and social analysis and mitigation of potential effects.

The selection of mitigation measures is based on the following six guiding principles:

- Avoidance of sensitive areas, where practical;
- Avoidance of watercourse crossings, where feasible, by use of an existing nearby crossing, access to structures from either side of the watercourse, or use of off-corridor access;
- Appropriate timing of construction activities, where feasible, to avoid sensitive time periods, such as fish spawning and egg incubation periods, or migratory bird and bat nesting periods;
- Proactive communication with Indigenous communities, government agencies, stakeholders and interest groups regarding the proposed Project;
- Proactive communication with landowners, businesses and interested community members on the proposed Project timelines and construction areas; and,
- Implementation of conventional, proven mitigation measures during construction consistent with the criteria set out in Appendix E of the Class EA for Transmission Facilities (Hydro One, 2024), and in accordance with applicable legislative requirements.

Based on the Project design and implementation of the proposed mitigation measures, no “significant” adverse net effects (e.g., effects following the implementation of mitigation) are anticipated. The following subsections detail the effects assessment and identify avoidance, mitigation and/or compensation commitments required for the proposed project.

7.1. Agricultural Resources

Agriculture is a predominant land use within the Niagara Region and is an important component of the regional economy. The majority of agricultural land use in the Niagara Region is designated for production of cash crops (including high concentrations of fruit and grape systems) and agricultural greenhouses (Agriculture and Agri-Food Canada, 2024). The PSA is a combined mixture of mostly organic soils and specialized crops (Class 0 and 3). The Preferred Route Alternative will cross several agricultural property parcels and will have temporary and long-term effects on agricultural operations in the area. Potential effects from the Project include:

- Permanent loss of agricultural land for production of crops within the new towers’ physical footprint;
- Temporary loss of agricultural land for production of crops associated with construction activities in and within close proximity to the ROW;
- Temporary soil compaction from construction vehicles;
- Potential for construction activities to mix soil horizons, lowering the quality of soil or mixing of soil across agricultural properties;
- Potential disturbance to farm operations including planting and harvesting schedules, spraying and tilling activities;
- Potential loss / partial removal of agricultural hedgerows;
- Application of herbicides within the ROW with potential to spread into adjacent farm operations;
- Potential damage to field tile drains; and,
- Potential effects to adjacent livestock including stress, injury or loss from construction activities including potential use of implosive conductor splicing methods;

While some of the effects to agricultural operations will be long-term and result in net effects, many are temporary in nature and can be mitigated with diligent construction

planning and implementation of mitigation measures during construction. No significant net effects to agricultural resources are anticipated. The following subsections outline the effects assessment for each potential agricultural effect and outline anticipated avoidance, mitigation and/or compensation strategies to be employed by Hydro One.

7.1.1. Loss of Agricultural Lands and Crops

The Project will result in temporary removal of planted/established crops and/or lands available for crop production to facilitate construction activities within the transmission line ROW. Also, some agricultural lands will be permanently lost as a result of Project infrastructure (e.g., tower footing locations). For the majority of the transmission line route, tower footings represent the only long-term loss of agricultural lands as the majority of the ROW can still be utilized for crops or pasture. However, Hydro One does recognize that individual circumstances, such as some transmission line crossing locations, may become more encumbered due to the need to maintain appropriate technical clearances from both the ground surface and other conductors, leading to additional crossing structures and lower vertical clearances. In such circumstances, there is potential for a slightly larger area (beyond the individual tower footings) of agricultural lands capable of being rendered out of production.

Lands out of production and crops lost as a result of the Project's construction activities will be compensated in accordance with Hydro One's crop loss/crop lands out of production policies or otherwise agreed upon between the landowner and the EPC contractor during procurement of temporary land rights to support construction.

Additionally, the following mitigation measures are proposed for effects to agricultural lands and crops:

- Contact will be maintained with landowners and stakeholders regarding work schedules and other items of interest (e.g., access roads, minimizing disturbances to existing and planned farm operations, etc.);
- Access roads, staging areas, tower construction and stringing activities will be constructed to a minimum length and width required to accommodate the safe movement of construction equipment;

- Work will be limited to the planned access roads, staging and work areas. If a later expansion to these areas is required, it will be discussed with the landowner in advance;
- Project components (i.e., tower locations) will be situated away from mapped/identified tile drain features; tile drains will be avoided for temporary construction access, to the extent practical;
- Existing farm lanes and other existing access roads will be used whenever practical. In the event farm lanes are absent, access will be focused within the ROW or along field edges, to the extent practical; and
- Restoration measures, as informed by discussions with landowners (e.g., alleviate soil compaction, remove excess aggregate, etc.) on areas affected by construction, may be undertaken following the completion of construction and removal of temporary construction access, as necessary.

7.1.2. Soil Compaction

Project activities have potential to cause soil compaction due to the use of heavy equipment. Compaction of soil may occur during both the construction and operation/maintenance phases of the Project. Soil compaction resulting from these activities is largely unavoidable and is anticipated to be temporary in nature. Measures to mitigate soil compaction include:

- Equipment with low bearing capacity will be used, where practical;
- Access roads, staging areas and tower and stringing activities will be constructed to a minimum length and width required to accommodate the safe movement of construction equipment;
- Work will be limited to the planned access roads, staging and work areas. If a later expansion to these areas is required, it will be discussed with the landowner in advance;
- Temporary access roads and work pads will be built in agricultural fields using mats, or geotextile and crushed rock, or equivalent means, which can be easily removed when construction is complete to allow for re-cultivation of the area; and,
- Restoration measures, as informed by discussions with landowners, to cultivate or otherwise alleviate soil compaction on areas affected by construction, may be undertaken following the completion of construction and removal of temporary construction access, as necessary.

7.1.3. Soil Mixing

Mixing of soil including soil horizons and movement of soil between property parcels is a potential effect of the Project. Excavations may be required for construction activities. Excavation has the potential to result in mixing of soil horizons, reducing the quality of surface topsoil for agricultural purposes. This effect is anticipated to be minimal and limited to areas of deep ground disturbance (e.g., some tower footing locations), but may be permanent. Additionally, movement of construction equipment through the ROW may cause migration of soils from one agricultural field to another. Mitigation measures to minimize topsoil and subsoil mixing will include:

- Where geotechnical conditions and engineering requirements allow, foundation types (such as helical piles) that minimize surface disturbance and do not require soil excavation or soil stripping of the foundation site may be used;
- Stripping or excavation of soils will be minimized to the extent practical;
- Where soil stripping is required, topsoil and subsoils will be removed and stockpiled separately;
- Depths of soil being removed will be carefully monitored and minimized during stripping activities;
- Volume of topsoil and subsoil salvaged for replacement or re-use on site will be maximized, where practical;
- Vegetation, stone piles, fencing and deleterious materials will be removed prior to stripping;
- For backfilling operations, topsoil and subsoil will be replaced in reverse order of excavation to minimize the potential for additional mixing and maximizing future growing potential;
- Soil cover on exposed areas within agricultural areas will be discussed with the landowner for the most appropriate solution;
- Equipment and vehicle inspections and cleaning will be conducted as required during construction, to minimize the potential for inadvertent transport of trace soils between contaminated and non-contaminated agricultural fields;
- Cleaning will occur in a manner that minimizes runoff and allows waste materials to be collected.

7.1.4. Disturbance to Farm Operations

Project activities will require construction and maintenance of the transmission line ROW. Effects to agricultural operations from construction and maintenance activities may include impediments to farm vehicle maneuverability or disruption to farm operations including planting and harvesting or tilling and spraying. Generally, disruption effects are anticipated to be temporary in nature and can be mitigated by:

- Where practical, the location of towers will be placed to minimize impacts to maneuverability of agricultural equipment (e.g., along lot lines or field boundaries);
- Contact will be maintained with affected landowners regarding work schedules and other items of interest (e.g., access roads, minimizing disturbances to farm operations, etc.);
- Access roads, staging areas, tower construction and stringing activities will be constructed to a minimum length and width required to accommodate the safe movement of construction equipment;
- Work will be limited to the planned access roads, staging and work areas. If a later expansion to these areas is required, it will be discussed with the landowner in advance; and,
- Constructed access roads will be smooth and tapered to allow for vehicular, pedestrian and equipment crossings, where applicable.

7.1.5. Vegetation Removal

Construction and maintenance of the transmission line ROW will require removal of 1.34 ha of incompatible vegetation, including trees typically found in hedgerows or windbreaks. Incompatible vegetation communities (identified through ELC mapping) associated with the PSA of the Preferred Route Alternative include the following:

- Fencerow (TAGM5) – 0.51 ha;
- Deciduous Woodland (WOD) – 0.28 ha;
- Deciduous Woodland/Thicket Complex (WOD/THD) – 0.55 ha; and,
- Deciduous Swamp (SWD) – 0.01 ha.

Construction and maintenance activities may require mechanical removal of vegetation (tree felling) and/or application of herbicides to species incompatible with overhead transmission lines. Effects from vegetation removal include potential for herbicide

overspray and/or fragmentation of existing hedgerows and windbreak systems. Where incompatible vegetation must be removed, these areas will be restored with compatible vegetation in discussion with landowners. Vegetation that will not affect construction or line clearances will be retained, where possible.

Construction and maintenance activities have potential to utilize herbicides to control noxious weeds and/or incompatible vegetation. There is also potential for inadvertent movement of trace soils between agricultural fields. Chemical control methods have potential to overspray to adjacent crops and movement of soils has potential to transport undesirable soil types and compounds. It is recognized that some agricultural operations in the PSA may be certified organic or produce Identity Preserved (IP) crops. Other agricultural operations may transition to organic/IP crop types. To minimize potential disruption or contamination to organic or IP agricultural operations the following mitigation measures will be implemented:

- Contact will be made with landowners to determine if organic or IP operations are present which may require additional considerations during construction planning;
- Equipment and vehicle inspections and cleaning will be established during construction, to minimize the potential for inadvertent transport of trace soils;
- Cleaning will occur in a manner that minimizes runoff, and allows for waste materials to be collected;
- Field crews will be informed if working in organic or IP croplands; and,
- Mitigation strategies will be discussed with landowners prior to construction and field crews will be informed of the required mitigation and monitored for proper implementation of these strategies.

7.1.6. Damage to Field Tile Drains

The use of heavy equipment for construction and maintenance activities has potential to cause damage to agricultural tile drains. If damage to tile drains occurs as a result of construction or maintenance activities, the tile will be repaired by a licensed tile drainage contractor in consultation with the affected landowner. To minimize potential for tile, drain damage, the following mitigation measures will be implemented for the Project:

- Landowners will be consulted to determine existing field tile locations in support of avoidance/protection measures;
- Tile drains will be avoided and/or protected (e.g., tower locations, temporary construction access), to the extent practical;
- Access roads, staging areas, tower construction and stringing activities will be constructed to a minimum length and width required to accommodate the safe movement of construction equipment;
- Work will be limited to the planned access roads, staging and work areas. If a later expansion to these areas is required, it will be discussed with the landowner in advance;
- Where temporary access roads and work pads are built in tiled agricultural areas, mats, or geotextile and crushed rock, or equivalent means, will be utilized to protect tile drains; and,
- Equipment with low bearing capacity will be used to minimize potential damage to tile drains, where practical.

7.1.7. Livestock Stress, Loss or Injury

Construction and maintenance activities are inherently loud and may occur in proximity to livestock managed areas (grazing fields, pastures, etc.) resulting in potential for livestock stress, injury or loss. Some construction activities, such as the potential use of implosive conductor splicing, may scare or startle agricultural livestock. These effects are anticipated to be temporary in nature and of a relatively short duration. To minimize impacts to livestock the following mitigation measures will be implemented:

- Landowners will be informed in advance of upcoming work activities which may disturb or pose a risk to livestock, and consulted with respect to potential mitigation measures, such as moving or containing livestock, as necessary;
- Vehicle and equipment travel on agricultural lands will follow the ROW, or existing roads, trails and paths to the extent practical;
- Field crews will be informed about livestock in the vicinity of work areas to confirm they are aware of the need to secure gates, are cognizant of noise sensitivity controls, and to clean–up of construction materials and debris at the end of each day to minimize potential livestock ingestion;
- If excavations cannot be closed immediately, exclusion fencing will be erected to protect livestock from entering;

- Vehicles/equipment will be inspected and cleaned as necessary to prevent the potential introduction or spreading of diseases;
- Existing gates and fences will be used as required. Fences and gates will be left in "as-found" condition following construction;
- Livestock access control gates and fencing will be installed during construction at roads and between fenced fields as necessary to prevent escape of livestock or movement of livestock into work areas;
- Equipment and machinery used on site will be maintained in good working condition with functioning mufflers;
- Prior to any use of implosive splicing, a Blasting Communication and Management Plan will be developed outlining proper storage, security, detonation, and notification requirements;
- Notify nearby area residents, municipal authorities, police department, and other construction crews about the use of implosive splicing, at least one week prior to the work commencing;
- Signs shall be posted on all roadways leading to a blasting area in accordance with government rules and regulations; and,
- Maintain safe distances of the blasting site from other employees, vehicles, equipment, structures, and fire hazard sources. Perform blasts during pre-determined times.

7.1.8. Potential GPS Signal Interference

Hydro One acknowledges there may be concerns regarding potential interference of the transmission line with automated or GPS-guided agricultural equipment (e.g. auto-steer), and that localized issues have been observed beneath transmission lines. While we do not anticipate effects to communication systems in farm equipment, Hydro One will work with potentially concerned farmers to collect information on the systems of concern and contact manufacturers of these systems to gain further insight into potential concerns and possible solutions if applicable. While obstructions such as buildings or trees are known to block reception of GPS signals, published studies assessing these concerns indicate that overhead power line conductors are too thin to cause appreciable screening.

7.2. Forestry Resources

As indicated in **Section 4.2**, there is no potential for the proposed Project to affect forestry resources; therefore, no potential effects have been identified for the proposed Project.

7.3. Archaeological Resources

As noted in **Section 4.3.1**, a Stage 1 Archaeological Assessment was completed by TMHC (2025) which determined that the Preferred Route Alternative contains lands with potential to support archaeological resources. A Stage 2 Archaeological Assessment is required for the technically Preferred Route Alternative, for all lands exhibiting archaeological potential that have not been previously assessed.

Hydro One commits to completing a Stage 2 Archaeological Assessment for these identified areas of archaeological potential along the Preferred Route Alternative as early as possible during detailed design and prior to ground disturbing activities associated with construction work occurring on these areas, or with acceptable avoidance and mitigation measures applied. Archaeological reports will be submitted to MCM where they will be reviewed to ensure conformance with the requirements of the *Ontario Heritage Act*. If the Stage 2 Archaeological Assessment identifies the need for further assessment, a Stage 3 Archaeological Assessment will occur as required and as outlined in the “Standards and Guidelines for Consultant Archaeologists” (MCM, 2011). Copies of all Archaeological reports will be filed for acceptance with MCM prior to construction. Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48(1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out an archaeological assessment, in compliance with Section 48(1) of the *Ontario Heritage Act*.

The Funeral, Burial and Cremation Services Act, 2002, S.O. 2002, c.33 requires that any person discovering human remains must cease all activities immediately and notify the police or coroner. If the coroner does not suspect foul play in the disposition of the remains, in accordance with Ontario Regulation 30/11 the coroner shall notify the

Registrar, Ontario Ministry of Public and Business Service Delivery, which administers provisions of that Act related to burial sites. In situations where human remains are associated with archaeological resources, the MCM should also be notified (at archaeology@ontario.ca) to ensure that the archaeological site is not subject to unlicensed alterations which would be a contravention of the *Ontario Heritage Act.*

7.4. Built Heritage Resources and Cultural Heritage Landscapes

Based on the findings of the CHREC Report, there is the potential for Project-related works to adversely affect 14 known or potential heritage resources along the Preferred Route Alternative, including 12 properties with potential Cultural Heritage Value or Interest (CHVI) and one crossing of the Welland Canal, a Cultural Heritage River. Of the 12 properties of known and/or potential CHVI within the PSA of the Preferred Route Alternative, eight are located within the transmission line ROW in association with a Built Heritage Resource and a Cultural Heritage Landscape, respectively.-The Project will cross the Welland Canal, a Canadian Heritage River. The proposed crossing of the Welland Canal occurs at the site of an existing transmission line crossing. The crossing will consist of overhead transmission lines and will not result in an alteration of the course or flow of the river itself. Works themselves will be coordinated with the St. Lawrence Seaway Authority and users of the canal. Accordingly, no direct or indirect impacts are anticipated to the Welland Canal.

To minimize potential adverse effects to built heritage resources and cultural heritage landscapes, work will be planned in a manner that avoids adverse effects to the identified potential built heritage resources and cultural heritage landscapes to the extent practical. Vibration from general construction activities is discussed further in **Section 7.5.6** of this ESR. Construction access and laydown areas will be temporary and restored to pre-existing conditions following the completion of construction.

Where an identified built heritage resource cannot be feasibly avoided and will be directly impacted through destruction, alteration, or disruption, Hydro One will undertake property specific Cultural Heritage Evaluation Reports (CHERs) and/or Heritage Impact Assessments (HIAs). CHERs and HIAs will be conducted as early as possible during the detailed design phase, subject to receiving permission to access the properties for

these surveys. The additional studies will confirm the CHVI and heritage attributes of the built heritage resource and identify all adverse effects. All evaluation and assessment will be in compliance with the Hydro One Cultural Heritage Identification and Evaluation Process (2020) and MCM Standards and Guidelines (2011).

7.5. Land Use and Communities

7.5.1. Business Operations

Project activities are required in areas of existing industrial operations such as those located in the southern portion of the City of Thorold, adjacent to Moyer Road and through the Gateway Economic Centre, located in the southern portion of the PSA through the City of Welland. There is potential for disruption to the function and to the access of nearby industrial and commercial operations during the construction phase of the Project; however, potential disruptions are expected to be minimal and temporary in nature.

To minimize disruptions and/or impacts, contact will be maintained with commercial and industrial property owners with the potential to be impacted during construction. Business access will be maintained at all times during construction, where feasible. In instances where access cannot be maintained, arrangements will be made for alternate access prior to construction activities starting and appropriate road signage will be provided.

Brief planned outages to transmission circuits may be required to facilitate line connections during construction. Hydro One will work with any affected transmission-connected facilities to provide advance notification and discuss potential means to mitigate the impact of these temporary outages to their operations.

Access to construction areas will be carefully designed to avoid and minimize adverse effects. Advanced construction notice will be provided for construction activities and lane restrictions. Road signage will also be created and installed to reflect this information.

7.5.2. Effects to Existing and Future Land Use Designations and Potential Future Development

The Project is within the City of Thorold, City of Niagara Falls, City of Welland and the Region of Niagara OP designated areas. The outline of land use policies and OP acceptable uses and how the Project fits into provincial policy and local OPs is outlined in **Section 4.4.1**. Generally, OPs include support towards energy transmission and investment in the Niagara Region. Specifically, the local OPs allow for the provision of opportunities to develop energy supply including electricity transmission facilities in all land use types. It is recognized that the proposed Project will cross multiple types of current land use designations, including agricultural, commercial, and industrial lands. While there are a number of compatible land uses within the transmission line corridor, the location of a transmission line corridor will introduce certain restrictions to future development potential within the corridor. Throughout the province, development (both residential and commercial/industrial) occurs around and adjacent to existing transmission line corridors and stations. Uses deemed to be compatible with overhead transmission lines are often approved within transmission line ROWs. Hydro One has existing departments and processes to review proposals for developments that are planned adjacent to or within transmission line ROWs and facilitate compatible uses of these corridors. Typically, there are no restrictions placed on development or new construction outside of the transmission line ROW itself.

Where and when future development projects or initiatives are proposed to occur along or within the ROW for the Project, Hydro One will apply its existing processes to review and facilitate these future developments, including potential compatible uses within the transmission line ROW. In addition, Hydro One will work with local municipalities to consider potential means of accommodating potential future development during design of the transmission line, within the property fabric traversed by the transmission line ROW.

7.5.3. Effects to Local Roads and Traffic

The proposed Project is located within a rural landscape, with a number of provincial highways serving as key access routes through the Niagara Region. Construction

activities have potential to cause disruption to Highway 140 traffic and to local traffic on municipal and county roads during construction phases of the proposed Project. Specifically, stringing of conductors across roads and highways and the construction of new access roads may require temporary road closures, rolling closures, lane occupancy and/or detours. The presence of heavy equipment may also increase traffic and loads which may result in localized wear and tear on lower order roadways. Effects to road and highway traffic and roadways are expected to be minimal and temporary in nature.

Temporary effects to roads and traffic are largely unavoidable. To mitigate potential impacts from construction activities:

- The Project will adhere to seasonal load restrictions;
- Where required, a Traffic Control Plan will be developed and shared with local municipalities and MTO, as necessary;
- Construction traffic will access the construction area from the existing road network at specified construction access/egress locations;
- In an effort to avoid road closures and other disruptions during stringing, conductor stringing will utilize rider poles, boom-tipped riders, or other protective measures in an effort to avoid road closures and other disruptions during stringing, to the extent practical;
- If temporary road or highway closures (e.g., rolling closures) are required during stringing or other construction activities, the construction contractor will coordinate closely with the appropriate road authority to confirm proper notice is provided and that required signage and traffic controls are utilized, and that the duration of any temporary closures will be minimized to the extent practical;
- Where construction work is planned to directly affect local traffic (e.g., temporary road or lane closures), communication to residents will be issued and road signage will be erected to provide notification / pre-construction information to area residents on timelines and potential detours, if required; and
- Traffic control officers or flag persons will be assigned to assist with construction entry/exit, as necessary.

With the implementation of the mitigation measures described above, the proposed Project is not anticipated to have a long-term net effect on local roads or traffic.

7.5.4. Mud and Construction Debris

Construction activities may result in the accumulation of mud and construction debris on and adjacent to local roads in construction areas. These effects have the potential to migrate to areas outside of the construction zone.

Construction will be completed with general clean site policies enforced requiring pick-up and disposal of refuse and construction waste at an approved waste management facility on a regular basis. Mud related to construction activities will be removed from local roads and access roads as necessary throughout construction. Mud mats will be installed (as needed) as a mechanism to reduce the transport of debris off-site. Vehicles and equipment will be regularly inspected and washed and maintained at work areas as necessary. Formal cleanup will further minimize this potential effect as construction progresses and is completed.

With the implementation of the mitigation measures described above, mud and construction debris generated by the proposed Project is not anticipated to have a long-term net effect.

7.5.5. Electric and Magnetic Fields (EMF)

EMF are invisible fields that surround electrical equipment, such as power cords, wires and everyday household items like microwaves, televisions and vacuums. EMFs are strongest when close to their source. As you move away from the source, the strength of the fields fades rapidly.

Hydro One has a dedicated team that regularly monitors global studies around EMFs and reviews that Hydro One infrastructure is built and maintained following best practices and industry standards. Hydro One consults Health Canada, the World Health Organization (WHO) and the International Commission on Non-Ionizing Radiation Protection (ICNIRP), for guidance on EMF and standardized approaches. Based on global studies which have and continue to be regularly monitored, these organizations indicate members of the public in the vicinity of transmission lines do not need to take precautionary measures to protect from fields produced by electricity at extremely low frequencies such as transmission infrastructure.

Hydro One has developed an Information Sheet that addresses concerns related to EMF and is available in **Appendix D**.

EMF values from the proposed Project are expected to remain significantly below the ICNIRP exposure guidelines.

7.5.6. Noise and Vibration

Construction and maintenance activities have the potential to affect ambient noise and vibration levels while the operation of the transmission line has the potential to affect noise levels during temporary weather events (i.e., foul-weather). These effects, in turn, may create temporary nuisance or disturbance effects for local residents, land users and wildlife.

All work is expected to be completed using common construction methods and in general accordance with the ministry's Publication NPC-115 "Construction Equipment", Publication NPC-118 "Motorized Conveyances" and Publication NPC-119 "Blasting", as required. The noise and vibration associated with construction would most likely be a result of activities, such as general site grading, foundations work, construction traffic and implosive splicing (if applicable). Each of the aforementioned activities require the use of various pieces of heavy equipment, such as bulldozers, front-end loaders, small trucks, backhoes, bobcats, dump trucks, compactors, concrete trucks and/or cranes. The movement and operation of vehicles used for transporting materials and workers will contribute to increased noise levels during the construction period.

Noise and vibration effects are anticipated to be short-term, temporary and transient during the construction period. Specific to vibration, it is expected to be temporary in nature, occur only during specific activities and limited to the immediate vicinity of the construction work area. Indirect noise disturbance effects on wildlife during construction can include temporary declines in habitat occupancy, as well as changes to mobility and feeding habitat patterns. Mitigation measures to reduce potential nuisance effects resulting from noise and vibration include:

- Sensitive receptors will be identified in the Project-specific EMP, for consideration when planning work such as implosive splicing locations;

- Equipment and machinery used on site will be maintained in good working condition;
- Prior to any use of implosive splicing (if applicable), a Blasting Communication and Management Plan will be developed outlining proper storage, security, detonation, and notification requirements;
- Area residents, municipal authorities, police department, and other crews within 1.6 km will be notified about the use of implosive splicing one week prior to the work commencing, if applicable;
- Signs shall be posted on all roadways leading to a blasting area in accordance with government rules and regulations; and
- A safe distance of a blasting site will be maintained from other employees, vehicles, equipment, structures, and fire hazard sources. Any blasts will be performed during pre-determined times and outside of electrical storms or adverse weather conditions.

Construction activities will also conform to local noise control by-laws (City of Thorold Noise By-Law 37-2014, City of Niagara Falls Noise By-law 155-2014 and the City of Welland Noise By-Law 23-2015). Noise By-Law exemptions will be sought if work is required outside of the hours specified in the aforementioned by-laws (e.g., overnight).

Noise sources and vibration levels from maintenance activities and operation after construction would be variable, are expected to be limited to a short duration, and would occur periodically over the life of the proposed Project. With exception of periodic maintenance activities (e.g., inspection from ground-based vehicles and vegetation maintenance, etc.), no additional noise (or vibration) sources are expected during maintenance of the proposed Project. Therefore, no additional mitigation is required during the maintenance and operation of the Project.

Noise emitted by transmission lines during normal operation relates to a number of different factors, such as weather conditions and how heavily loaded the line is. For example, during regular weather, our lines are typically almost silent, but during more severe weather like thunderstorms, the noise levels can be raised. Regarding the potential to affect noise levels as a result of the operation of the transmission line, Hydro One is committed to investigating the application of the ministry's final draft Publication NPC-360 "Protocol for the Measurement and Prediction of Audible Noise from HV

Transmission Lines" during detailed design. The upgrade of the Crowland TS from 115 kV to 230 kV will require the installation of new 230 kV transformers at the station. These new 230kV transformers were subject to a noise assessment study which indicated that no noise mitigation measures are anticipated to be required at this time.

With the implementation of the mitigation measures described above, noise sources and vibration levels generated by the proposed Project are not anticipated to have a long-term net effect.

7.5.7. Community Benefits Initiative

Hydro One is committed to working with municipalities in the area to identify opportunities that could enhance and contribute to the larger broader landscape, recognizing that community benefits can be varied and diverse in nature.

7.6. Mineral and Petroleum Resources

7.6.1. Aggregate Extraction

As discussed in **Section 4.5**, there is one active application for an aggregate pit located to the east of the Preferred Route Alternative, at the northern extent of the alignment, in the City of Niagara Falls. Pending the approval of this application made by Walker Industries, the measures below will be implemented by Hydro One in order to mitigate potential impacts from construction activities on the proposed aggregate pit. Hydro One will:

- Maintain open communication with Walker Industries to coordinate construction schedules and activities;
- Continue to engage with the Walker Industries liaison to facilitate ongoing dialogue and promptly address any concerns;
- Develop a traffic management plan to minimize disruptions to quarry operations;
- Use designated routes for construction vehicles to avoid disrupting quarry operations;
- Implement erosion and sediment control measures to prevent runoff into nearby water bodies;
- Install appropriate signage and barriers to keep personnel away from unauthorized areas;

- Develop contingency plans for potential incidents, such as spills or equipment failures, to minimize environmental and operational impacts; and
- Comply with relevant environmental regulations and obtain necessary permits before commencing construction.

With the implementation of the mitigation measures described above, construction activities associated with the proposed Project are not anticipated to have a long-term net effect on the proposed aggregate pit or its application.

7.6.2. Petroleum Resources

Two abandoned petroleum wells are also within the PSA of the Preferred Route Alternative, while three unknown petroleum wells and one abandoned petroleum well are located in the broader LSA of the Preferred Route Alternative. The proposed Project is not anticipated to have a temporary and/or permanent effect on petroleum pools in proximity to the proposed Project.

7.7. Natural Environment Resources

7.7.1. Physical Environment

7.7.1.1. Physiography and Geology

The existing physiography, topography and geology is expected to remain as is following the construction of the proposed Project. Therefore, no net effects on the physical environment have been identified for the proposed Project.

7.7.1.2. Spills

During construction and maintenance activities, there is the possibility of spills from the release of oils and fuels from construction/maintenance vehicles and equipment. There are a number of mitigation measures to reduce the risk of spills and to minimize the effect in the unlikely event that a spill occurs.

An Emergency Response Plan as well as spill cleanup equipment will be maintained and readily accessible at all times during construction and maintenance activities. Refuelling of vehicles and equipment will be completed in designated locations, a minimum of 30 m away from sensitive receptors (e.g., SWP areas, watercourse,

wetlands, etc.) while utilizing emergency spill trays. In the event refuelling is required outside of designated areas, additional containment or other mitigation and spill prevention measures will be utilized. Fuelling operations will require the operator to visually observe the fuelling process at all times.

There are a number of additional mitigation measures to reduce the risk of spills and to minimize the effect in the unlikely event that a spill occurs. These measures include the following:

- Equipment will be inspected regularly during construction to maintain it is clean and free of leaks;
- Areas impacted by a spill will be secured, and unauthorized personnel will be kept out of the affected area until further assessment and/or clean-up is conducted;
- Clean-up and the disposal of contaminated materials will be managed in accordance with provincial regulations and guidelines;
- Fuels, chemicals, lubricants or other deleterious substances will be stored on level ground in properly contained storage areas;
- Only approved aboveground petroleum storage tanks will be used during the construction phase of the Project and will be stored in designated fuelling areas and with additional temporary containment measures;
- Work conducted near Provincially/locally designated Vulnerable Areas (namely IPZs) will be avoided or limited, where practical; and
- The NPCA and/or the City of Thorold, City of Welland, City of Niagara Falls and the Niagara Region will be consulted in order to undertake the proper action for managing the potential threats to SWP areas.

The new 230 kV transformers to be installed at the Crowland TS will be subject to an ECA that will dictate spill mitigation measures to protect against the risk of an inadvertent release of mineral insulating oil from the transformers.

Should a reportable spill occur, the MECP Spills Action Centre (SAC) will be notified of all reportable spills and containment and remediation measures undertaken.

7.7.1.3. Waste Generation

Construction waste will be generated by the proposed Project and would need to be disposed of at appropriate waste reception or recycling facilities. Waste produced during

the construction period may include non-hazardous wastes (packaging, spent lubricating cartridges, coffee cups, etc.) and hazardous wastes (pneumatic oils from hydraulic systems, gasoline and other lubricants/oils).

Hazardous waste (solid and liquid) should be transported by MECP licensed waste haulers to MECP registered disposal sites. Good management practices are recommended to prevent spills and contamination during construction (see above). Any temporary waste on-site should include the use of secured containers in designated sites away from sensitive areas and removed from the site on an ongoing basis. With respect to concrete wash water, all water from concrete chute washing activities will be contained in leak proof containers or in an approved settling pond off site. Waste produced will be minimized, segregated, and recycled where possible, and all testing, handling, storage, transport and disposal of waste will be completed in accordance with all applicable legislation.

With the implementation of the mitigation measures described above, waste generated by the proposed Project is not anticipated to have a long-term net effect.

7.7.1.4. Excess Materials Management

Project activities have the potential to produce excess materials during construction and maintenance phases. Excess materials can include topsoil and subsoil from excavation or stripping activities and imported materials (e.g. gravel) for temporary use. Efforts will be made to reuse soils onsite where practical and feasible; however, excess materials that cannot be managed onsite will be handled in accordance with O. Reg. 406/19. In the event soils are stockpiled, they will be managed in ways that are not conducive to Bank Swallow *(Riparia riparia)* nesting (e.g., slopes maintained at 70° or less, and/or covered or bare soils seeded during the breeding season).

Soil testing to meet the requirements of O. Reg. 406/19 will be completed, if necessary, during geotechnical investigations prior to or during construction. If excess material is deemed suitable, Hydro One will work with landowners to explore opportunities for beneficial reuse within the property parcel. Reuse sites will be selected based on the characterization of excess soils, the need for a beneficial reuse and the volume of excess soils required. Excess soil required to leave the site will be tracked for the

Project area to the final deposit site, if required, and taken to an approved facility licensed to accept excess soil based on its characterization or other off-site location that can demonstrate beneficial reuse.

7.7.2. Atmospheric Environment

7.7.2.1. Climate Change

It is important to note that the proposed Project is not a power generation project, and its operation would not emit greenhouse gases. However, there would be temporary emission of fossil fuels from the vehicles and equipment used during construction and maintenance activities associated with the proposed Project. Idling of construction vehicles and equipment will be kept to a minimum. The emissions directly related to the construction and maintenance of this Project would be minimal.

Hydro One recognizes that a changing climate is likely to result in an increase of unusual weather patterns and severe weather events, which could potentially damage or adversely affect infrastructure and other public facilities. The infrastructure being planned for this proposed Project will be engineered to adequately withstand the anticipated effects of climate change.

7.7.2.2. Air Quality

Construction activities have the potential to create temporary, localized effects on air quality in the immediate vicinity of the proposed Project. Emissions from construction activities are primarily comprised of fugitive dust and combustion products from the movement and operation of construction equipment and vehicles. These emissions, in turn, may create a nuisance or disturbance effect for local residents and land users during the construction phase.

During construction, equipment and machinery will be maintained in good working condition to minimize excessive exhaust. Where possible, idling of construction vehicles and equipment will be kept to a minimum. Additional mitigation measures to reduce nuisance effects of dust and air emissions during construction include the following:

- Vehicles will not exceed posted speed limits;
- Minimize vehicular traffic and stabilize exposed soils in high traffic areas with suitable cover material;

- Avoid excavation and other construction activities that have the potential to release airborne particulates during windy periods, to the extent practical. If excavation or other construction activities with a potential to release airborne particulates must occur during windy conditions, dust controls will be utilized;
- Effective dust suppression techniques, such as on-site watering, will be implemented as necessary;
- Cover or otherwise contain loose construction materials with the potential to release airborne particulates during transport, installation or removal to the extent practical; and
- Disturbed areas will be restored as soon as practical to minimize duration of soil exposure.

Emissions from maintenance activities during operation will be variable, are expected to be short-term in duration, and would occur periodically over the life of the proposed Project. Nuisance effects posed by these temporary activities are expected to be negligible and would not result in noticeable or long-term changes to local air quality.

7.7.3. Noise and Vibration

There is the potential for increased noise and vibration during construction and maintenance activities; however, as noted in **Section 7.5.6**, they are anticipated to be short-term, temporary, transient, and intermittent. This is because the proposed Project is linear, and activities would be planned sequentially. The duration of construction and maintenance activities at any one location along the transmission line corridor would be limited and intermittent: thereby, reducing the amount of time of noise and vibration at any given area. From an operational perspective, the transmission line's potential to affect noise levels is specifically associated with temporary weather events (i.e. foul weather).

The addition of the 230kV yard to the existing Crowland TS will require the installation of new 230 kV transformers at the station. Noise modelling studies have concluded that no mitigations are required for sensitive receptors in the station study area. Refer to **Section 7.5.6** for additional information.

7.7.4. Surface Water Resources

During construction and certain maintenance activities, the potential effects of the proposed Project on surface water include changes in surface water quantity or quality conditions in nearby municipal drains or watercourses due to site preparation, earthworks, discharge of construction water, and operation of vehicles and equipment.

7.7.4.1. Potential Effects on Surface Water Quantity

Project activities during the construction phase that have the potential to influence surface water quantity conditions in nearby municipal drains and watercourses include:

- Site preparation for the new transmission towers, construction of temporary access roads, and temporary laydown areas;
- Construction adjacent to municipal drains, watercourses and in/adjacent to wetland areas; and
- Discharge of construction water from dewatering activities.

Site preparation, including activities such as removal of vegetation, locates/daylighting of potential existing buried utilities, and construction of temporary access roads would be required in support of transmission tower installation. Vegetation removals during construction have the potential to result in a temporary increase in overland flows, potential organic and sediment loading to nearby municipal drains and watercourses, as well as potential water temperature increases in instances where vegetation removal adjacent to watercourses is required. Similarly, vehicle and construction equipment have the potential to create temporary rutting in soils which have the potential to result in localized ponding and/or channelization leading to additional erosion of soils.

To avoid or minimize the potential adverse effects related to vegetation removals and soil rutting on surface water quantity, the following mitigation measures will be implemented:

- Where practical, activities with potential to cause rutting, ponding/channelization or erosion will be planned during stable and dry ground conditions;
- Existing watercourse crossings and constructed access roads will be utilized to the extent practical;
- The use of Erosion Sediment Control (ESC) measures (e.g., erosion blankets/coir mats, silt socks, etc.) will be utilized, where necessary;

- Where required, temporary crossing structures will be installed for construction access at watercourses and other low-lying areas and will be removed upon completion of construction;
- The use of constructed access (e.g., mats or geotextile/crushed stone) roads will be utilized and will be monitored to ensure there is no surface ponding to minimize rutting and pooling of water;
- Vegetation removals will be minimized to the extent practical. Compatible vegetation will be retained within riparian areas adjacent to watercourses that will not impede the construction or stringing of towers;
- Machine clearing and grubbing will be restricted near sensitive environmental areas; hand clearing will be required within watercourse banks/riparian areas;
- Replant with compatible vegetation (e.g., shrubs and native seed mix) as required;
- Where erosion is a concern, exposed soils in previously vegetated areas will be re-vegetated as practical or have other erosion or sedimentation measures applied as necessary;
- Where applicable and possible, vegetative buffers will be maintained to protect receptors;
- Construction access and laydown areas will be restored following completion of construction;
- Work will be staged to minimize the extent of exposed soils (i.e., bare soils without vegetative cover or erosion and sediment controls such as coir blankets) at any given time;
- Topsoil will be stockpiled in designated areas away from water features and will utilize containment measures such as erosion and sediment control as appropriate;
- Disturbed areas will be stabilized and restored as soon as practical;
- Equipment operation adjacent to watercourses and wetlands will be minimized, where possible;
- Works adjacent or around water feature banks will be conducted during appropriate conditions and times of the year (e.g., dry or frozen conditions), to the extent practical;
- Vegetation buffers along water feature banks will be maintained to the extent practical, and restored; and
- NPCA will be consulted for ESC measures within regulated areas during detail design.

With the implementation of the mitigation measures described above, vegetation removals and temporary soil rutting are not anticipated to have a long-term net effect on surface water quantity in the receiving municipal drains/watercourses.

The Project is predominantly located within agricultural lands. It is anticipated that the proposed Project will utilize existing access routes wherever practical, and the number and location of access roads would be established during the detailed design phase. Access roads will be chosen to avoid crossing municipal drains or watercourses, or use existing crossings, where practical. In the event the proposed Project requires the construction of new access roads, their construction has the potential to disrupt sheet flow of surface waters over agricultural and other lands.

To avoid or minimize the potential adverse effects associated with the installation of access roads on surface water quantity, the following mitigation measures would be implemented:

- Existing, natural drainage patterns and flows will be identified and maintained to the extent practical;
- Equalization culverts or similar methods may be used in construction of access roads. If surface water accretion issues are identified during construction, remedial measures (e.g., retroactive installation of equalization culverts within temporary access roads) will be undertaken promptly;
- Existing watercourse crossings and constructed access roads will be utilized to the extent practical;
- Construction and access planning will take into account tile drains to maintain continued function of drainage tiles, to the extent practical. Discussions with landowners will be held where further information is needed to avoid adverse effects; and
- The use of ESC measures (e.g., erosion blankets/coir mats, silt socks, etc.) will be utilized, where necessary.

With the implementation of the mitigation measures described above, installation of temporary and permanent access roads is not anticipated to have a long-term net effect on surface water quantity in the receiving municipal drains/watercourses.

Site preparation would also be required for temporary laydown areas and conductor “pulling pads”; the locations of which have not been established. These areas would be

placed away from sensitive areas (e.g., municipal drains, watercourses, wetlands, woodlots) to the extent feasible.

The removal and discharge of construction water may be required as a result of dewatering activities in holes or trenches related to foundations. Discharge is expected to occur to nearby lands, of which quantities are expected to be relatively minor. It is not expected that an EASR would be required from the MECP, but this can only be established with certainty during detailed design. The discharge of construction water from dewatering activities may result in slight increases to surface water levels of aquatic features; however, much of the surface water discharged onto land could infiltrate through permeable agricultural lands.

To avoid or minimize the potential adverse effects of dewatering activities on surface water quantity, the following mitigation measures will be implemented:

- If dewatering cannot be avoided, construction water will be discharged in compliance with permits and/or approvals from MECP and the City of Thorold, City of Welland, City of Niagara Falls and/or the Niagara Region, as required;
- If dewatering cannot be avoided, a construction water management plan will be developed prior to construction and implemented appropriately (e.g., potential for passing discharge water through a filter bag or drum before discharge to the environment to capture sediment and slow down the water velocity, etc.);
- Where possible, opportunities to maximize retention times and reduce surface flow velocities will be executed;
- Where geotechnical conditions and engineering requirements allow, foundation types (such as helical piles) that minimize the amount of construction dewatering required can be utilized; and
- Where practical, discharge of construction waters is to occur at least 30 m away from sensitive receptors (e.g., watercourses, wetlands, etc.). If discharge of construction waters must occur within 30 m of a watercourse or wetland, additional ESC measures will be utilized.

With the implementation of the preliminary designs and mitigation measures described above, and the short duration of the dewatering activities, these activities are not anticipated to have a long-term net effect on surface water quantity in the receiving municipal drains/watercourses.

There is potential for Project infrastructure (access roads, towers) to be located within NPCA regulated lands with the potential to result in impacts to natural hazard lands, wetlands and/or areas of interference. The location of Project infrastructure will be determined during detail design. Net effects on surface water quantity in association with Project infrastructure is addressed in the text above.

To avoid or minimize potential adverse effects of Project infrastructure within NPCA Regulated Areas on surface water quantity, the following mitigation measures will be implemented:

- NPCA will be consulted during detailed design and construction planning for activities within NPCA Regulated Areas;
- Design of the transmission line will avoid or minimize the extent to which transmission towers are located within Regulated Areas, to the extent practical;
- If necessary, a Permit for Development, Interference with Wetlands and Alternation to Shorelines and Watercourses, as per (O. Reg 41/24) will be obtained through the NPCA prior to construction;
- Construction work (e.g., tower construction) within Regulated Areas will be conducted during stable (frozen/dry) ground conditions, to the extent practical (acknowledging that this will likely not be feasible in all situations); and
- Temporary construction access through Regulated Areas may involve additional ESC or other environmental mitigation measures.

At the end of construction, the work areas (i.e., tower foundation areas, access roads, pulling pads and temporary laydown areas) will be seeded/re-vegetated and the temporary laydown areas would be restored to their original condition to the extent feasible. The construction phase of the proposed Project is not anticipated to have a long-term net effect on surface water quantity.

Maintenance activities will be variable, are expected to be short-term in duration, and would occur periodically over the life of the proposed Project. Though short-term in duration, maintenance activities have the potential to result in soil rutting, disrupt sheet flow of surface water over agricultural lands, increase overland flow and mobilization/transportation of organic debris and sediment loading in nearby municipal drains and watercourses.

To avoid or minimize the potential adverse effects of maintenance activities on surface water quantity, the implementation of the mitigation measures outlined above for construction related activities (where applicable) would be implemented during maintenance activities. As a result, maintenance activities are not anticipated to have a long-term net effect on surface water quantity.

7.7.4.2. Potential Effects on Surface Water Quality

Project activities during the construction phase that have the potential to influence surface water quality conditions in nearby aquatic features (e.g., municipal drains, watercourses) include:

- Site preparation for the new transmission towers, construction of temporary and permanent access roads, and temporary laydown areas;
- Earthworks associated with the construction of access roads, temporary laydown areas, puller pads, etc.;
- Discharge of construction water from dewatering activities to nearby lands; and
- Operation of vehicles and equipment throughout the construction phase.

Site preparation would consist of removal of vegetation, topsoil stripping and rough grading (where necessary), and temporary stockpiling of materials. These activities would result in the temporary exposure and disturbance of soil with the potential for wind and water erosion and the transport of sediment to aquatic features. Site preparation would also result in the temporary accumulation of cleared vegetation with the potential for mobilization of organic debris and its transport to aquatic features during runoff events. Earthworks would consist of excavation, fill, and temporary stockpiling activities, and would similarly result in disturbance and exposure of soil to wind and water erosion and the transport of sediment to aquatic features. It is expected that the transmission ROW associated with the proposed Project will be restored to similar grades at the various areas of disturbance.

Earthworks will also be required for the construction of temporary access roads, temporary laydown areas, and pulling pads within the various disturbed work areas along the transmission line ROW. Earthworks may also be required for the installation of temporary culverts, including excavation, preparation of culvert pipe bedding, culvert

pipe placement, and backfilling. Stockpiling of soil and aggregate materials will also be required in support of earthworks.

Earthworks for the construction of temporary laydown areas, pulling pads, etc., would similarly consist of excavation, fill and sub-grade preparation, followed by the installation of crushed stone overtop of geotextile fabric, or equivalent means. Soil and aggregate materials would be temporarily stockpiled. Earthworks would also potentially be required during foundation preparations, though, depending on the technology, this may not be required. Earthworks to support the above activities would include stockpiling of soil and aggregate materials.

The measures outlined above to avoid or minimize potential impacts the proposed Project may have on surface water quantity will also serve to avoid or minimize the potential adverse effects of site preparation and other earthwork activities on surface water quality in aquatic features.

In addition, and in support of site preparation and earthwork activities, the following ESC measures will be implemented as a mechanism to avoid and minimize impacts on surface water quality:

- An ESC plan will be developed prior to construction and ESC measures will be identified and implemented as required. Measures such as erosion blankets/coir mats, silt socks, etc., or similar, are expected to form part of the ESC plan, where appropriate;
- Areas with high erosion potential will be identified and avoided, where possible;
- Construction activities near sensitive features or areas may be suspended during extreme wet weather events, and crews will review and consider weather forecasts in their planning of such work;
- ESC installations will only be removed after disturbed areas are restored, accumulated sediment has been disposed, and construction activities in the vicinity are completed;
- In an effort to reduce potential erosion, mechanical or vegetation erosion control measures will be employed, such as buffer strips, erosion control blankets and sedimentation fences, as required;
- Equipment operation on slopes adjacent to streams will be minimized to the extent practical;

- Disturbed areas near watercourses and wetlands or sensitive environmental areas will be restored as soon as practical; and
- ESC measures will be regularly inspected, including after each significant [>10 mm] rainfall event, and repaired where necessary to maintain functionality.

With the implementation of the mitigation measures described above, and the limited duration of the construction works, site preparation and earthwork activities are not anticipated to have long-term net effects on surface water quality conditions in aquatic features.

The removal and discharge of construction water may be required as a result of dewatering activities in holes or trenches related to foundations of transmission towers. The measures outlined above to avoid or minimize discharge of construction water on surface water quantity will also serve to avoid or minimize the potential adverse effects on surface water quality. As a result, dewatering activities are not anticipated to have long-term net effects on surface water quality in the receiving aquatic features.

7.7.5. Source Water Protection

During construction and maintenance activities, there is the possibility of contamination of surface water through spills or leaks from the release of oils and fuels from vehicles and equipment. There are a number of mitigation measures to reduce the risk of contamination of source water in the unlikely event that a spill or leak occurs. These measures include the following:

- Maintain an Emergency Response Plan and have readily accessible cleanup materials and equipment at all times during construction and maintenance activities;
- Remediate spills/leaks as soon as possible upon identification and notify the MECP Spills Action Centre as required;
- Refuelling will be conducted in designated areas with appropriate protective measures and equipment available; and
- Refuelling areas will be located outside of SWP areas to the extent practical. If refuelling must occur within SWP areas, additional protective measures (emergency spill trays, etc.) may be employed as necessary.

Construction and maintenance activities also have the potential for impacts to designated surface water Intake and SGRAs. Similar to the above, there are a number of Project-specific mitigation measures which will be implemented as a mechanism to reduce potential impacts. These measures include the following:

- Identify and protect surface water IPZs during construction and maintenance activities, as required;
- Comply with relevant legislation and policies such as: *Clean Water Act*, PPS, OPs, and NPCA SWP Plans, where applicable;
- Provincially/locally designated Vulnerable Areas (namely IPZs) will be avoided, where practical; and
- Consult with Indigenous communities, NPCA, and/or the City of Thorold, City of Welland, City of Niagara Falls and the Niagara Region during detailed design and construction planning on Project-specific mitigation measures.

As outlined in **Section 4.6.5**, the SPA that falls within the PSA has policies related to fuel handling and storage. The SPA also identifies the requirement for development of a Risk Management Plan if significant threats to SWP are identified based on Project activities. Based on the scope of work for construction, operation and maintenance of the Project, significant threats to SWP have not been identified. Project-specific mitigation measures and best management practices have been detailed, above, to further minimize the potential threat within SWP areas.

7.7.6. Groundwater Resources

During construction, the potential effects of the proposed Project on groundwater include changes in water quality due to disturbance of pre-existing soil contamination which may exist, changes to existing groundwater quality or quantity due to excavation and construction dewatering, and changes in groundwater flow regime due to the installation of foundations for transmission line towers. It is not expected that there would be any effects on groundwater during the maintenance and operation phase due to a lack of subsurface disturbance once the transmission line is operational.

Changes in groundwater due to Project activities during construction could also affect the amount of groundwater discharged towards nearby watercourses and natural environmental features (e.g., vegetation, fish habitat, wetlands, etc.).

Effects on groundwater due to dewatering would be ephemeral and have a zone of influence measured in the range of several tens of metres. This effect would be limited to the construction phase only. Where geotechnical conditions and engineering requirements allow, foundation types (such as helical piles) that minimize the amount of construction dewatering required can be utilized.

7.7.6.1. Potential Effects on Groundwater Quality

Contaminated soil and groundwater containment and disposal measures would be implemented according to the pertinent regulations, as required.

The regional overburden geology is dominated by the Haldimand Clay Plain that exists over much of the PSA. The Haldimand Clay Plain is characterized by heavy textured soils with poor drainage. The PSA is located within the Caistor clay loam region, which is mapped in the Welland River drainage area. This area is often characterized by imperfectly drained soil and wet, swampy spots.

Underlying the northern and central sections of Haldimand Clay Plain within the PSA is bedrock composed of the Lockport and Guelph Formations, respectively, which are composed of Sandstone, Shale, Dolostone, and Siltstone. The southern portion of the Haldimand Clay Plain within the PSA is bedrock composed of the Salina Formation, which is composed of Sandstone, Shale, Dolostone, Limestone, Gypsum, and Salt. Groundwater moves very slowly in shale bedrock and competent shale also acts as an aquitard. The dominant aquifer in the PSA is found at the base of the overburden and generally consists of sand and gravel and weathered and fractured bedrock. The natural water quality is generally poor with taste and odour issues related to the shale bedrock. The overburden thickness varies and is generally thinner in the northern portion of the PSA (~7.6m), becomes thicker near the centre, leading to the Welland Canal (~27.37 m), and is approximately 32.4 m thick closer to the south

The helical pile foundations that may be used for the Project are installed by rotating the steel pile slowly into the ground. No soil is removed during this process (i.e., no excavation is required). Helical pile foundations also do not have the vibrations usually associated with driven steel piles and as stated above, there is no excavation of soil so there are no concerns related to annular seals that are associated with drilled

foundation pile systems. It is considered very unlikely that the installation of helical screw piles will impact water wells, even if wells are located relatively close to the tower foundation. Transmission line structure footings, both helical and traditional, generally do not adversely affect the quality of water resources, as effects of construction are often shallow relative to deeper aquifers, temporary in duration, and often less intrusive than other construction methodologies (e.g., excavations for building foundations or driven pile footings). No adverse effects are anticipated for changes in groundwater quality due to the construction of the proposed Project. If changes in groundwater quality were to occur, it is anticipated that groundwater quality would return to baseline conditions following the implementation of mitigation measures previously outlined above. Potential Effects on Groundwater QuantityGroundwater base flow (quantity) is seasonally important to nearby waterbodies and natural environment features, including vegetation, fish and aquatic habitat. As such, it is predicted that there would be limited to no temporal effects on groundwater levels and/or groundwater quantity as a result of construction activities. Construction is occurring predominantly within agricultural lands. If there is a need to handle any construction water, it is anticipated that discharge would be to nearby agricultural lands and allowed to infiltrate, with some runoff from this discharge. Transmission line structure footings generally do not adversely affect the quantity of water resources, as effects of construction are often shallow relative to deeper aquifers, temporary in duration, and often less intrusive than other construction methodologies (e.g., excavations for building foundations or driven pile footings). Though currently not anticipated, if detailed design suggests that construction dewatering is required at a rate greater than 50,000 L/day, an EASR would be obtained from the MECP. The proposed Project would comply with applicable guidelines and legislation, including Provincial Water Quality Objectives, Ontario Drinking Water Standards, Objectives and Guidelines and *O. Reg. 153/04*. Adequate dewatering and discharge plans would be developed prior to construction, and collected water would be contained and tested prior to disposal, if required.

It is anticipated that the municipal wells and local private water wells within the area will not be significantly affected as a result of dewatering activities associated with transmission line tower foundations. If construction dewatering is required for any open

excavation, the zone of influence of such dewatering activities is very localized, and the majority of water wells exploit aquifer(s) that are at a much greater depth than the proposed excavations (i.e., bedrock aquifers; **Section 4.6.4**). Where necessary, a hydrogeological assessment will be conducted to inform construction planning, permitting and management.

The effects of dewatering activities during construction are expected to be temporary, and groundwater levels and flows are expected to return to pre-construction conditions following the construction period. The nature of the subsurface soils, the existence of a high-water table regime, and the small zone of influence to be created by construction dewatering is expected to result in a recovery to the pre-disturbance state in a matter of several days.

7.7.7. Designated or Special Natural Areas

7.7.7.1. Significant Woodlands

Significant woodlands were identified in 4 locations across the PSA of the Preferred Route Alternative. These woodlands were identified through a combination of the City of Thorold, City of Welland, City of Niagara Falls and the Niagara Region OP schedules and significant woodland criteria and verified as present during the 2024 field surveys. Each of the significant woodland communities were considered common or secure by the province of Ontario. The proposed Project ROW crosses 0.83 ha of Dillon identified woodland communities, all of which are anthropogenically influenced (WOD, WOD/THD), of which includes 2.61 ha of a combined category of potential and/or confirmed significant woodlands.

Vegetation clearing will be required for the portion of the significant woodlands within the new transmission line ROW to enable the safe and reliable operation of the transmission line. These removals will be limited to the extent practical and will not represent a total loss of vegetation on the landscape, but rather a transition from vegetation that is incompatible, as discussed in **Section 7.1.5** (e.g., mature woodlot,) with overhead transmission line corridors, to vegetation that is compatible (e.g., shrubs and meadow species). Woodlands play an important role with Indigenous communities as they support elements required for continued practice of Indigenous culture and

rights (e.g., hunting, trapping, plant harvesting, ceremony, etc.). When viewed in a holistic manner by Indigenous communities, woodlands are home to their non-human relatives and hold spiritual and intrinsic value in both human and non-human realms.

Although vegetation clearing for the new transmission line will not represent a complete removal of vegetation communities within the new ROW, it will result in changes in vegetation composition within an existing woodland community (e.g., transition from taller tree/large shrub communities to shorter-growing forb and shrub communities). Such changes have the potential to produce edge effects (positive, negative and/or neutral), as well as result in habitat fragmentation (e.g., bisecting an existing woodland community). Changes in habitat composition has the potential to result in changes in habitat quality for some flora and fauna, while fragmentation of woodlands has the potential to result in a decline in species occupancy.

In addition to the above, there are a number of mitigation measures to reduce the proposed Project's impact on significant woodlands. These measures include the following:

- Minimize the extent of vegetation clearing required for the Project;
- Incompatible vegetation will be salvaged or felled as appropriate;
- Refuelling of vehicles and/or equipment will occur within a designated refuelling area located away from significant woodlands;
- Tree removals adjacent to watercourses will be cut such their root systems remain intact to maintain soil stability, and compatible bank/riparian vegetation will be retained to the extent practical;
- Tree removals and other vegetation clearing will be completed outside of the migratory bird breeding season (i.e., April 5 through August 31, nesting zone C1; ECCC, 2018) and the bat active season (i.e., April 1 to September 30), where practical;
- Where vegetation clearing is required during the breeding bird season, nest searches will be conducted by a qualified person in accordance with applicable provincial and federal requirements;
- In the event significant woodlands with the potential to support bats require tree removals, bat acoustic surveys may be completed during the month of June in accordance with agency approved protocols to determine SAR bat habitat use (or lack thereof). Where acoustic surveys confirm SAR bat habitat use, the MECP

will be consulted prior to construction regarding permitting/approvals next steps under the ESA;
- Snags (dead standing trees) and cavity trees that do not pose a risk to the construction or operation of the transmission line will be identified and retained, to the extent practical; and
- Woodlands disturbed during construction will be restored following completion of construction with compatible native species (e.g., native seed mix and shrub stock).

7.7.7.2. Conservation Areas

There are no Conservation Areas within the PSA associated with the proposed Project; therefore, no effects on Conservation Areas as a result of the proposed Project are anticipated. Smith Ness, an NPCA managed Conservation Area, is located approximately 5 km away from the proposed ROW at its closest point.

7.7.7.3. Areas of Natural and Scientific Interest

There are no ANSI's located within the PSA associated with the proposed Project; therefore, no effects on ANSIs as a result of the proposed Project are anticipated. Lyons Creek Floodplain Wetland is the closest ANSI and is located approximately 2.2 km away from the proposed Project ROW at its closest point.

7.7.7.4. Valleylands

One significant valleyland was identified within the PSA in association with the Welland River. No additional topographic features or valleylands meeting criteria of **Section 8.0** (Significant Valleylands) of the 2010 MNRF NHRM were observed as a result of the 2024 field investigations. Valleylands will be considered during design with respect to tower locations. To the extent practical, work or disturbance will be avoided within valleylands or areas adjacent to the edge of the valleylands. Additional effects and mitigation measures for valleylands associated with river crossings in support of the proposed Project are described in **Section 7.7.4**.

7.7.7.5. Provincially Significant Wetlands

Five PSWs were identified within the PSA associated with the proposed Project, and includes the South Allanburg Slough Forest, Welland River East, Upper Grassie Brook,

Lyons Creek North, and Lyons Creek Wetland Complexes. The proposed Project ROW crosses 0.98 ha of PSW mapped by the MNR.

Tower locations and access roads will be located such that they will avoid wetlands, to the extent practical. The limits of wetlands will be clearly demarcated within the Environmental Management Plan to limit construction activities within wetland communities, where practical.

Generally, mitigation measures described in **Section 7.7.7** would also be employed with respect to wetland areas. In general, the removal of trees and ground vegetation will be minimized during construction to the extent practical. In addition, construction activities for the proposed Project will be restricted to designated work areas. Wherever practical, access to the construction areas for the proposed Project will utilize existing access roads. Where construction access in wetlands cannot be avoided, temporary access roads and work pads will be built using measures such as mats, geotextile and crushed rock, or equivalent means, which will protect the underlying soils during construction and can be easily removed when construction is complete. Equalization culverts, French drains or similar measures may be employed as necessary for any constructed access required within wetlands to maintain surface flow and drainage patterns during construction. Additional materials (i.e., rip-rap, filter cloth, and silt fencing) should be readily available in case they are needed promptly for erosion and/or sediment control. No maintenance or fueling of machinery will be planned to occur within 30 m of the wetland. If such work must occur within 30 m of a wetland community due to unforeseen circumstances, additional spill protection measures (e.g., portable containment) will be utilized. Any wetlands disturbed during construction will be restored following completion of construction with compatible native species (e.g., native wetland seed mix, shrub stock, or a combination of both as appropriate). Wetland areas overlapping with NPCA regulated areas will adhere to the required permitting and mitigation measures as described in **Section 7.7.4.1** above.

An ESC Plan will be employed to identify mitigation for wetland communities and will identify locations for protective fencing. In addition, no refuelling of vehicles and/or equipment would be permitted adjacent to wetlands (i.e., a 30 m buffer) to avoid potential spills (e.g., fuel, oil, lubricant) from migrating and entering aquatic habitats.

Spill kits will be located at work areas to mitigate the effects of accidental spills or releases, should they occur during construction. Wetland areas impacted during construction (directly or indirectly) will be restored to pre-construction drainage patterns.

7.7.8. Natural Heritage Features

As mentioned previously in **Section 4.6.8**, while the majority of the PSA consists of active agricultural lands, the Preferred Route Alternative was identified to contain woodlands, wetlands, wildlife habitat and potential SAR habitat, as well as direct and/or seasonal fish habitat.

Construction associated with the proposed Project may induce both temporary and permanent disturbance to natural heritage features. Permanent adverse effects include the proposed removal of 1.34 ha of incompatible vegetation, which may be contributing to wildlife habitat within the PSA, to accommodate the proposed double circuit 230 kV transmission line. With exception to the 1.34 ha of incompatible vegetation removal requirements, it is anticipated that the long-term adverse effects to natural heritage features can generally be avoided or mitigated through tower placements, wildlife exclusionary fencing, scheduling construction activities outside of sensitive wildlife timing windows and on-site monitoring during the wildlife active period. The locations for towers will be determined during the detailed design phase.

Temporary adverse effects include those from Project operations that physically or visually disrupt wildlife during active construction. Although no effects on natural heritage features are anticipated during the maintenance and operation phase**,** there is potential for birds to collide with transmission lines during the operational phase of the proposed Project.

Construction activities would be restricted to designated work areas and protective barriers, such as fencing, of which would be erected to protect adjacent features from construction related effects. For example, silt fencing and/or other SEC measures would be installed as required to prevent the migration of sediment-laden water from the site. In addition, vegetation removal limits would be clearly demarcated. Prior to construction, a detailed construction plan would be developed and the NPCA would be consulted for

work in regulated areas to inform required permitting under O. Reg 41/24 and supporting documents.

Other measures that may be undertaken to reduce adverse effects resulting from the construction of the proposed Project include:

- Restricting access and minimizing travel/work areas to maximize retention of compatible vegetation, where practical;
- Implementing sediment and erosion controls;
- Selectively cutting and retaining compatible vegetation to promote regeneration;
- Disposing of non-salvageable limbs by chipping or removal to designated areas;
- Removal of isolated trees with the potential to support bats will occur outside of the bat active season (i.e., April 1 to September 30), where additional authorizations from MECP may be required if removal of trees are proposed during the bat active season;
- Using constructed access (e.g., mats, or geotextile and gravel), to avoid or minimize effects to soils (compaction, rutting etc.);
- Restoring compacted areas, as required;
- Retention of compatible vegetation to the extent practical; and
- Application of ESC as deemed necessary.

Temporary construction access (e.g., access mats or geotextile and gravel) will be removed upon completion of construction. Temporary laydown areas will be installed during construction and these areas will be restored following removal.

Most wildlife species that have the potential to occur within the Project work areas are habituated to human activities and are mobile. For the most part, sensitive resident animals can relocate temporarily to nearby habitats through flight or via existing corridors (e.g., fencerows, watercourse riparian areas, etc.) to seek shelter as a mechanism to avoid noise and disturbance associated with construction activities and return after construction completion. Construction disturbance would be sufficiently local and transitory that little displacement of wildlife is anticipated. Hydro One acknowledges that habitat in the Niagara Region is generally limited and fragmented; however, with the implementation of natural features and species-specific mitigation measures outlined in **Section 7.7.7** and **Section 7.7.8**, respectively, the effect of the proposed Project on wildlife is anticipated to be minimal.

Removal of vegetation has the potential to disturb nesting migratory birds. The *Migratory Birds Convention Act*, 1994 (MBCA) prohibits the disturbance, destruction or removal of a nest, egg or nest shelter of most migratory birds during the active season. To avoid contravention of the MBCA, vegetation removal should be conducted outside of the migratory bird nesting period (i.e., April 5 to August 31 in nesting zone C1 as provided by ECCC [2018]), where feasible. Buildings that may be impacted by the Project (i.e., alteration or removal of the structure) should be assessed by a qualified professional prior to alteration or removal to determine if migratory bird species known to nest within anthropogenic structures (i.e., Barn Swallow [*Hirundo rustica*]*)* may be impacted by the Project during the migratory bird nesting period.

7.7.8.1. Wetlands

The proposed Project ROW crosses 4.03 ha of Dillon identified wetland communities (SWD, SWT and SWT/THD), of which includes 0.98 ha of PSW mapped by the MNR. Wetlands are considered as sensitive features and will be taken into account during Project planning and decision making as a mechanism to minimize Project impacts.

Wetlands play an important role with Indigenous communities as they support elements required for continued practice of Indigenous culture and rights (e.g., hunting, trapping, plant harvesting, ceremony, etc.). Although vegetation clearing will not represent a loss of vegetation on the landscape, it will result in changes in vegetation composition in small portions of wetland communities. Such changes have the potential to produce edge effects (positive, negative and/or neutral), as well as result in habitat fragmentation (e.g., dividing an existing wetland community). Changes in habitat composition has the potential to result in changes in habitat quality for some flora and fauna, while fragmentation of wetlands has the potential to result in a decline in species occupancy. The portions of wetland communities that are located within the ROW are characterized as disturbed, as they are located along the outer boundary/edge of the community adjacent to corridors of anthropogenic land use (roads, residential, agricultural). As such, the Project is not anticipated to impact the overall functionality or quality of wetland to accommodate vegetation removal for incompatible vegetation.

Section 7.7.7.5 describes Project impacts on wetlands and associated mitigation measures that would be employed with respect to wetlands during construction.

7.7.8.2. Fish and Aquatic Habitat

The proposed Project crosses several watercourses identified as direct fish habitat. Although transmission towers will be located to avoid impacts to fish and aquatic habitat, there is potential for fish and aquatic habitat to be affected short-term during the construction phase of the proposed Project through the removal of trees within riparian areas which are incompatible with overhead transmission lines (i.e. their height at maturity has potential to interfere with the safe and reliable operation of the line) and potential temporary watercourse crossings required to facilitate construction activities.

The removal of trees within riparian areas has the potential to affect fish habitat as it may reduce the amount of potential shade provided to fish and aquatic habitat, thereby influencing potential changes in water temperature for small reaches. Removal of trees within riparian areas also has the potential to affect fish and aquatic habitat cover as it would represent a reduction of potential overhanging vegetation. In instances where trees within riparian areas require removal, their root structures will remain intact (i.e., grubbing will not be conducted within riparian areas) in order to maintain their current soil stabilization characteristics. With respect to temporary watercourse crossings, potential effects on fish and aquatic habitat include alterations to riparian areas, increased turbidity and release of deleterious substances. In the event in-water works are required to support the construction of potential watercourse crossings, Hydro One or the EPC will engage with the MECP, MNRF, NPCA and/or DFO to discuss the application of timing restriction for in-water works, and to obtain necessary permits and approvals as required before the commencement of work.

Other potential disturbances to fish and aquatic habitat resulting from construction activities near water would be minimized through the development of an ESC plan, which would include mitigation measures such as crossings during low flow conditions, retaining stream bank vegetation (where practical), and storing materials away from water features. In addition, no refuelling or vehicles and/or equipment would be permitted within 30 m of a watercourse to prevent potential spills (e.g., fuel, oil, lubricant) from entering aquatic features.

As previously stated, although the transmission towers will be located to avoid impacts to fish and aquatic habitat, the aforementioned potential short-term effects on fish and aquatic habitat can be avoided and or mitigation through the application of mitigation measures included in **Sections 7.7.4, 7.7.5,** and **7.7.8.** In addition, where implosive conductor splicing is being considered, work will be planned and conducted in accordance with the Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters (DFO), as deemed necessary.

7.7.8.3. Woodlands

The proposed Project ROW crosses 0.83 ha of Dillon identified woodland communities, all of which are anthropogenically influenced (WOD, WOD/THD), of which includes 2.61 ha of a combined category of potential and/or confirmed significant woodlands. Note that portions of the potential and/or confirmed significant woodlands include community types of thicket (THD), that were not included in Dillon's classification of a woodland (as per ELC criteria); as such, thicket communities were not included in the 0.83 ha of Dillon identified woodland communities.

Encroachment to woodland communities and removal of trees associated with contiguous woodland communities will be avoided and minimized where feasible to reduce the impacts to woodlands within the ROW. Hydro One acknowledges that woodlands provide wildlife habitat and local social importance. Additionally, woodlands within the PSA provide significance to Indigenous communities as they are considered home to their non-human relatives who hold spiritual and intrinsic value in both the human and non-human realms.

Section 7.7.7.1 describes Project impacts on woodlands and associated mitigation measures that would be employed with respect to woodlands during construction.

7.7.8.4. Species at Risk

As noted in **Section 4.6.8,** species designated as either endangered or threatened under the ESA are provided species and habitat protection. Additionally, migratory birds listed under Schedule 1 of SARA are afforded species and residence protection. Generally, potential or anticipated impacts to SAR habitat will be avoided during detailed design, where possible. Where encroachment to potential SAR habitat, or impacts to

SAR may occur, consultation and required permitting or authorizations under the ESA will be obtained prior to construction and site alteration activities. In addition, construction personnel will be aware of the potential presence of, and able to identify, SAR with the potential to occur within work areas.

The ROW associated with the proposed Project was assessed to potentially provide theoretical habitat for vegetation and wildlife SAR, including SAR vegetation (Black Ash, Eastern Flowering Dogwood, Butternut, Round-leaved Greenbriar) and SAR wildlife (Bobolink, Eastern Meadowlark, Red-headed Woodpecker, Acadian Flycatcher, Barn Swallow, Wood Thrush and SAR bats).

7.7.8.4.1. SAR Vegetation

Potential occurrence of SAR vegetation (Butternut, Black Ash, Eastern Flowering Dogwood, Round-leaved Greenbriar) was identified to within the PSA of the Preferred Route Alternative. Although these species were not identified during the 2024 confirmatory site assessment, appropriate survey effort and seasonality to evaluate species detection/non-detection is occurring for the 2025 growing season. In the event Black Ash and Butternut are identified, a health assessment will be completed to determine if the trees are retainable (healthy) and general characteristics to determine if they meet eligibility for protection under the ESA.

7.7.8.4.2. SAR Wildlife

Potential occurrence and habitat of SAR wildlife (Bobolink, Eastern Meadowlark, Red-headed Woodpecker, Acadian Flycatcher, Barn Swallow, Wood Thrush and SAR bats) was identified within the PSA of the Preferred Route Alternative.

7.7.8.4.3. Bats

Habitat with the potential to support SAR bats will be assessed for the presence of habitat trees (snags, cavities) in 2025 during the leaf-off period to inform potential constraints during detailed design and to identify areas where habitat can be retained prior to construction, where possible. Contractors will be educated on the potential for bats/bat habitat which may be encountered within the general work areas. In the event potential SAR bat habitat (trees with a 10 cm or greater diameter at breast height with supporting roosting characteristics) requires removal in support of the proposed Project,

consultation with the MECP is recommended, where additional study of bat visual exit and/or acoustic surveys may be required during the month of June in accordance with agency approved protocols to determine SAR bat use (or lack thereof).

To mitigate impacts to SAR bats, tree removals are required to take place during the non-active bat period (October 1 to March 31). Trees that may be impacted by removal activities will be evaluated for their potential to provide suitable bat roosting habitat.

7.7.8.4.4. Turtles

Blanding's Turtles have the potential to occur in wetlands within the PSA of the Preferred Route Alternative. Additionally, nesting habitat for this species may occur across the PSA. Blanding's Turtle are known to travel up to 250 m (or in some cases, further) from their overwintering habitat in search of nesting sites (ECCC, 2018). While Blanding's Turtle is primarily associated with naturally occurring wetland and aquatic habitats, this species will nest in a variety of human-altered sites such as fields, gravel roads, and road shoulders (ECCC, 2018). Based on current guidance detailed in the *Recovery Strategy for the Blanding's Turtle, Great Lakes/ St. Lawrence population in Canada* (ECCC, 2018), active roads and shoulders are not protected as Blanding's Turtle habitat under the ESA (Section 10), as they are not naturally occurring, and resumed to be ecological traps; however, these areas may still act as potential nesting habitat. Where nests are established in these road shoulders, the nests are protected under the ESA (Section 9). Characterization of overwintering habitat and areas that may potentially support Blanding's Turtle will be assessed in 2025 to inform potential constraints during detailed design and to identify areas where habitat can be retained prior to construction, where possible. Where applicable, construction personnel will be educated on the potential for Blanding's Turtle/ Blanding's Turtle habitat which may be encountered within the general work areas.

7.7.8.4.5. Birds

The following SAR birds and their habitat were identified as having the potential to occur within the PSA of the Preferred Route Alternative: Bobolink, Eastern Meadowlark, Red-headed Woodpecker and Acadian Flycatcher, Wood Thrush and Barn Swallow.

Bobolink, Eastern Meadowlark, Red-headed Woodpecker and Acadian Flycatcher are afforded protection under the ESA, as well as the SARA as migratory birds listed under Schedule 1 of the SARA; whereas Wood Thrush and Barn Swallow are not afforded species and habitat protection under the ESA but are afforded protection under the SARA as migratory birds listed under Schedule 1 of the SARA.

SARA contains provisions that allow for the protection of certain listed SAR individuals, their residences as well as their critical habitat. SARA defines a residence as: "*a dwelling-place, such as a den, nest or other similar area or place, that is occupied or habitually occupied by one or more individuals during all or part of their life cycles, including breeding, rearing, staging, wintering, feeding or hibernating."*.

Both Bobolink and Eastern Meadowlark prefer tall grassland habitats, including native prairies and savannahs, as well as non-native pastures, hayfields, weedy meadows, herbaceous fencerows, and airfields. Potential Bobolink and Eastern Meadowlark habitat can be found in fragmented areas of grassland habitats within the PSA of each segment of the Preferred Route Alternative. Though Bobolink and Eastern Meadowlark do not have species-specific definitions for 'residence' under SARA, the nest would qualify as the residence of a Bobolink or Eastern Meadowlark based on SARA's standard definition for residence. To reduce potential impacts to nesting Bobolink and Eastern Meadowlark, the following mitigation measures are proposed:

- Prioritize, where possible, construction activities outside of sensitive timing period for Bobolink and Eastern Meadowlark (i.e., active breeding season May 1 to July 31) when working adjacent to areas identified as suitable breeding habitat for Bobolink and Eastern Meadowlark;
- Should construction activities and/or vegetation clearing be required in or adjacent to areas identified as potentially suitable breeding habitat for Bobolink and/or Eastern Meadowlark, a confirmatory grassland breeding bird survey may be required to determine presence/absence of SAR grassland birds; and
- In the event a Bobolink and/or an Eastern Meadowlark breeding habitat is confirmed through confirmatory grassland breeding bird surveys, alteration or removal of the habitat will require authorizations under the ESA. Removal of Bobolink and/or Eastern Meadowlark habitat and/or their nests during the active nesting season for these species would result in potential adverse impacts to the species residence.

Red-headed Woodpecker can be found in a variety of treed habitats, including deciduous woodlands, open woodlots, parks, golf courses, cemeteries, treed agricultural and urban areas, savannah-like grasslands with scattered trees, riparian forests, wetlands, beaver ponds, burned areas, and along forest edges and roadsides. As Red-headed Woodpecker can be found in a variety of treed habitats, areas of potential habitat can be difficult to define. However, given the higher density of woodlands along B2 of the Preferred Route Alternative, potential Red-headed Woodpecker habitat may be found in the deciduous woodlands within the PSA of this area. Although Red-headed Woodpecker does not have a species-specific definition for 'residence' under SARA, the nest would qualify as the residence of a Red-headed Woodpecker based on SARA's standard definition for residence.

Acadian Flycatcher require large, mature, undisturbed forests, typically over 40 hectares, and prefers interior forest areas more than 100 meters from the edge. It inhabits the understory of closed-canopy woods, often in swamps, ravines, or near water. Potential Acadian Flycatcher habitat can be found in the dense deciduous woodlands along B2 within the PSA of the Preferred Route Alternative. Under SARA, the residence of Acadian Flycatcher is defined as the nest (ECCC, 2017).

To reduce potential impacts to nesting Red-headed Woodpecker and Acadian Flycatcher, the following mitigation measures are proposed:

- Prioritize, where possible, construction activities outside of sensitive timing period for Red-headed Woodpecker and Acadian Flycatcher (i.e., active breeding season May 1 to July 31) when working adjacent to areas identified as suitable breeding habitat for Red-headed Woodpecker and Acadian Flycatcher;
- Should construction activities and/or vegetation clearing be required in or adjacent to areas identified as suitable breeding habitat for Red-headed Woodpecker and/or Acadian Flycatcher, a confirmatory woodland breeding bird survey may be required to determine detection/non-detection of SAR woodland birds; and
- In the event a Red-headed Woodpecker and Acadian Flycatcher breeding habitat is confirmed through confirmatory woodland breeding bird surveys, alteration or removal of the habitat will require authorizations under the ESA. Removal of Red-headed Woodpecker and/or Acadian Flycatcher habitat as well as their

nests during the active breeding period for these species would result in potential adverse impacts to the species.

Under SARA, Barn Swallow and Wood Thrush are not afforded protection under the ESA, but are migratory birds listed under Schedule 1 of SARA, and as such, these individuals and their residences are afforded protection under SARA.

Under SARA, a Barn Swallow's residence is defined as the nest (ECCC, 2019). Though Wood Thrush do not have a species-specific definition for 'residence' under SARA, the nest as well as the tree the nest resides in would qualify as the residence of a Wood Thrush based on SARA's standard definition for residence.

In the event a Barn Swallow or Wood Thrush nest is confirmed within the ROW of the Preferred Route Alternative, removals would be required outside of the migratory bird breeding season (April 1 to August 31). In the event a Barn Swallow or Wood Thrush nest is required for removal during the migratory bird nesting season, a permit under the SARA may be required and would be determined in consultation with ECCC. Removal of Barn Swallow or Wood Thrush nests during the active nesting season for these species would result in potential adverse impacts to the species residence.

7.7.8.4.6. Aquatics

The proposed Project transmission line ROW was assessed to provide habitat for three aquatic SAR (one fish and two mussels) based on DFO mapping. Potential impacts to these aquatic SAR and associated mitigation measures outlined above under **Section 7.7.8.2** would adequately minimize or avoid potential impact to these species and their habitat. However, if vegetation removal is proposed within riparian areas that contribute to habitat for these aquatic SAR, and/or in-water works during construction is proposed, MECP and DFO will be consulted, and necessary permits and approvals would be obtained in advance of construction.

Where applicable, construction personnel will be aware of the potential presence of, and able to identify, SAR with the potential to occur within the general work areas. Should SAR be encountered during construction activities, activities within the immediate vicinity of the SAR will be stopped until it has been determined that harm to the individual(s) will not occur. The required activities will be assessed to determine whether

the work/schedule can be modified, or mitigation measures employed, to avoid potential effects on SAR and their habitat. If avoidance of SAR and/or SAR habitat is not possible, MECP, ECCC/CWS and/or DFO will be consulted in advance of construction to discuss detailed mitigation measures and or/assess the need for permitting/approvals under the ESA, SARA or the *Fisheries Act*.

7.7.8.5. Wildlife and Significant Habitat

Based on the results of the background review, ELC mapping, and results of the 2024 field investigations, the following confirmed and candidate SWH types were identified within the PSA for the Preferred Route Alternative:

- Candidate SWH for Waterfowl Stopover and Staging Areas;
- Candidate SWH for Raptor Wintering Areas;
- Candidate SWH for Bat Maternity Colonies;
- Candidate SWH for Turtle Wintering Areas;
- Candidate SWH for Reptile Hibernacula;
- Candidate SWH for Colonially Nesting Bird Breeding Habitat (Tree/Shrub);
- Confirmed SWH for Deer Wintering Congregation Area;
- Candidate SWH for Waterfowl Nesting Area;
- Candidate SWH for Bald Eagle and Osprey Nesting, Foraging and Perching Habitat;
- Candidate SWH for Woodland Raptor;
- Candidate SWH for Turtle Nesting;
- Candidate SWH for Seeps and Springs;
- Candidate SWH for Amphibian Breeding Habitat (Woodland and Wetland);
- Candidate SWH for Woodland area-sensitive Bird Breeding;
- Candidate SWH for Amphibian Movement Corridors;
- Candidate SWH for Marsh Breeding Bird;
- Candidate SWH for Terrestrial Crayfish;
- Confirmed SWH for Special Concern and Rare Wildlife Species:
  - Swamp Rose-Mallow;
  - Weak Stellate Sedge;
  - Black Gum;
  - White Wood Asher;
  - Common Nighthawk;
  - Grasshopper Sparrow;

- Barn Swallow;
- Wood Thrush;
- Eastern Wood-pewee;
- Woodland Vole;
- Snapping Turtle;
- Northern Map Turtle;
- Eastern Milksnake;
- Eastern Ribbonsnake;
- Spotted Sucker;
- Grass Pickerel; and
- Monarch.

During Project construction activities, the following would be taken into consideration to avoid and/or mitigate impacts to wildlife habitat:

- Boundaries of important wildlife habitats will be identified and the ROW boundaries flagged prior to clearing;
- Retention of snags and cavity trees with potential to support bats, to the extent practical;
- Retention of super canopy trees for nesting, to the extent practical;
- Trees containing stick nests and areas where active animal dens or burrows are encountered will be left undisturbed until unoccupied, as determined by a qualified person;
- Stick nests on transmission structures will be left undisturbed if eggs or young are in the nest until the young have fledged unless there is an immediate safety concern addressed. If no eggs or young are observed, the nest will be removed;
- In the event that removal of stick nests is deemed to be required during detailed design or construction, Hydro One or its EPC contractor will consult with the MNRF to discuss permitting requirements;
- Tree/vegetation clearing will be avoided during the migratory bird nesting period (April 5 to August 30), where practical;
- Tree clearing will be avoided during the bat active period (April 1 to September 30);
- Where vegetation clearing is required, some of the cleared vegetative material may be used to create brush piles along the ROW edges to promote wildlife habitat were deemed appropriate;
- General avoidance of wildlife and wildlife habitats, where practical;

- Hydro One and its EPC contractor will review the SWHMST as detailed environmental mitigation plans are developed for construction;
- In the event that collection, salvage or relocation of wildlife is required due to construction activities, Hydro One or its EPC contractor will consult with MNR to discuss permitting requirements;
- Promotion of wildlife habitat through vegetation control;
- Retention of natural vegetation, where possible;
- Use of native plant species where restoration seeding or planting is conducted;
- Construction personnel will be educated on the potential for wildlife which may be encountered within the general work areas; and
- In the event in-water works are proposed during Project construction, areas with the potential to support turtle wintering areas will be avoided during the turtle wintering season (October 1 to April 30), and areas with the potential to support breeding amphibian habitat will be avoided during the anuran breeding period (April 1 to June 30).

7.7.8.6. Invasive Species

There is potential for the proposed Project to inadvertently facilitate the spread of invasive species that may occur within or adjacent to work areas during the construction phase. Construction staff will be educated on the identification of invasive species and the importance of avoiding their spread to new areas. Additional measures that would be undertaken to reduce the spread of invasive species include:

- Utilizing native plant species during construction restoration;
- Taking care to avoid spreading invasive species (especially invasive plant species) that occur in or adjacent to work areas and educating crews on the importance of preventing the spread of invasive species;
- Abiding by the *Invasive Species Act* regulations;
- Proper handling, containment and disposal of invasive plant material, where required;
- Inspecting and cleaning equipment and vehicles as necessary to reduce potential for spreading invasive species propagules. Guidance should follow the Clean Equipment Protocol for Industry (Halloran, 2016); and
- Tracking special treatment areas (e.g., large established populations of invasive species within the ROW) for consideration when planning future maintenance works.

7.8. Indigenous Culture, Values and Land Use

As indicated in **Section 4.4.4**, there are no First Nation reserve lands located in the PSA.

Hydro One is committed to developing and maintaining relationships of mutual respect with Indigenous communities and recognizes that Indigenous communities and their lands are unique in Canada, with distinct legal, historical and cultural significance. Hydro One is committed to continuing engagement with the Indigenous communities to provide regular Project updates, and actively identify and avoid geographically defined areas which support current or past traditional use for the harvesting of wildlife or fish, the harvesting of traditional plants, or use as sites of spiritual or cultural significance. Similarly, Indigenous communities will be provided opportunities to review the findings of archaeological field surveys and assessment reports.

Indigenous communities have a desire to protect and mitigate adverse effects to Natural Environment features such as SAR, wildlife, fish and aquatic habitat, and natural or naturalized areas with their traditional territory that could be used for hunting, gathering, harvesting or other traditional uses. Mitigation measures to address effects to these features are described elsewhere in this chapter. Three communities expressed interest in being involved with future archaeological and Natural Environment field work, dependent on their internal capacity. Hydro One and its consultants have been working closely with interested communities and will include representatives in archaeological and environmental fieldwork. Indigenous communities will be provided opportunities to review the findings of archaeological field surveys and archaeological reports.

Hydro One will continue to seek to identify community concerns and build appropriate actions into proposed Project plans to address expressed concerns.

7.9. Recreational Resources

The PSA hosts cricket, rugby, and paintball recreational facilities, along with the Niagara Region Model Flying Club in the north, and the Welland Minor Baseball Association in the south. The Welland Canal and Welland River also present recreational opportunities to nearby communities.

There is potential that these recreational resources, particularly the cricket pitch, paintball facility and the Niagara Region Model Flying Club along the Preferred Route Alternative, may be temporarily affected during the construction and maintenance phase of the proposed Project due to the presence of construction laydown areas within the corridor, as well as construction equipment and presence of construction crew members and traffic. Impacts during the operations phase are not anticipated. While there may be some temporary impacts to the enjoyment of recreational resources adjacent to the proposed Project, such impacts are expected to be short-term in nature. Advanced notice will be provided to nearby residences, farms, landowners and commercial operations, outlining the location of entry/exit points for the construction site as well as the schedule for construction work or construction related traffic in those areas. Clear and temporary road signage will also be created and installed to reflect this information. Disturbance to existing recreational resources will be avoided to the extent practical. This may include timing work to avoid seasons of heavier use. Safety precautions will be utilized throughout the Project area to protect the public such as anti-climbing devices and appropriate signage where necessary.

7.10. Visual and Aesthetic Resources

The proposed Project is located within predominantly flat agricultural lands, providing views that are open and expansive. Existing vertical elements include traffic and light standards, existing transmission lines. The majority of sensitive receptors are residences with wide views into the horizon. Many of the properties have existing tree lined wind breaks, natural features and hedgerows that offer localized privacy from adjacent visual elements.

Location of transmission structures is one of the largest factors influencing the visual effects to specific receptors. Design of the transmission line (e.g., placement of structure locations) will be visible to nearby sensitive receptors.

During detailed design (selection of transmission structure placement), consideration will be given to proximity to nearby sensitive receptors, existing visual screening (e.g., vegetation), and existing infrastructure and other landscape characteristics, in order to mitigate the net visual change resulting from the new transmission structures.

While the new transmission structures will be of a greater height, the proposed Project will repurpose approximately 13.17 km of an existing 115 kV transmission corridor (including replacement of the existing structures), which will significantly reduce the net visual change for over two-thirds (2/3) of the proposed Project's total length.

7.11. Technical Considerations

7.11.1. Infrastructure Crossings

Construction of the proposed Project will require crossings of existing linear infrastructure; including provincial Highway 140, constructed drains, railway lines, as well as running parallel to existing highways, roadways and along and over several municipal roads. Permanent or long-term impacts to existing linear infrastructure are not anticipated. Rider poles, boom-tipped riders or similar protection will be utilized during conductor stringing. Disruption to traffic on roads and highways during construction is anticipated to be temporary and short in duration.

Use of temporary or rolling closures of highways may be required to facilitate stringing activities. Where the new transmission line crosses Highway 140, setback distances provided by MTO will be respected and adhered to. Work within MTOs highway ROW or permit control area will require an Encroachment Permit and/or Land Use Permit as well as a consultation with MTO during detailed design. Hydro One's Contractor will obtain all necessary Encroachment Permits and Land Use Permits from MTO prior to the start of construction.

To facilitate construction of the aerial crossings associated with railway lines, temporary flagging operations may be required. Lastly, municipal drainage superintendents will be consulted during detailed design and construction planning to discuss effects to municipal drains. Placement of transmission structures will avoid municipal drains to the extent practical, including consideration of setbacks as communicated by the municipal drainage superintendents and their staff. Creation of new crossings will be avoided to the extent practical by using existing access and crossings and by accessing work areas from either side of drains, where feasible. Disturbed areas will be restored to a pre-disturbed state or better following the completion of construction.

7.12. Summary of Potential Environmental Effects, Mitigation Measures, and Net Effects

Table 7-1 provides a summary of potential effects, the associated mitigation, and the net effects identified for the proposed Project, during the construction and operation and maintenance phase.

Table 7-1: Summary of Potential Effects, Mitigation Measures and Net Effects

Environmental Concern	Project Phase & Potential Effects	Mitigation Measures	Net Effects
Agricultural Resources: Crop Loss	**Construction & Maintenance:** Temporary removal of crops and soils supporting crop production, as well as permanent removal of land available for agricultural production as a result of Project infrastructure (e.g., tower footings). For the majority of the transmission line route, tower footings represent the only long-term loss of agricultural lands as the majority of the ROW can still be utilized for crops or pasture. However, Hydro One does recognize that individual circumstances, such as some transmission line crossing locations, may become more encumbered due to the need to maintain appropriate technical clearances from both the ground surface and other conductors, leading to additional crossing structures and lower vertical clearances. In such circumstances, there is potential for a slightly larger area (beyond the individual tower footings) of agricultural lands capable of being rendered out of production.	The following mitigation is recommended to address these potential effects: • Contact will be maintained with landowners regarding work schedules and other items of interest (e.g., access roads, minimizing disturbances to existing and planned farm operations, etc.). • Where practical, some construction and maintenance activities will be scheduled to avoid the growing season or sensitive times of year (e.g., extreme wet periods) although it is recognized that this may not be feasible in all circumstances. • Access roads, staging areas, tower construction and stringing activities will be constructed to a minimum length and width required to accommodate the safe movement of construction equipment. • Existing farm lanes and other existing access roads will be used whenever practical. In the event farm lanes are absent, access will be focused along field edges, to the extent practical. • Work will be limited to the planned access roads, staging and work areas. If a later expansion to these areas is required, it will be discussed with the landowner in advance. • Lands will be restored following construction and maintenance activities (e.g., removal of temporary access roads, removal of erosion and sediment controls, disking of lands, aeration, and cultivation of soils to alleviate soil compaction where required), where feasible.	Net effects include permanent removal of land available for agricultural production as a result of Project infrastructure (e.g., tower footings); not considered significant. Crop loss and lands out of production temporarily as a result of the proposed Project (e.g., during construction) will be compensated.
Agricultural Resources: Soil Compaction	**Construction & Maintenance:** Compaction of soil caused by movement of construction equipment or maintenance vehicles over agricultural lands.	In addition to the mitigation outlined above, the following additional mitigation is recommended to address these potential effects: • Equipment with low bearing capacity will be used, where practical. • Temporary access roads and work pads will be built in agricultural fields using measures such as mats or, geotextile and crushed rock, or equivalent means, which can be easily removed when construction is complete to allow for re-cultivation of the area.	No significant net effects are predicted.

Environmental Concern	Project Phase & Potential Effects	Mitigation Measures	Net Effects
Agricultural Resources: Soil Mixing	**Construction:** Potential for excavation activities to cause mixing of soil horizons, thus lowering the quality of soil.	In addition to the mitigation outlined above, the following additional mitigation is recommended to address these potential effects: • Where geotechnical conditions and engineering requirements allow, foundation types (such as helical piles) that minimize surface disturbance and does not require soil excavation or soil stripping of the foundation site may be used. • Stripping or excavation of soils will be minimized to the extent practical. • Where soil stripping is required, topsoil and subsoils will be removed and stockpiled separately. • Depths of soil being removed will be carefully monitored and minimized during stripping activities. • Volume of topsoil and subsoil salvaged for replacement or re-use on site will be maximized, where practical. • Vegetation, stone piles, fencing and deleterious materials will be removed prior to stripping. • For backfilling operations, topsoil and subsoil will be replaced in reverse order of excavation to minimize the potential for admixing and maximizing future growing potential. • Soil cover on exposed areas within agricultural areas will be discussed with the landowner for most appropriate solution. • Equipment and vehicle inspections and cleaning will be conducted as required during construction, to minimize the potential for inadvertent transport of trace soils between contaminated and non-contaminated agricultural fields. • Cleaning will occur in a manner that ensures that runoff is contained, and waste materials can be collected.	No significant net effects are predicted.
Agricultural Resources: Disturbance to Farm Operations	**Construction:** Potential to disturb farm operations including planting and harvesting schedules, spraying, tiling activities, etc. **Operation:** Impediments to the maneuverability of agricultural equipment.	In addition to the mitigation outlined above, the following additional mitigation is recommended to address these potential effects: • Constructed access roads will be smooth and tapered to allow for vehicular, pedestrian, and equipment crossings, where applicable	Agriculture is a compatible use within overhead transmission line ROWs. Some agricultural fields will have new transmission structures. The selection of route alternative A1/B2/C1/C2 as the Preferred Route Alternative will maximize the ability to repurpose existing transmission corridors, resulting in the least amount of net new transmission structures within agricultural fields. No significant net effects are predicted.

Environmental Concern	Project Phase & Potential Effects	Mitigation Measures	Net Effects
Agricultural Resources: Vegetation Removal	**Operation:** Partial removal or fragmentation of existing hedgerows and windbreaks between agricultural land parcels.	The following mitigation is recommended to address these potential effects: • Vegetation that will not affect construction or line clearances will be retained, where practical.	Net effects include permanent removal of incompatible vegetation (hedgerows/windbreaks) to ensure the safe operation of the transmission line; not considered significant. Incompatible vegetation removal will not represent a loss of vegetation on the landscape, but rather a transition from vegetation that is incompatible with transmission line corridors, to vegetation that is compatible.
Agricultural Resources: Contamination of Organic or Identity Preserved (IP) Crops	**Construction & Maintenance:** Potential for activities, including use of herbicides to control noxious weeds or vegetation, to contaminate organic or IP crops or agricultural fields transitioning to organic/IP crop types. Potential for inadvertent movement of trace soils between agricultural fields which contain organic or IP crops.	In addition to the mitigation outlined above, the following additional mitigation is recommended to address these potential effects: • Contact will be made with landowners to determine if organic or IP operations are present which may require additional considerations during construction planning. • Field crews will be informed if working in organic or IP croplands. • Equipment and vehicle inspections and cleaning will be established during construction, to minimize the potential for inadvertent transport of trace soils between contaminated and non-contaminated agricultural fields. • Cleaning will occur in a manner that ensures that runoff is contained, and waste materials can be collected. • Work areas will be assessed during pre-construction activities to identify the presence of weed species, degree of infestation, and the distribution of weeds within the Project footprint and the immediately adjacent areas. • Work areas will be monitored for weeds throughout the Project and until the Project has been completed. • The transmission ROW will be monitored for establishment of weeds until construction is completed. • Corrective measures for managing weeds may include herbicide application, mowing, and hand pulling. • Weed control during construction will be conducted by the construction contractor.	No significant net effects are predicted.

Environmental Concern	Project Phase & Potential Effects	Mitigation Measures	Net Effects
Agricultural Resources: Damage to Field Tiles	**Construction & Maintenance:** Potential for equipment to damage or crush existing agricultural tile drains.	In addition to the mitigation outlined above, the following additional mitigation is recommended to address these potential effects: • Landowners will be consulted to determine existing field tile locations in support of avoidance/protection measures. • Tile drains will be avoided and/or protected (e.g., through tower locations, temporary construction access), to the extent practical. • Where temporary access roads and work pads are built in agricultural fields, measures such as mats or, geotextile and crushed rock, or equivalent means will be used to protect tile drains. • Where practical, some construction and maintenance activities will be scheduled to avoid the growing season or sensitive times of year (e.g., extreme wet periods) although it is recognized that this may not be feasible in all circumstances.	No significant net effects are predicted. If tile damage to tile drains occurs as a result of construction activities and/or maintenance activities, the tile will be repaired by a licensed tile drainage contractor in consultation with affected landowner.
Agricultural Resources: Livestock Stress, Loss or Injury	**Construction & Maintenance:** Potential for activities to be required within livestock managed areas (grazing fields, pastures, etc.) resulting in potential for livestock stress, injury or loss. In addition, potential use of implosive splicing may scare or startle agricultural livestock.	In addition to the mitigation outlined above, the following additional mitigation is recommended to address these potential effects: • Landowners will be informed in advance of upcoming work activities which may disturb or pose a risk to livestock, and consulted with respect to potential mitigation measures, such as moving or containing livestock, as necessary. • Field crews will be informed about livestock in the vicinity of work areas to confirm they are aware of the need to secure gates, are cognizant of noise sensitivity controls, and to ensure clean–up of construction materials and debris at the end of each day to minimize potential livestock ingestion. • If excavations cannot be closed immediately, exclusion fencing will be erected to protect livestock from entering. • Vehicles and equipment will be inspected and cleaned as necessary to prevent the potential introduction or spreading of diseases. • Existing gates and fences will be used as required. All fences and gates will be left in "as-found" condition following construction. • Livestock access control gates and fencing will be installed during construction at roads and between fenced fields as necessary to prevent escape of livestock or movement of	No significant net effects are predicted. Compensation will be made for loss or injury to livestock directly resulting from activities associated with the proposed Project.

Environmental Concern	Project Phase & Potential Effects	Mitigation Measures	Net Effects
		livestock into work areas. • Prior to any use of implosive splicing, a Blasting Communication and Management Plan will be developed outlining proper storage, security, detonation, and notification requirements. • Nearby area residents, municipal authorities, police department, and other construction crews will be notified about the use of implosive splicing, at least one week prior to the work commencing. • Signs shall be posted on all roadways leading to a blasting area in accordance with government rules and regulations. • Safe distances of the blasting site will be maintained from other employees, vehicles, equipment, structures, and fire hazard sources. Blasts will be performed during pre-determined times.	
Agricultural Resources: Potential GPS Signal Interference	**Operation:** Some farmers, on other similar Hydro One Transmission Line Projects, have raised concerns regarding potential for overhead transmission lines to interfere with automated or GPS-guided farm equipment, when said equipment is directly below the conductors.	Hydro One acknowledges that localized issues have been observed by farmers beneath transmission lines. While we do not anticipate effects to communication systems in farm equipment, Hydro One will work with potentially concerned farmers to collect information on the systems of concern and contact manufacturers of these systems to gain further insight into potential concerns and possible solutions, if applicable.	No significant net effects are predicted. The Preferred Route Alternative will maximize the ability to repurpose existing transmission corridors. As a result, the amount of net new transmission line (compared to currently existing) located on agricultural fields will be minimized. While obstructions such as buildings or trees are known to block reception of GPS signals, published studies assessing these concerns indicate that overhead power line conductors are too thin to cause appreciable screening. Likewise, corona or sparking on a power line generates insufficient noise at frequencies used for GPS to interfere with its operation.
Archaeological Resources	**Construction:** Disturbance to lands with archaeological potential.	Prior to construction, a Stage 2 Archaeological Assessment will be completed within the identified areas of archaeological potential along the new transmission line corridor in accordance with Ministry of Citizenship and Multiculturalism (MCM) requirements. In the event the Stage 2 Archaeological Assessment identifies the need for further assessment, a Stage 3 Archaeological Assessment will occur as required and as outlined in the “Standards and Guidelines for Consultant Archaeologists", Ministry of Tourism and Culture (2011). Should previously undocumented archaeological resources be	No significant net effects are predicted. Additional archaeological assessments will be completed as early as possible during detailed design and prior ground disturbing activities associated with construction work occurring on these areas or with acceptable avoidance and mitigation measures applied.

Environmental Concern	Project Phase & Potential Effects	Mitigation Measures	Net Effects
		discovered, they may be a new archaeological site and therefore subject to Section 48(1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out an Archaeological Assessment, in compliance with Section 48(1) of the *Ontario Heritage Act*. The Funeral, Burial and Cremation Services Act, 2002, S.O. 2002, c.33 requires that any person discovering human remains must cease all activities immediately and notify the police or coroner. If the coroner does not suspect foul play in the disposition of the remains, in accordance with Ontario Regulation 30/11 the coroner shall notify the Registrar, Ontario Ministry of Public and Business Service Delivery, which administers provisions of that Act related to burial sites. In situations where human remains are associated with archaeological resources, the Ministry of Citizenship and Multiculturalism should also be notified (at archaeology@ontario.ca) to ensure that the archaeological site is not subject to unlicensed alterations which would be a contravention of the *Ontario Heritage Act*.	
Built Heritage Resources and Cultural Heritage Landscapes	**Construction:** Based on the baseline findings of the Cultural Heritage Existing Conditions Report, there is the potential for project-related works to adversely affect known and potential built heritage resources and cultural heritage landscapes within the ROW.	Additional studies, including a Cultural Heritage Preliminary Impact Assessment, are required to confirm potential built heritage resources and cultural heritage landscapes along the transmission line ROW for the proposed Project. To the extent practical, work will be planned in a manner that avoids adverse effects to identified built heritage resources and cultural heritage landscapes. In the event that built heritage resources and cultural heritage landscapes cannot be feasibly avoided and will be directly impacted through destruction, alternation, or disruption, a property specific CHER and/or HIA will be completed. CHERs and HIAs will be conducted as early as possible during the detailed design phase, subject to receiving permission to access the properties for these surveys. The CHER and/or HIA will confirm the cultural heritage value or interest, the heritage attribute(s) of the impacted built heritage resource and will identify adverse effects. All evaluation and assessments will be in compliance with the Hydro One Cultural Heritage Identification and Evaluation Process and MCM Standards and Guidelines.	No significant net effects are predicted. CHERs and/or HIAs will be completed prior to construction where impacts to potential built heritage resources may occur.

Environmental Concern	Project Phase & Potential Effects	Mitigation Measures	Net Effects
		Appropriate mitigation or conservation measures that reduce or avoid potential adverse effects will be recommended based on the understanding of the cultural heritage value or interest, and heritage attributes of potential affected built heritage resources. Construction access and laydown areas will be temporary and restored to pre-existing conditions following the completion of construction.	
Land Use and Communities: Business Operations	**Construction:** Potential for activities to disrupt commercial or industrial operations.	In addition to the applicable mitigation outlined above, the following additional mitigation is recommended to address these potential effects: • Contact will be maintained with business owners with the potential to be impacted by construction regarding work schedule and other items of interest. • Access to businesses will be maintained at all times during construction to the extent feasible. If existing access cannot be maintained, arrangements will be made for alternate access, including public signage as required. • Construction activities and equipment will be managed to avoid damage and disturbance to adjacent properties, structures and operations. • Where seasonal businesses are identified, efforts will be made to avoid disruption during peak/busy seasons, to the extent practical. • Due to construction activities, there is a high probability that some brief planned outages to transmission circuits will be required to facilitate line connections during construction. During construction, these outages are anticipated to be brief and will only affect facilities that are connected directly to the transmission grid (the distribution supply to homes and businesses in the area will not be affected). Hydro One will work with any affected transmission-connected facilities to provide advance notification and discuss potential means to mitigate the impact of these temporary outages to their operations.	No significant net effects are predicted.

Environmental Concern	Project Phase & Potential Effects	Mitigation Measures	Net Effects
Land Use and Communities: Existing and Future Land Use Designations and Potential Future Development	**Operation:** While transmission lines can be largely compatible with development, its location will introduce certain restrictions to future uses within the lands occupied by the transmission line ROW.	The following mitigation is recommended to address these potential effects: • Throughout the province, development (both residential and commercial/industrial) occurs around existing transmission line corridors and stations. Uses deemed to be compatible with overhead transmission lines are often approved within transmission line ROWs. Hydro One has existing departments and processes to review proposals for developments that are planned adjacent to or within transmission line ROWs and facilitate compatible uses of these corridors. • Typically, there are no restrictions placed on development or new construction outside of the transmission line ROW itself. • Where and when future development projects or initiatives are proposed to occur along or within the ROW for the new transmission line, Hydro One will apply its existing processes to review and facilitate these future developments, including potential compatible uses within the transmission line ROW. • Hydro One will work with Municipalities to consider potential means of accommodating potential future development during design of the transmission line, within the property fabric traversed by the line.	No significant net effects are predicted. There will be opportunities for compatible uses to be developed within the ROW.
Land Use and Communities: Local Roads and Traffic	**Construction:** Potential for increased traffic, including heavy equipment, on local and regional roads. In addition, stringing of conductors across highways and roadways may require temporary road closures and detours.	The following mitigation is recommended to address these potential effects: • A pre- and post-construction road survey will be completed to document impacts to local roads caused by heavy equipment and increased construction traffic during construction activities and will be shared with municipal staff in advance of construction work commencing. • Adherence to seasonal load restrictions. • Damage to local and regional roads as a direct result of construction activities associated with the proposed Project will be repaired. • Where required, a Traffic Control Plan will be developed and shared with local municipalities, as necessary. • Construction traffic will access the construction area from	No significant net effects are predicted.

Environmental Concern	Project Phase & Potential Effects	Mitigation Measures	Net Effects
		the existing road network at specified construction access/egress locations. • Common parking areas will be established for construction crews. • Conductor stringing will utilize rider poles, boom-tipped riders or other protective measures in an effort to avoid road closures and other disruptions during stringing, to the extent practical. • If temporary road or highway closures (e.g., rolling closures) are required during stringing, access road construction, or other construction activities, the construction contractor will coordinate closely with the appropriate road authority to ensure that proper notice is provided and that required signage and traffic controls are utilized. The duration of temporary closures will be minimized to the extent practical. • Where construction work is planned to directly affect local traffic (e.g., temporary road or lane closures), notice will be issued and road signage will be erected to provide notification/pre-construction information to area residents on timelines, and potential detours, if required. • Traffic control officers or flag persons will be assigned to assist with construction entry/exit, as necessary.	
Land Use and Communities: Mud and Construction Debris	**Construction & Maintenance:** Potential for tracking of mud and migration of construction debris to areas outside of the construction zone.	The following mitigation is recommended to address these potential effects: • Roads will be cleaned to remove mud on an as needed basis. • Mud mats will be installed (on an as need basis) as a mechanism to reduce the transport of mud. • Vehicles and equipment will be regularly inspected and cleaned as necessary, construction sites will be kept generally tidy at the extent practical and waste bins will be available wherever solid wastes are generated. • Waste materials will be collected and transported to a licensed or approved waste management facility on a regular basis. • General clean site policies will be implemented requiring pick-up and disposal of refuse and construction waste on a regular basis.	No significant net effects are predicted.

Environmental Concern	Project Phase & Potential Effects	Mitigation Measures	Net Effects
Land Use and Communities: Electric and Magnetic Fields (EMF)	**Operation:** Potential exposure to increased EMF once the transmission line is energized.	The following mitigation is recommended to address these potential effects: • EMF levels associated with the proposed Project are anticipated to remain significantly lower than the general public exposure limits. • The proposed Project will be designed and operated in accordance with appropriate regulatory requirements.	No significant net effects are predicted. Health Canada does not consider that any precautionary measures are needed regarding daily exposures to EMFs at extremely low frequencies. There is no conclusive evidence of any harm caused by exposures at levels found in Canadian homes and schools, including those located just outside the boundaries of power line corridors.
Land Use and Communities: Noise & Vibration	**Construction, Maintenance & Operations:** Potential disturbance as a result of noise, including potential use of implosive splicing and their associated increased vibrations levels. The upgrade of Crowland TS from 115 kV to 230 kV will require the installation of new 230 kV transformers at the station, which will likely have greater noise emissions than the existing 115 kV transformers.	In addition to the applicable mitigation outlined above, the following additional mitigation is recommended to address these potential effects: • Construction will be completed in accordance with local noise control by-laws (City of Thorold Noise By-Law 37-2014, the City of Welland Noise By-Law 23-2015, and the City of Niagara Falls Noise By-Law 155-2014), or applicable exemptions. • No noise mitigations are required for the new 230kV yard at Crowland TS. • Construction will be completed in general accordance with the ministry's Publication NPC-115 "Construction Equipment", Publication NPC-118 "Motorized Conveyance" and NPC-119 "Blasting". • Sensitive receptors will be identified in the Project-specific Environmental Management Plan, for consideration when planning work such as implosive splicing locations; • As it relates to the upgrade of the Crowland TS, Hydro One is committed to investigating the use of the ministry's Publication NPC-300 "Environmental Noise Guideline – Stationary and Transportation Noise Sources – Approvals and Planning" during detailed design. • As it relates to Project operation, Hydro One is committed to investigating the use of the ministry's Publication NPC360 "Protocol for the Measurement and Prediction of Audible Noise from HV Transmission Lines" during detailed design.	No significant net effects are predicted.
Natural Environment Resources - **Physical Environment:** Spills	**Construction & Maintenance:** Potential inadvertent release of deleterious substances including oil, gasoline or other liquids.	The following mitigation is recommended to address these potential effects: • Refuelling of vehicles and equipment will be completed in a designated location a minimum of 30 m away from sensitive	No significant net effects are predicted.

Environmental Concern	Project Phase & Potential Effects	Mitigation Measures	Net Effects
		receptors, such as designated source water protection areas, watercourses, surface drainage features, wetlands, etc. • Fuelling of vehicles/equipment will occur utilizing an emergency spill tray to capture accidental release of fluids. • Fuelling operations will require the operator to visually observe the fuelling process 100% of the time. • If refuelling must occur outside of designated areas, additional containment or other mitigation and spill prevention measures will be utilized. • Equipment will be inspected regularly during construction to ensure it is clean and free of leaks. • An Emergency Response Plan and spill cleanup equipment will be maintained and be readily accessible at all times during construction and maintenance activities. • Spills will be addressed and remediated as soon as possible after a spill. • Areas impacted by a spill will be secured, and unauthorized personnel will be kept out of the affected area until further assessment and/or clean-up is conducted. • Clean-up and the disposal of contaminated materials will be managed in accordance with provincial regulations and guidelines. • Fuels, chemicals, lubricants or other deleterious substances will be stored on level ground in properly contained storage areas. • Only approved aboveground petroleum storage tanks will be used during the construction phase of the Project and will be stored in designated fuelling areas and with additional temporary containment measures. • The MECP Spills Action Centre will be notified of all reportable spills. • Work conducted near provincially/locally designated vulnerable areas (Intake Protection Zones [IPZs]) will be avoided or limited, where practical. • NPCA, the City of Thorold, the City of Welland, the City of Niagara Falls, the Niagara Region and Indigenous communities will be consulted as required in order to undertake the proper action for managing the potential threats to source water protection areas.	

Environmental Concern	Project Phase & Potential Effects	Mitigation Measures	Net Effects
Natural Environment Resources - **Physical Environment:** Waste Generation	**Construction & Maintenance:** Solid and/or liquid waste will be generated.	The following mitigation is recommended to address these potential effects: • Waste and recyclables will be sorted, segregated and removed to a licensed or approved waste management facility and/or recycling facility. • Excess construction materials (i.e., waste, granular fill, clay) will be removed from construction sites and areas on an ongoing basis. • Concrete wash water will not be discharged onto the ground at the Project site. All water from concrete chute washing activities will be contained in leak proof containers or in an approved settling pond. • Liquid and solid sewage wastes held in portable tanks will be removed by a licensed contractor and taken to licensed or approved disposal areas. • Waste materials will be contained and not allowed into sensitive receptors such as waterbodies, riparian areas, wetlands or agricultural fields. • Testing, handling, storage, transport and disposal of waste will be completed in accordance with applicable legislation.	No significant net effects are predicted.
Natural Environment Resources - **Physical Environment:** Excess Materials Management	**Construction & Maintenance:** Excess materials including topsoil and subsoil, may be produced during site excavations.	The following mitigation is recommended to address these potential effects: • Soils stored on-site (e.g., in stockpiles) will be managed in accordance with Ontario Regulation 406/19. • In the event soils are stockpiled, they will be managed in ways that are not conducive to bank swallow nesting (e.g., slopes maintained at 70° or less, and/or covered or bare soils seeded during the breeding season). • Excess soils proposed to be removed from the site will be characterized during geotechnical investigations, or prior to, or during construction and managed in accordance with Ontario Regulation 406/19. Efforts will be made to increase the reuse of soils on-site. • Excess soils will be managed off-site based on the quality of the material (i.e., sent for reuse or disposal). Reuse sites will be selected based on the characterization of excess soils, the need for a beneficial reuse and the volume of excess soils required.	No significant net effects are predicted.

Environmental Concern	Project Phase & Potential Effects	Mitigation Measures	Net Effects
		• Acknowledgement from reuse sites will be obtained prior to the movement of excess soils. • Soil movements will be tracked from the Project area to the final deposit site, if required. • A notice will be submitted to the MECP for the Project, if required.	
Natural Environment Resources – **Atmospheric Environment:** Climate Change	**Construction & Maintenance:** Emissions will be generated from vehicles and equipment.	In addition to the applicable mitigation outlined above, the following additional mitigation is recommended to address these potential effects: • Equipment will be properly serviced and maintained. • Where possible, idling of construction vehicles and equipment will be kept to a minimum and GPS or other navigation tools will be used in vehicles to optimize routing. • The transmission line will be designed to adequately withstand the effects of climate change.	No significant adverse net effects are predicted. Through the selection of route alternative A1/B2/C1/C2 as the Preferred Route Alternative, and subsequent addition of the Crowland TS 230 kV capacity operational line losses will be significantly reduced, resulting in a more efficient transmission supply to the area. Additionally, maintenance and other operational tasks requiring the use of combustion engine vehicles and equipment will become more efficient due to the need to maintain one transmission corridor instead of two, resulting in decreased fossil fuel emissions over the long term.
Natural Environment Resources - **Atmospheric Environment:** Air Quality	**Construction & Maintenance:** Potential for fugitive dust and impacts to air quality from vehicle emissions.	In addition to the applicable mitigation outlined above, the following additional mitigation is recommended to address these potential effects: • Vehicles will not exceed posted speed limits. • Minimize and stabilize vehicular traffic and exposed soils in high traffic areas with suitable cover material. • Avoid excavation and other construction activities that have the potential to release airborne particulates during excessively windy periods, to the extent practical. • If excavation or other construction activities with a potential to release airborne particulates must occur during windy conditions, dust controls will be utilized. • Cover or otherwise contain loose construction materials with the potential to release airborne particulates during transport, installation or removal to the extent practical. • Disturbed areas will be restored as soon as practical to minimize duration of soil exposure. • Effective dust suppression techniques, such as on-site watering, will be implemented as necessary.	No significant net effects are predicted.

Environmental Concern	Project Phase & Potential Effects	Mitigation Measures	Net Effects
Natural Environment Resources – **Atmospheric Environment:** Noise and Vibration	**Construction, Maintenance & Operation:** Potential disturbance as a result of noise, including potential use of implosive splicing and their associated increased vibrations levels. Indirect noise disturbance effects on wildlife during construction can include temporary declines in habitat occupancy, as well as changes to mobility and feeding habitat patterns.	Refer to the mitigation recommended for Noise and Vibration under Land Use and Communities above. The Project's Environmental Management Plan will identify nearby sensitive receptors to construction noise and vibration.	No significant net effects are predicted.
Natural Environment Resources - **Surface Water Resources:** Soil Rutting & Vegetation Removals	**Construction & Maintenance:** Potential for vehicles and equipment to create rutting in soils, creating ponding or channelization leading to additional erosion of soils. Vegetation removals (1.34 ha of incompatible vegetation) have the potential for increases in both overland flow and water temperature, as well as mobilization and transport of organic debris and sediment to nearby watercourses and municipal drains.	In addition to the applicable mitigation outlined above, the following additional mitigation is recommended to address these potential effects: • Where practical, activities with potential to cause rutting, ponding/channelization or erosion will be planned during stable and dry ground conditions. • Existing watercourse crossings and constructed access roads will be utilized to the extent practical. • Where required, temporary crossing structures will be installed for construction access at watercourses and other low-lying areas and will be removed upon completion of construction. • Existing, natural drainage patterns and flows will be identified and maintained to the extent possible. • Equalization culverts or similar methods may be used in construction of access roads. If surface water accretion issues are identified during construction, remedial measures (e.g., retroactive installation of equalization culverts within temporary access roads) will be undertaken promptly. • Compatible vegetation will be retained and buffered to protect sensitive receptors, where practical. • Machine clearing and grubbing will be restricted near sensitive environmental areas, hand clearing may be required within watercourse banks/riparian areas, where practical. • Vegetation removals will be minimized to the extent possible, and replanted/seeded with compatible vegetation as required. • Where erosion is of concern, exposed soils in previously vegetated areas will be re-vegetated as practical, or have other ESC measures (e.g., erosion blankets/coir mats, silt	No significant net effects are predicted.

Environmental Concern	Project Phase & Potential Effects	Mitigation Measures	Net Effects
		socks, etc.) applied as necessary. • Construction access and laydown areas will be restored following completion of construction. • Cleared vegetation will be relocated to designated areas away from aquatic features. • Equipment operation adjacent to watercourse and wetlands will be minimized, where practical. • Works adjacent or around watercourse banks will be conducted during appropriate conditions and times of the year (e.g., dry or frozen conditions), to the extent practical. • NPCA will be consulted (specifically for ESC measures within Regulated Areas) during detailed design.	
Natural Environment Resources - **Surface Water Resources:** Dewatering	**Construction:** Potential increase in surface water flows resulting from dewatering activities.	The following mitigation is recommended to address these potential effects: • Construction water will be discharged in compliance with permits and/or approvals from the MECP, the City of Thorold, the City of Welland, the City of Niagara Falls and the Niagara Region, as required. • If construction dewatering is required, a construction water management plan will be developed prior to construction and implemented appropriately (e.g., passing discharge water through a filter bag or drum before discharge to the environment to capture sediment and slow down the water velocity, etc.). • Where practical, opportunities to maximize retention times and reduce surface flow velocities will be executed. • Where geotechnical conditions and engineering requirements allow, foundation types (such as helical piles) that minimize the amount of construction dewatering required may be utilized. • Where practical, discharge of construction waters is to occur at least 30 metres away from sensitive features (e.g., watercourses, wetlands, etc.). If discharge of construction waters must occur within 30 m of a watercourse or wetland, erosion and sediment controls will be utilized.	No significant net effects are predicted.

Environmental Concern	Project Phase & Potential Effects	Mitigation Measures	Net Effects
Natural Environment Resources - **Surface Water Resources:** Erosion and Sedimentation	**Construction:** Potential for erosion, sedimentation and soil loss during site preparation and construction.	In addition to the applicable mitigation outlined above, the following additional mitigation is recommended to address these potential effects: • An ESC plan will be developed prior to construction and ESC measures will be identified and implemented as required. Measures such as erosion blankets/coir mats, silt socks, etc., or similar, are expected to form part of the ESC plan, where appropriate. • Areas with high erosion potential will be identified and avoided, to the extent practical. • Construction activities near sensitive features or areas may be suspended during extreme wet weather events, and crews will review and consider weather forecasts in their planning of such works. ESC installations will only be removed after disturbed areas are restored, accumulated sediment has been disposed, and construction activities in the vicinity are completed. In an effort to reduce potential erosion, mechanical or vegetation erosion control measures will be employed, such as buffer strips, erosion control blankets and sedimentation fences, as required. • Equipment operation on slopes adjacent to watercourses will be minimized to the extent practical. • Disturbed areas near watercourses and wetlands or sensitive environmental areas will be restored as soon as practical. • ESC measures will be regularly inspected (including after each significant rainfall event >10 mm) and repaired where necessary to maintain functionality.	No significant net effects are predicted.
Natural Environment Resources - **Surface Water Resources:** Construction work within areas regulated by Conservation Authorities	**Construction:** Potential for infrastructure (towers, watercourse crossings) to be located within Conservation Authority Regulated Areas.	The following mitigation is recommended to address these potential effects: • NPCA will be consulted during detailed design and construction planning. • Design of the transmission line will avoid or minimize the extent to which transmission towers are located within regulated areas, to the extent practical. • If necessary, a Permit for Development, Interference with Wetlands and Alternation to Shorelines and Watercourses will be obtained through the Conservation Authority (NPCA)	No significant net effects are predicted. Permit for Development, Interference with Wetlands and Alterations to Shorelines and Watercourses will be obtained in advance of construction, where necessary.

Environmental Concern	Project Phase & Potential Effects	Mitigation Measures	Net Effects
		prior to construction. • Construction work (e.g., tower construction, temporary construction access) within regulated areas will be conducted during stable (frozen/dry) ground conditions, to the extent practical or isolated with appropriate ESC measures and other environmental mitigation measures.	
Natural Environment Resources - Source Water Protection: Source Water Protection	**Construction and Maintenance:** Potential for contamination of surface water through spills or leaks.	Refer to the mitigation recommended for Spills under Physical Environment.	No significant net effects are predicted.
Natural Environment Resources - Source Water Protection: Source Water Protection	**Construction:** Potential for impacts to private drinking water wells.	In addition to the applicable mitigation outlined above, the following mitigation is recommended to address these potential effects: • Municipal wells and local private water wells within the area are not anticipated to be affected in any measurable way by potential construction dewatering of tower foundation holes or excavations from tower construction. • The majority of wells exploit aquifer(s) that are at much greater depth than the proposed tower excavations. In the event dewatering activities create a minor radius of influence, shallow well aquifers, groundwater levels and flows are expected to return to pre-construction conditions during the construction period.	No significant net effects are predicted.
Natural Environment Resources - Groundwater Resources: Groundwater Quality	**Construction:** Disturbance of contaminated soil has the potential to contribute to groundwater contamination.	Refer to the mitigation recommended for Spills and Excess Materials Management under Physical Environment, Soil Rutting under Surface Water Resources and for Soil Mixing under Agricultural Resources.	No significant net effects are predicted.
Natural Environment Resources - Groundwater Resources: Groundwater Quantity	**Construction:** Disturbance and compaction to soil has the potential to inhibit infiltration.	Refer to mitigation recommended for Soil Compaction under Agricultural Resources, as well as the mitigation recommended above for groundwater quality.	No significant net effects are predicted.

Environmental Concern	Project Phase & Potential Effects	Mitigation Measures	Net Effects
Natural Environment Resources - **Groundwater Resources:** Groundwater Quantity	**Construction:** Dewatering activities/removal of groundwater have the potential to result in temporary lowering of aquifers.	Refer to mitigation recommended for Dewatering under Surface Water Resources. Additional mitigation recommended includes: • If deemed necessary, a hydrogeological assessment will be conducted to inform construction planning, permitting and management.	No significant net effects are predicted. Groundwater resources within the area are not anticipated to be adversely affected by dewatering of tower foundation holes or excavations from tower construction. Such effects will cease upon the completion of construction dewatering.
Natural Environment Resources - **Designated or Special Natural Areas:** Significant Woodlands	**Construction:** Potential removal of 2.61 ha of significant woodlands (transition to compatible vegetation) within the ROW. **Maintenance:** Vegetation management within the ROW to ensure that incompatible vegetation does not threaten the safe and reliable operation of the transmission line.	In addition to the applicable mitigation outlined above, the following additional mitigation is recommended to address these potential effects: • The extent of clearing and vegetation removal required for the transmission line ROW within woodlands will be minimized to the extent practical. • Woodlands will be taken into account when planning access, and the footprint of work areas/access within woodlands will be minimized to the extent practical. • Incompatible vegetation will be salvaged or felled as appropriate. • Conduct tree removals associated with woodlands outside of the migratory bird breeding season (i.e., April 5 through August 31, zone C1 as provided by ECCC 2018) and the bat active season (i.e., April 1 to September 30), where practical. • In the event vegetation clearing is required during the breeding bird season, nest searches will be conducted by a qualified person in accordance with applicable provincial and federal requirements. • In the event woodlands with the potential to support bats require tree removals, bat acoustic surveys for man-made structures and visual exit for wooded areas, may be completed by the contractor's Environmental Lead during the month of June in accordance with agency approved protocols to determine Species at Risk (SAR) bat habitat use (or lack thereof). • Prior to construction, the MECP will be consulted regarding permitting/approvals next steps under the *Endangered Species Act*, 2007 (ESA). • Snags (dead standing trees) and cavity trees that do not pose a risk to the construction or operation of the transmission line will be identified and retained, to the extent practical.	Net effects include permanent removal of incompatible vegetation (portions of woodland) to ensure the safe operation of the transmission line; not considered significant. Incompatible vegetation removal will not represent a loss of vegetation on the landscape, but rather a transition from vegetation that is incompatible with transmission line corridors, to vegetation that is compatible.

Environmental Concern	Project Phase & Potential Effects	Mitigation Measures	Net Effects
Natural Environment Resources – Natural Heritage Features: Significant Valleylands	**Construction & Maintenance:** Potential impacts to valleylands due to removal of vegetation, soil erosion, sedimentation, etc. Effects are associated with the following community: Welland River	The following mitigation is recommended to address these potential effects: • Valleylands will be considered during detailed design with respect to tower locations. • To the extent practical, avoid work or disturbance to the valleylands or areas adjacent to the edge of the valleylands. • Where tree removals are required in association with valleylands the measures described below in “Natural Environment Resources - Natural Heritage Features: Vegetation” should be followed.	No significant net effects are predicted
Natural Environment Resources - Designated or Special Natural Areas: Significant Wetlands	**Construction:** Potential impacts to 4 ha of wetlands (includes 0.98 ha of PSW) as a result of vegetation loss, soil erosion, sedimentation, etc. Wetland effects are associated with the following community: • SWD (0.01 ha) • SWT (0.01 ha) • SWT/THD (1.77 ha) • MAM (1.9 ha) • MAS (0.32 ha)	Refer to mitigation recommended for Spills under Physical Environment, Soil Rutting & Vegetation Removal under Surface Water Resources and Significant Woodland under Designated or Special Natural Areas. Additional Recommended Mitigation includes: • Wetland boundaries will be clearly delineated in the Environmental Management Plan. • Work activities and access within wetlands will be minimized to the extent practical. • Where construction access in wetlands cannot be avoided, temporary access roads and work pads will be built using measures such as mats or, geotextile and crushed rock, or equivalent means, which will protect the underlying soils during construction and can be easily removed when construction is complete. • Equalization culverts, French drains or similar measures may be employed as necessary for any constructed access required within wetlands to maintain surface flow and drainage patterns during construction. • Additional materials (i.e., rip rap, filter cloth, and silt fencing) should be readily available in case they are needed promptly • or erosion and/or sediment control. • No maintenance or fueling of machinery will be planned to occur within 30 m of the wetland. If such work must occur within 30 m of a wetland community due to unforeseen circumstances, additional spill protection measures (e.g., portable containment) will be utilized.	Net effects include permanent removal of incompatible vegetation to ensure the safe operation of the transmission line; not considered significant. Incompatible vegetation removal will not represent a loss of vegetation on the landscape, but rather a transition from vegetation that is incompatible with transmission line corridors, to vegetation that is compatible.

Environmental Concern	Project Phase & Potential Effects	Mitigation Measures	Net Effects
Natural Environment Resources - **Natural Heritage Features:** Vegetation	**Construction & Maintenance:** Removal of 52.13 ha (50.78 ha compatible, and 1.35 ha of incompatible vegetation with transmission lines) of vegetation within proposed activity work areas. Up to 50.78 ha of compatible vegetation will be retained, where practical.	Refer to mitigation recommended for Hedgerows and Windbreak under Agricultural Resources and IBA and Significant Woodlands under Designated or Special Natural Areas. Additional recommended mitigation includes: • Tree protection zones will be used to delineate and protect trees that do not require removal for construction activities or operation of the transmission line, as necessary. • Non-salvageable limbs will be disposed of by chipping or removal to designated areas. • Tree removals adjacent to watercourses will be cut such that their root systems remain intact to maintain soil stability, and compatible bank/riparian vegetation will be retained to the extent practical. • Isolated trees (i.e., not associated with woodlands) identified by a qualified person as having the potential to support bats will be removed outside of the bat active season (i.e., April 1 to September 30). • In the event isolated trees with the potential to support bats require removal during the bat active season, exit surveys will be completed by a qualified person following agency approved protocols. Where surveys confirm no habitat use, the isolated tree(s) can be removed. In the event habitat use is confirmed, removals will be completed between October 1 and March 31.	Net effects include permanent removal of incompatible vegetation to ensure the safe operation of the transmission line; not considered significant. Incompatible vegetation removal will not represent a loss of vegetation on the landscape, but rather a transition from vegetation that is incompatible with transmission line corridors, to vegetation that is compatible.
Natural Environment Resources - **Natural Heritage Features:** Vegetation	**Construction:** Accumulation of cleared vegetation.	In addition to the applicable mitigation outlined above, the following additional mitigation is recommended to address these potential effects: • The City of Thorold, the City of Welland, the City of Niagara Falls and the Niagara Region are designated areas by the Canadian Food Inspection Agency (CFIA, 2025) prohibiting the movement of Ash firewood and wood Ash products. As such, wood waste will be managed in accordance with federal requirements and best practices.	No significant net effects are predicted.

Natural Environment Resources - Natural Heritage Features: Fish and Fish Habitat	**Construction & Maintenance:** Potential disturbance to fish habitat as a result of vegetation loss, soil erosion, sedimentation, etc.	Refer to mitigation recommended for Spills under Physical Environment. Additional recommended mitigation includes: • The creation of new watercourse crossings during construction will be avoided to the extent practical by using existing access and crossings (e.g., bridges, culverts) and by accessing work areas from either side of watercourses/drains. • Construction access, laydown and work areas will be planned to avoid waterbodies and potential fish habitat to the extent practical (e.g., maintaining distance from watercourse banks except where crossings exist or are required). • Disturbance to waterbodies, shorelines, riparian areas, etc. will be stabilized to prevent erosion. • An ESC plan will be developed to include mitigation measures such as constructing watercourse crossings during low flow conditions, retaining compatible stream bank vegetation, use of ESC during construction and restoration, and storing materials away from sensitive receptors (e.g., watercourses, drains, wetlands). • Project wastes will be immediately removed from and stored away from riparian areas. • No refuelling or vehicles and/or equipment will be permitted within 30 m of a watercourse to prevent potential spills (e.g., fuel, oil, lubricant) from entering aquatic features. • Disturbed areas will be restored to a pre-disturbed state or better, upon completion of construction, with compatible native species (e.g., seed mix, shrub stock, or a combination of both). • If permanent or temporary works are required below the high-water mark of a watercourse with potential fish habitat, a Request for Review will be prepared and submitted to the DFO in support of a Letter of Advance and/or approvals under the Fisheries Act. Further, the MNRF will be consulted with to discuss permitting requirements under the Fish and Wildlife Conservation Act. • If in-water works are required during construction, Hydro One or the EPC will engage with MNRF to discuss the application of timing restrictions. • Where implosive conductor splicing is utilized, work will be planned and conducted in accordance with the Guidelines for the Use of Explosives in or Near Canadian Fisheries	No significant net effects are predicted.

Environmental Concern	Project Phase & Potential Effects	Mitigation Measures	Net Effects
		Waters (DFO) as deemed necessary. • Transmission line structures will be set back from watercourse banks and located outside of regulatory floodplains, to the extent practical. • Work will be conducted in accordance with a permit from the applicable Conservation Authority when working within their regulated area. • Indigenous communities will also be consulted on mitigation measures to address SAR and their habitats.	
Natural Environment Resources - **Natural Heritage Features:** Woodlands	**Construction:** Potential removal of 0.83 ha of woodland (transition to compatible vegetation) within the transmission ROW. Woodland impacts by ELC type is associated with the following communities: • WOD (0.28 ha) • WOD/THD (0.55 ha) **Maintenance:** Vegetation management within the transmission ROW to ensure that incompatible vegetation does not threaten the safe and reliable operation of the transmission line.	Refer to mitigation recommended for Significant Woodlands under Designated or Special Natural Areas.	Net effects include permanent removal of incompatible vegetation to ensure the safe operation of the transmission line; not considered significant. Incompatible vegetation removal will not represent a loss of vegetation on the landscape, but rather a transition from vegetation that is incompatible with transmission line corridors, to vegetation that is compatible. .
Natural Environment Resources - **Natural Heritage Features:** Wetlands	**Construction:** Potential impacts to 4 ha of wetlands as a result of vegetation loss, soil erosion, sedimentation, etc. Wetland effects are associated with the following community: • SWD (0.01 ha) • SWT (0.01 ha) • SWT/THD (1.77 ha) • MAM (1.9 ha) • MAS (0.32 ha)	Refer to mitigation recommended for Spills under Physical Environment, Soil Rutting & Vegetation Removal under Surface Water Resources, Significant Woodland under Designated or Special Natural Areas, and Significant Wetlands under Designated or Special Natural Areas.	Net effects include permanent removal of incompatible vegetation to ensure the safe operation of the transmission line; not considered significant. Incompatible vegetation removal will not represent a loss of vegetation on the landscape, but rather a transition from vegetation that is incompatible with transmission line corridors, to vegetation that is compatible.
Natural Environment Resources - **Natural Heritage Features:** Species at Risk	**Construction & Maintenance:** Potential disturbance or loss of SAR and/or SAR habitat.	Refer to mitigation recommended for Soil Rutting & Vegetation Removal under Surface Water Resources, Significant Woodland under Designated or Special Natural Areas and Vegetation under Natural Heritage Features. Additional mitigation includes: • Impacts to potential SAR habitat will be avoided, where possible. In the event impacts cannot be avoided, MECP will be consulted regarding permitting/approval requirements under the ESA during detailed design.	Net effects include permanent removal of incompatible vegetation to ensure the safe operation of the transmission line; not considered significant. Incompatible vegetation removal will not represent a loss of vegetation on the landscape, but rather a transition from vegetation that is incompatible with transmission line corridors, to vegetation that is

Environmental Concern	Project Phase & Potential Effects	Mitigation Measures	Net Effects
		• Boundaries of SAR habitats will be identified and flagged off. • To the extent possible, incompatible vegetation/trees with the potential to provide SAR habitat will be removed/trimmed to the extent that they no longer pose a risk to overhead transmission lines while still maintaining their potential SAR habitat characteristics. • Snags (dead standing trees) and cavity trees with the potential to provide SAR habitat that do not pose a risk to the operation of the transmission line will be identified by a qualified person and retained to the extent practical. • Construction personnel will be aware of the potential presence of, and able to identify, SAR with the potential to occur within the general work areas. • Should SAR be encountered during construction activities, activities will be stopped until it has been determined that harm will not occur. The required activities will be assessed to determine whether the work/schedule can be modified, or mitigation measures employed, to avoid potential effects on SAR and their habitat. • If avoidance of SAR and/or SAR habitat is not possible, MECP and/or DFO will be consulted in advance of construction to discuss detailed mitigation measures and/or assess the need for permitting/approvals under the ESA, SARA or the Fisheries Act. • If a SAR is harmed or killed as a result of work activities, the MECP will be notified, and the relevant work activities will cease within the immediate area until the species has been removed by personnel authorized to handle SAR. • SAR observed during construction activities will be reported to the MECP, as required. • Indigenous communities will also be consulted on mitigation measures to address SAR and their habitats.	compatible. Permitting under the ESA, SARA and/or the Fisheries Act will be obtained in advance of construction, where necessary.
Natural Environment Resources – Natural Heritage Features: Species at Risk (SAR) – Bats	**Construction & Maintenance:** Potential disturbance or loss of SAR and/or SAR habitat	The following mitigation is recommended to address these potential effects: • The potential to impact SAR bats would be restricted to maternity sites or day-roosts. • Assess for maternity roosts along the Preferred Route Alternative prior to construction for habitat retention, to the	Net effects include permanent removal of incompatible vegetation to ensure the safe operation of the transmission line; not considered significant. Incompatible vegetation removal will not represent a loss of vegetation on the landscape, but rather a

Environmental Concern	Project Phase & Potential Effects	Mitigation Measures	Net Effects
		extent practical. • Educate contractors by informing them of the bat species in Ontario which receive species and habitat protection. • Remove all buildings and trees that are 10 cm in diameter at breast height or larger between October 1 and March 31 (bat active season is April 1 to September 30). If this is not possible, conduct an exit survey paired with acoustics (man-made structures) and/or acoustic surveys (wooded areas) during the month of June prior to removal of potential habitat roost trees/buildings. Where exit/acoustic surveys identify SAR bats entering/exiting habitat features, consult with the MECP prior to construction to discuss detailed mitigation measures and/or assess the need for permitting/approvals. • Construction of bat nesting boxes in certain areas may be considered to offset the potential loss of roosting habitat.	transition from vegetation that is incompatible with transmission line corridors, to vegetation that is compatible. Permitting under the ESA and/or SARA will be obtained in advance of construction, where necessary.
Natural Environment Resources – Natural Heritage Features: Species at Risk (SAR) – Birds (Bobolink, Eastern Meadowlark, Red-headed Woodpecker and Acadian Flycatcher, Wood Thrush and Barn Swallow)	**Construction & Maintenance:** Potential disturbance or loss of SAR and/or SAR habitat	The following mitigation is recommended to address these potential effects: • Habitat removal during the migratory bird breeding season (April 5 to August 31 in nesting zone C1: ECCC, 2018) will be avoided to the extent feasible. • Should construction activities and/or vegetation clearing be required in or adjacent to areas identified as suitable breeding habitat for Red-headed Woodpecker and/or Acadian Flycatcher, a confirmatory woodland breeding bird survey may be required to determine detection/non-detection of SAR woodland birds • Should construction activities and/or vegetation clearing be required in or adjacent to areas identified as potentially suitable breeding habitat for Bobolink and/or Eastern Meadowlark, a confirmatory grassland breeding bird survey may be required to determine presence/absence of SAR grassland birds • Non-intrusive nest surveys will be undertaken by a qualified biologist if habitat removal is required during the April 5 to August 31 period. • In the event there is potential for work occurring within the nesting period, additional measures to	Net effects include permanent removal of incompatible vegetation to ensure the safe operation of the transmission line; not considered significant. Incompatible vegetation removal will not represent a loss of vegetation on the landscape, but rather a transition from vegetation that is incompatible with transmission line corridors, to vegetation that is compatible. Permitting under the ESA and/or SARA will be obtained in advance of construction, where necessary.

Environmental Concern	Project Phase & Potential Effects	Mitigation Measures	Net Effects
		exclude Barn Swallow from nesting in structures (e.g., installing netting) may be considered as a mechanism to avoid impacts to the species. • Although potential Bank Swallow occurrence or habitat was not previously identified, soil stockpiles should be managed in ways that are not conducive to Bank Swallow nesting (e.g. slopes maintained to 70° or less, and/or covered or bare soil seeded during the breeding season).	
Natural Environment Resources – Natural Heritage Features: Species at Risk (SAR) – Turtles (Blanding's Turtle)	**Construction & Maintenance:** Potential disturbance or loss of SAR and/or SAR habitat	The following mitigation is recommended to address these potential effects: • Where Blanding's Turtle nests are established in these road shoulders, the nests are protected under the ESA (Section 9). • Characterization of overwintering habitat and areas that may potentially support Blanding's Turtle will be assessed in 2025 to inform potential constraints during detailed design and to identify areas where habitat can be retained prior to construction, where possible. • Contractors will be educated on the potential for Blanding's Turtle/ Blanding's Turtle habitat which may be encountered within the general work areas.	No significant net effects are predicted. Permitting under the ESA and/or SARA may be obtained in advance of construction, if determined to be required.
Natural Environment Resources – Natural Heritage Features: Species at Risk (SAR) – Aquatic SAR	**Construction & Maintenance:** Potential disturbance or loss of SAR and/or SAR habitat	Refer to mitigation recommended for Fish and Fish Habitat under Natural Environment Resources above.	No significant net effects are predicted. Permitting under the ESA, SARA and/or the Fisheries Act will be obtained in advance of construction, where necessary.
Natural Environment Resources – Natural Heritage Features: Species at Risk (SAR) – Butternut / Black Ash	**Construction & Maintenance:** Potential disturbance or loss of SAR and/or habitat	The following mitigation is recommended to address these potential effects: • A Butternut and/or Black Ash inventory and health assessment must be completed by qualified personnel for any Butternut trees identified within the ROW or within 25 m of the ROW, where possible. • Where impacts to Butternut are anticipated, removal of Butternut is eligible for conditional exemption under the ESA through activity registration under Part V of O. Reg. 830/21 so long as the conditions in the regulation are adhered to.	Net effects include permanent removal of incompatible vegetation to ensure the safe operation of the transmission line; not considered significant. Incompatible vegetation removal will not represent a loss of vegetation on the landscape, but rather a transition from vegetation that is incompatible with transmission line corridors, to vegetation that is compatible. Permitting under the ESA and/or SARA will be

Environmental Concern	Project Phase & Potential Effects	Mitigation Measures	Net Effects
		• Given that Butternut and Black Ash are incompatible with transmission lines, as deemed necessary by the results of any Butternut and/or Black Ash health assessments, mitigation measures will be implemented prior to commencement of work activities for Butternut and/or Black Ash located outside of the transmission ROW. Such mitigation may include, where possible: o Tree protection fencing should be installed at least 1.2 metres in height and in such a way that the fence cannot be altered. o Avoid placing any material or equipment within 25 m of the Butternut and/or Black Ash. o Indigenous communities will also be consulted on mitigation measures to address SAR and their habitats.	obtained in advance of construction, where necessary.
Natural Environment Resources - **Natural Heritage Features:** Wildlife Habitat	**Construction & Operation:** Potential disturbance or loss of wildlife habitat, including habitat fragmentation.	Refer to mitigation recommended for Significant Woodland under Designated or Special Natural Areas, Species at Risk (SAR) under Natural Heritage Features, and Vegetation under Natural Heritage Features. Additional mitigation includes: • Boundaries of important wildlife habitats will be identified, and the ROW boundaries flagged prior to clearing. • Trees containing stick nests and areas where active animal dens or burrows are encountered will be left undisturbed until unoccupied, as determined by a qualified person. • Where vegetation clearing is required, some of the cleared vegetative material may be used to create brush/habitat piles along the ROW edges, where appropriate. • Birds of prey may construct stick nests on transmission structures. Osprey nests are most common on transmission structures, but Bald Eagle nests are occasionally encountered. If there are eggs or young in the nest, it is Hydro One protocol to leave the nest until the young have fledged unless there is an immediate safety concern to be addressed. If there are no eggs or young observed, the nest will be removed and replaced. • In the event that removal of stick nests is deemed to be required during detailed design or construction, Hydro One or its EPC contractor will consult with the MEPC to discuss permitting requirements. • Construction personnel will be educated on the potential for	Net effects include permanent removal of incompatible vegetation to ensure the safe operation of the transmission line; not considered significant. Incompatible vegetation removal will not represent a loss of vegetation on the landscape, but rather a transition from vegetation that is incompatible with transmission line corridors, to vegetation that is compatible.

Environmental Concern	Project Phase & Potential Effects	Mitigation Measures	Net Effects
		wildlife which may be encountered within the general work areas. • In-water works within turtle wintering areas during the turtle overwintering period will be avoided. • In the event that collection, salvage or relocation of wildlife is required due to construction activities, Hydro One or its EPC contractor will consult with MECP to discuss permitting requirements.	
Natural Environment Resources - **Natural Heritage Features:** Invasive Species	**Construction:** Potential for inadvertent spread of invasive species propagules through the movement of soil, debris and/or plant material via construction vehicles and equipment.	Refer to mitigation recommended for Agricultural Resource effects. Additional mitigation includes: • Construction crews will be educated on the importance of avoiding inadvertent spread of invasive species, and to identify the invasive species that are known to occur or are likely to occur within work areas. • Areas identified as having invasive species present will be considered during access and construction planning. Stands of invasive plant species will be avoided to the extent practical during construction. • Equipment and vehicle inspections and cleaning will be established during construction, to minimize the potential for inadvertent transport of invasive species propagules. • Inspecting and cleaning equipment and vehicles as necessary to reduce potential for spreading invasive species propagules. Guidance should follow the Clean Equipment Protocol for Industry (Halloran, 2016). • Crews will be educated and informed of invasive species known or with potential to occur in work areas. • Special treatment areas (e.g., large established populations of invasive species within the ROW) will be tracked for consideration when planning future maintenance works.	No significant net effects are predicted.
Indigenous Culture, Values and Land Use	**All Phases:** Potential to affect Indigenous Community interests.	• Indigenous communities have expressed interest in being involved with future archaeological and Natural Environment field work. Hydro One and its consulting archaeologist and ecologist will work with interested communities to include representatives from interested communities in archaeological and environmental fieldwork. • Indigenous communities will be provided opportunities to review the findings of archaeological field surveys and archaeological assessment reports.	No significant net effects are predicted.

Environmental Concern	Project Phase & Potential Effects	Mitigation Measures	Net Effects
		• If archaeological artefacts are encountered during construction, work in the vicinity will cease and a licensed archaeologist will be engaged immediately to ensure compliance with the *Ontario Heritage Act.* Indigenous communities have a desire to protect and mitigate adverse effects to natural environment features such as SAR, wildlife and aquatic habitat, and natural or naturalized areas within their traditional territory that could be used for hunting, gathering, harvesting or other traditional uses. Mitigation measures to address effects to these features are described above under Natural Heritage Features.	
Recreational Resources	**Construction & Maintenance:** Potential for temporary disturbance to tourism and enjoyment of recreational resources including the cricket pitch, paintball facility and the Niagara Region Model Flying Club along the Preferred Route Alternative, in addition to the Welland Canal and Welland River.	The following mitigation is recommended to address these potential effects: • Though there may be temporary impacts to the enjoyment of recreational resources adjacent to the proposed Project, such impacts are expected to be short-term in nature. • Advanced notice will be provided to nearby residences, farms, landowners and commercial operations, outlining the location of entry/exit points for the construction site as well as the schedule for construction work or construction related traffic in those areas. Clear and temporary signage will be created and installed to reflect this information.	No significant net effects are predicted. Hydro One will commit to working with local municipalities to identify community benefit opportunities to enhance the broader landscape.
Visual and Aesthetic Resources: Visibility of the Project by Sensitive Receptors	**All Phases:** Potential visual impacts to sensitive receptors with views of the Project.	Location of transmission structures is one of the largest factors influencing the visual effects to specific receptors. Design of the transmission line (e.g., placement of structure locations) will consider visibility to nearby sensitive receptors.	Construction of the new transmission structures will result in a visual change to the landscape. Hydro One will commit to working with local municipalities to identify community benefit opportunities to enhance the broader landscape.
Technical Considerations: Infrastructure Crossings	**All Phases:** Permanent overhead crossing of Highway 140, as well as construction of a new transmission line parallel to other highways, including municipal roads.	Refer to mitigation recommended for Local Roads & Traffic under Land Use Communities. Additional mitigation includes: • Permanent impacts to Highway 140 or any other municipal road crossings are not anticipated as part of this project. • Where the new transmission line crosses Highway 140, setback distances provided by the MTO will be respected. • Work within the MTO Highway 140 ROW will require an Encroachment Permit and/or a Land Use Permit as well as consultation and input from Ministry staff during design.	No significant net effects are predicted.

Environmental Concern	Project Phase & Potential Effects	Mitigation Measures	Net Effects
Technical Considerations: Infrastructure Crossings	**Construction:** Underground utility crossing.	The following mitigation is recommended to address these potential effects: • Equipment with low bearing capacity will be used, where feasible. • Temporary and permanent access roads and work pads will be built using mats or geotextile and crushed rock, and/or other protective measures will be implemented as deemed necessary. • Contact will be maintained with applicable utility operators regarding work schedule and other items of interest.	No significant net effects are predicted.
Technical Considerations: Infrastructure Crossings	**Construction and Operation:** Permanent overhead crossing of the existing railway line ROWs.	The following mitigation is recommended to address these potential effects: • Temporary flagging operations of railway lines may be required to facilitate construction of the aerial crossing. • Hydro One will work with applicable rail authorities during design.	No significant net effects are predicted.
Technical Considerations: Infrastructure Crossings	**All Phases:** Crossings of constructed drains.	Refer to applicable mitigation recommended for Fish and Fish Habitat under Natural Heritage Features and Spills under Physical Environment. Additional mitigation includes: • Municipal drainage superintendents will be consulted during design and construction planning, to discuss any potential effects to municipal drains. • Placement of transmission structures will avoid municipal drains to the extent practical, including consideration of setbacks as communicated by the municipal drainage superintendents and their staff. • The creation of new crossings during construction will be avoided to the extent practical by using existing access and crossings (e.g., bridges, culverts) and by accessing work areas from either side of drains, where feasible. • Disturbed areas will be restored to a pre-disturbed state or better following completion of construction.	No significant net effects are predicted.

7.13. Cumulative Effects Assessment

The Cumulative Effects Assessment (CEA) for the Project has been completed in accordance with the Class EA for Minor Transmission Facilities requirements: “The assessment will include the proposed undertaking and any other proposed undertakings in the immediate project area where documentation is available (e.g., other EAs”). For this Project, the CEA involved the consideration of Project effects combined with effects from other proposed undertakings in the immediate Project area (overlapping the 500 m LSA) where documentation was publicly available. To extend a CEA beyond the immediate Project area (i.e., to assess trajectories of change over time on a broader regional basis) is outside the scope of the Class EA and Hydro One’s ability to influence, control, or reasonably predict.

7.13.1. Regional and Historic Cumulative Effects to Aboriginal Treaties and Indigenous Rights

Hydro One recognizes and appreciates the legacies of settlement, including agricultural and land conversion and development activities have, and continue to put pressure on Indigenous communities’ current and future use of lands and resources. Hydro One's role is to provide the necessary electrical infrastructure based on regional planning assessments and direction provided by the IESO. In the case of the Project and other Hydro One projects in the Niagara Region, the need for this new infrastructure has been identified by IESO in their regional planning framework and demand forecasts, with a formal direction provided to Hydro One to undertake planning, and eventually construction and operation of the necessary transmission infrastructure.

7.13.2. Project Inclusion List

Figure 7-1 provides an overview of known projects that overlap with the LSA which have been included in this CEA. As summarized in **Table 7-2**, overlapping projects have been categorized into the following three tiers (in decreasing order of information available):

1. Projects with completed and publicly available impact assessments or EAs;
2. Known current, and future Hydro One projects where the EA (including selection of a Preferred Route Alternative) is not yet completed but where, as owners of

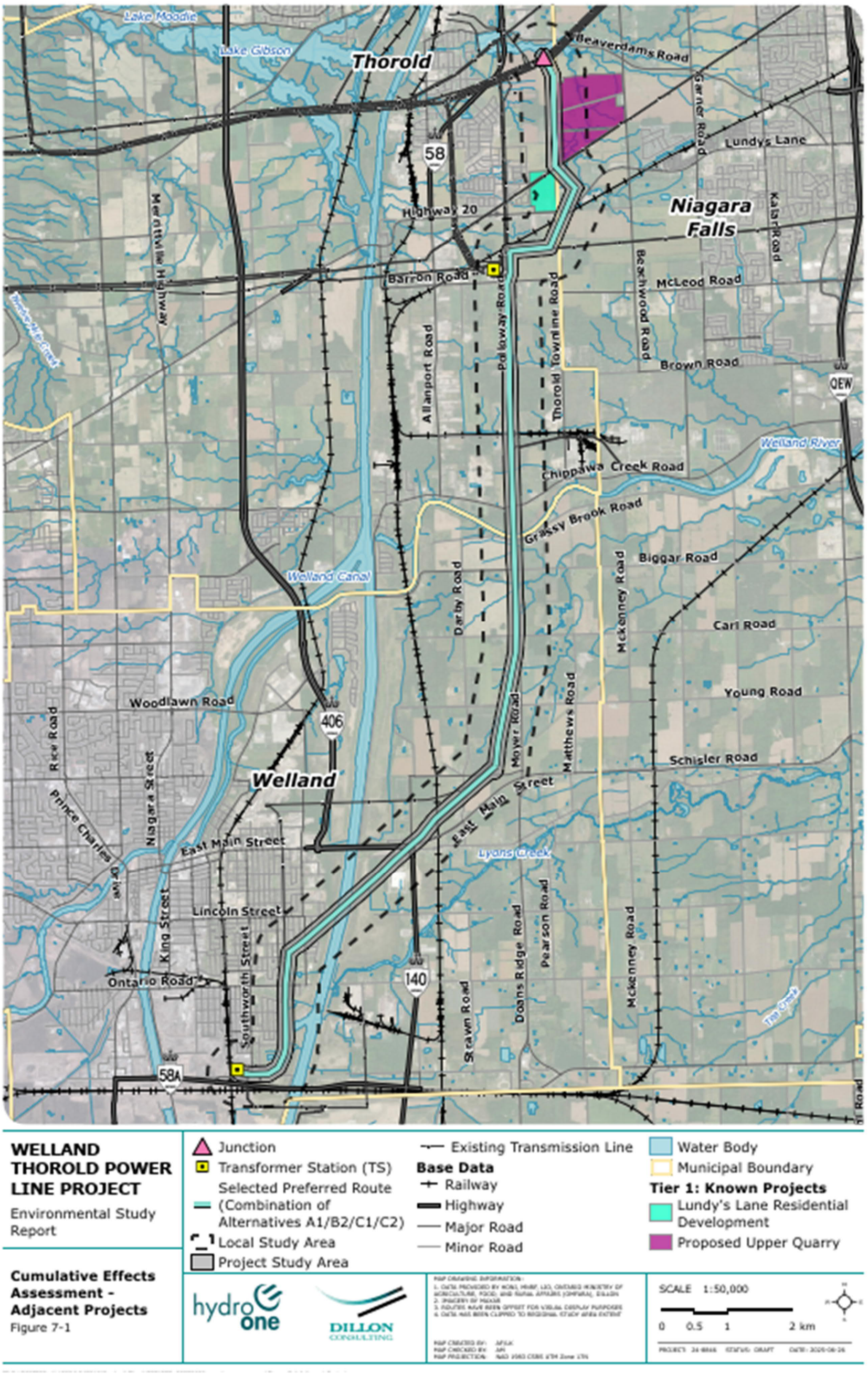
transmission line infrastructure, Hydro One has a reasonable understanding of what future potential effects may be; and

3. Other future projects where proponents have not yet started or completed an EA or other planning study such that insufficient information is publicly available to meaningfully assess interactions with the Project. It is noted that for these future projects, this Class EA and CEA will be available for consideration to their benefit, including the potential to assess cumulative effects of the Project combined with those future projects.

Table 7-2: Projects Included in the Cumulative Effects Assessment

Project Name	Proponent	Interaction with Welland Thorold Project
Tier 1 Projects: Effects Assessment Documentation Publicly Available		
13030 Lundy's Lane	Rudanco Hospitality Corporation	The proposed residential/commercial development overlaps with the PSA west of the Project in the area of the Allanburg TS. Currently zoned Residential and Highway Commercial. While previously approximately 19.6 ha of land was in agricultural use, it is no longer operating as an active field.
Upper's Quarry	Walker Industries	The proposed quarry overlaps with the PSA east of the Project near the Allanburg TS. Currently zoned Good General Agriculture, however the proposed quarry renders agricultural rehabilitation unfeasible.
Tier 2 Projects: Hydro One Planned Future Undertakings with Owner Predicted High-Level Effect Knowledge		
N/A		
Tier 3 Projects: Future Projects in Area where Assessment of Effects are not yet known		
N/A		

Figure 7-1: Cumulative Effects Assessment



7.13.3. Analysis of Cumulative Effects

Table 7-3 summarizes the cumulative effects analysis completed for Tier 1 and Tier 2 projects on the Project Inclusion List. Cumulative effects were assessed by looking at each project's effects assessment tables, identifying potential temporary and long-term effects and net effects for each project and assessing potential for cumulative effects of multiple projects overlapping the Project LSA. Cumulative effects were analyzed from a "temporary effect" or a "long-term effect" perspective. Temporary effects are effects primarily related to construction activities associated with the respective infrastructure. Long-term effects represent potential project effects that may be experienced over the life of the project. It is noted, however, that some long-term effects are related to periodic maintenance activities which will not be persistent throughout the entire lifespan of the project but will be limited to periodic maintenance events (e.g., maintenance vehicles tracking mud on local roads will only occur if and when maintenance activities are required in muddy areas).

Table 7-3: Cumulative Effects Assessment

Environmental Concern	Welland Thorold Transmission Line		13030 Lundy's Lane		Upper's Quarry		Cumulative Effects Analysis		Determination of Significance
	Temporary Effect	**Long-Term Effect**	**Temporary Effect**	**Long-Term Effect**	**Temporary Effect**	**Long-Term Effect**	**Temporary Effect**	**Long-Term Effect**	
Agricultural Resources: Crop Loss	**Yes** Temporary removal of crops and soils supporting crop production.	**Yes** Permanent removal of land available for agricultural production as a result of Project infrastructure.	**No** Not Applicable.	**No** Not Applicable.	**Yes** Temporary removal of crops and soils supporting crop production.	**Yes** Permanent removal of approximately 106.3 ha of lower priority agricultural lands as a result of the proposed quarry.	**Yes** Multiple projects have a potential to temporarily remove crops and soils from agricultural production to accommodate construction activities of multiple projects. If multiple projects are under construction at the same time this may result in a temporary cumulative effect of reduced agricultural production.	**Yes** Multiple projects have a potential to permanently remove agricultural land from production to accommodate new development. Multiple projects on the landscape will compound this effect.	**Not Considered Significant** Long-term permanent removal of land available for agricultural production is not considered significant in the larger landscape of the Niagara Region. Agriculture is a compatible use within overhead transmission line ROWs and the extent of agricultural land permanently removed from transmission line projects is limited to the tower footings themselves.
Agricultural Resources: Soil Compaction	**Yes** Compaction of soil caused by movement of construction equipment over agricultural land.	**Yes** Compaction of soil caused by movement of vehicles over agricultural land as a result of periodic maintenance activities.	**No** Not Applicable.	**No** Not Applicable.	**No** Not Applicable. It is reasonable to assume that the proposed quarry will remove agricultural soils.	**No** Not Applicable. It is reasonable to assume that the proposed quarry will remove agricultural soils.	**No** Multiple projects have the potential for isolated soil compaction within their respective project limits. Cumulative effects are not anticipated as Project-specific mitigation measures can be implemented to address effect.	**No** Not applicable. Multiple projects have identified the removal of agricultural soil to support development.	**Not Considered Significant** Agricultural soil will be moved to support proposed development. The effects of soil compaction during construction of the transmission line can be mitigated or restored (e.g., post-construction alleviation of compaction) at a project level.
Agricultural Resources: Soil Mixing	**Yes**	**Yes**	**No**	**No** Not Applicable.	**No**	**Yes**	**No**	**No** Not Applicable.	**Not Considered Significant**

Environmental Concern	Welland Thorold Transmission Line		13030 Lundy's Lane		Upper's Quarry		Cumulative Effects Analysis		Determination of Significance
	Temporary Effect	**Long-Term Effect**	**Temporary Effect**	**Long-Term Effect**	**Temporary Effect**	**Long-Term Effect**	**Temporary Effect**	**Long-Term Effect**	
	Potential for excavation activities to cause mixing of soil horizons, thus lowering the quality of soil.	Potential for excavation activities to cause mixing of soil horizons, thus lowering the quality of soil.	Not Applicable.		Not Applicable. It is reasonable to assume that the proposed quarry will remove agricultural soils.	Based on project reporting, it is reasonable to assume soil will be mixed with the removal of land from agricultural production for the development of the quarry.	Multiple projects have the potential for soil mixing within their respective project limits. Cumulative effects are not anticipated as Project-specific mitigation measures can be implemented to address effect.		Effects from multiple projects can be mitigated at a project level.
Agricultural Resources: Disturbance to Farm Operations	**Yes** Potential to disturb farm operations including planting and harvesting schedules, spraying, tiling activities, etc.	**Yes** Impediments to the maneuverability of agricultural equipment as a result of periodic maintenance activities.	**No** Not Applicable.	**No** Not applicable.	**Yes** Potential to disturb farm operations including planting and harvesting schedules, spraying, tiling activities, etc.	**Yes** Based on project reporting, it is reasonable to assume potential to disturb farm operations with the removal of land from agricultural production for the development of the quarry.	**No** Multiple projects have the potential to temporarily disturb farm operations within their respective project limits. Cumulative effects are not anticipated as Project-specific mitigation measures can be implemented to address effect.	**No** Multiple projects have potential to create impediments to maneuverability of agricultural equipment and permanent removal of agricultural lands. However, impediments would not impact the larger agricultural community, and effects would be on a site-by-site basis. Project-specific mitigation measures can be implemented to address effect.	**Not Considered Significant** Effects from multiple projects can be mitigated at a project level.
Agricultural Resources:	**No** Not Applicable.	**Yes** Partial removal or fragmentation	**No** Not applicable.	**No** Not applicable.	**No** Not applicable.	**Yes** The project area includes the	**No** Not Applicable.	**No** Multiple projects will result in removal or	**Not Considered Significant**

Environmental Concern	Welland Thorold Transmission Line		13030 Lundy's Lane		Upper's Quarry		Cumulative Effects Analysis		Determination of Significance
	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	
Vegetation Removal		of existing natural features, hedgerows and windbreaks between agricultural land parcels as a result of periodic maintenance activities.				removal of approximately 106.3 ha of agricultural lands where vegetation will be removed for the project footprint.		fragmentation of natural features, hedgerows and windbreaks between agricultural land parcels as a result of period maintenance activities. Cumulative effects are not anticipated as Project-specific mitigation measures can be implemented to address this effect.	Effects from multiple projects can be mitigated or restored at a project level.
Agricultural Resources: Contamination of Organic or Identity Preserved (IP) Crops	**Yes** Potential for activities, including use of herbicides to control noxious weeds or vegetation, to contaminate organic or IP crops or agricultural fields transitioning to organic/IP crop types.	**Yes** Potential for activities, including use of herbicides to control noxious weeds or vegetation, to contaminate organic or IP crops or agricultural fields transitioning to organic/IP crop types as a result of periodic maintenance activities	**No** Not Applicable.	**No** Not Applicable.	**No** No mention of soil contamination effects in the Agricultural Impact Assessment (AIA).	**No** No mention of soil contamination effects in the (AIA).	**No** Cumulative effects are not anticipated as Project-specific mitigation measures can be implemented to address effect.	**No** Cumulative effects are not anticipated as Project-specific mitigation measures can be implemented to address effect.	**Not Considered Significant** Effects from multiple projects can be mitigated at a project level.
Agricultural Resources: Damage to Field Tiles	**No** Not Applicable.	**No** Not Applicable.	**No** Not Applicable.	**No** Not Applicable.	**No** Not Applicable. The AIA noted there were	**No** Not Applicable. The AIA noted	**No** Not Applicable.	**No** Not Applicable.	**Not Considered Significant** Not Applicable.

Environmental Concern	Welland Thorold Transmission Line		13030 Lundy's Lane		Upper's Quarry		Cumulative Effects Analysis		Determination of Significance
	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	
					no tile drainage installations identified on the Subject Lands.	there were no tile drainage installations identified on the Subject Lands.			
Agricultural Resources: Livestock Stress, Loss or Injury	**Yes** Potential for activities to be required within livestock managed areas (grazing fields, pastures, etc.) resulting in potential for livestock stress, injury or loss. In addition, potential use of implosive splicing may scare or startle agricultural livestock.	**Yes** Potential for activities to be required within livestock managed areas (grazing fields, pastures, etc.) resulting in potential for livestock stress, injury or loss as a result of periodic maintenance activities	**No** Not Applicable.	**No** Not Applicable.	**No** Not Applicable. The AIA noted there were no active livestock operations identified on the Subject Lands.	**No** Not Applicable. The AIA noted there were no active livestock operations identified on the Subject Lands.	**No** Only the Welland to Thorold project has a potential to temporarily impact agricultural livestock through induced stress, loss or injury during construction and maintenance phases. Cumulative effects are not anticipated as Project-specific mitigation measures can be implemented to address effect.	**No** Only the Welland to Thorold project has a potential to permanently impact agricultural livestock through induced stress, loss or injury during construction and maintenance phases. Cumulative effects are not anticipated as Project-specific mitigation measures can be implemented to address effect.	**Not Considered Significant** Effects from the Welland to Thorold project can be mitigated at a project level.
Archaeological Resources	**No** Not Applicable – Effects on Archaeological Resources are long-term/permanent only.	**Potential** Based on the Stage 1 Archaeological Assessment findings, there is the potential for project-related works to	**No** Not Applicable – Effects on Archaeological Resources are long-term/permanent only.	**Potential** Based on the Stage 1-2 Archaeological Assessment findings there is the potential for project-related works	**No** Not Applicable – Effects on Archaeological Resources are long-term/permanent only.	**Potential** Based on the Stage 1-4 Archaeological Assessment findings, the site has been excavated and documented to	**No** Not Applicable – Effects on Archaeological Resources are long-term/permanent only.	**No** Cumulative effects are not anticipated as Project-specific mitigation measures can be implemented to address effect.	**Not Considered Significant** Not considered significant because potential impacts to Archaeological Resources can be mitigated on a project-specific basis.

Environmental Concern	Welland Thorold Transmission Line		13030 Lundy's Lane		Upper's Quarry		Cumulative Effects Analysis		Determination of Significance
	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	
		adversely affect known archaeological sites. A Stage 2 Archaeological Assessment will be required for areas where additional assessment is recommended for the selected route.		to adversely affect known archaeological sites. A Stage 3 Site-Specific Assessment has been recommended for the project.		the extent required by the Ministry of Citizenship and Multiculturalism.			
Built Heritage Resources and Cultural Heritage Landscapes	**No** Not Applicable.	**Potential** Based on the baseline findings of the Cultural Heritage Existing Conditions Report and Cultural Heritage Preliminary Impact Assessment, there is the potential for project-related works to adversely affect known and potential built heritage resources and a potential cultural heritage	**No** Not Applicable.	**Potential** No built heritage resources were identified in the Planning Rationale.	**No** Based on research and evaluation undertaken, the subject lands were found to not contain built heritage resources or significant cultural heritage landscapes.	**No** Based on research and evaluation undertaken, the subject lands were found to not contain built heritage resources or significant cultural heritage landscapes.	**No** Not Applicable.	**Potential** The Welland to Thorold project has the potential to impact known and/or areas of potential cultural heritage. Cumulative effects are not anticipated as Project-specific mitigation measures can be implemented to address effect.	**Not Considered Significant** Effects from can be mitigated at a project level.

Environmental Concern	Welland Thorold Transmission Line		13030 Lundy's Lane		Upper's Quarry		Cumulative Effects Analysis		Determination of Significance
	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	
		landscape within the study area. Further cultural heritage studies will be conducted during detailed design.							
Land Use and Communities: Business Operations	**Yes** Potential for activities to disrupt commercial or industrial operations (construction), including temporary transmission outages during construction which may affect some facilities that are connected directly to the transmission system.	**No** Not Applicable.	**No** Not Applicable.	**No** Not Applicable.	**No** Not applicable	**No** Not Applicable.	**No** Not Applicable.	**No** Not Applicable.	**Not Considered Significant** Not considered significant because potential impacts to business operations will be temporary in nature and can be mitigated on a Project-specific basis.
Land Use and Communities: Existing and Future Land Use Designations and Potential Future Development	**No** Not Applicable.	**Yes** While transmission lines can be largely compatible with development, its location within	**No** Not Applicable.	**No** The lands were rezoned, and the (OP) amended so that the project is compatible	**No** Not Applicable.	**Yes** The transition of lands to accommodate the needs of the quarry will introduce certain restrictions to	**No** Not Applicable.	**Yes** Several projects have identified the need to acquire designated, or potential, future development lands.	**Not Considered Significant** While several projects have identified potential impacts to designated, or potential, future development lands, the impact is known ahead of the development taking place. There are numerous

Environmental Concern	Welland Thorold Transmission Line		13030 Lundy's Lane		Upper's Quarry		Cumulative Effects Analysis		Determination of Significance
	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	
		areas zoned to allow future commercial/industrial development, or otherwise targeted/identified for future development potential, will introduce certain restrictions to future uses within the lands occupied by the transmission line ROW.		with existing and future land use designations and potential future developments.		future uses within the lands.			examples across the province of land development occurring around existing transmission corridors.
Land Use and Communities: Local Roads and Traffic	**Yes** Potential for increased traffic, including heavy equipment, on local and regional roads. In addition, stringing of conductors across highways and roadways may require temporary road closures and detours.	**No** Not Applicable.	**Yes** Potential for increased traffic, including heavy equipment, on local and regional roads.	**Yes** Traffic volumes are expected to increase in the area given the number of planned residential units. These increases are currently predicted to cause capacity issues at three intersections.	**Yes** Potential for increased traffic, including heavy equipment, on local and regional roads.	**Yes** Potential for increased traffic, including heavy equipment, on local and regional roads.	**Yes** Several projects have identified temporary impacts from construction local road networks. This includes potential short-term road closures, increased traffic, infrastructure crossings etc. If multiple projects proceed simultaneously impacts could be compounded having a negative effect on the larger road network.	**Yes** Several projects have identified long-term impacts from an increase in traffic associated with the residential housing and operational activities associated with the quarry on local road networks. If multiple projects proceed simultaneously impacts could be compounded having a negative effect on the larger road network.	**Not Considered Significant** Not considered significant because potential impacts to local roadways would be temporary in nature. Road closures or disruptions to traffic require approvals from local municipalities and/or MTO prior to construction. Local municipalities and MTO have processes in place to coordinate multi-project impacts and mitigate network disruptions.

Environmental Concern	Welland Thorold Transmission Line		13030 Lundy's Lane		Upper's Quarry		Cumulative Effects Analysis		Determination of Significance
	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	
Land Use and Communities: Mud and Construction Debris	**Yes** Potential for tracking of mud and migration of construction debris to areas outside of the construction zone.	**No** Not applicable.	**Yes** Potential for tracking of mud and migration of construction debris to areas outside of the construction zone.	**No** Not Applicable.	**Yes** Potential for tracking of mud and migration of construction debris to areas outside of the construction zone.	**No** Not Applicable.	**Yes** Several projects have identified temporary effects from construction activities. Effects can be mitigated through Project-specific mitigation measures.	**No** Not Applicable.	**Not Considered Significant** Not considered significant because potential impacts are temporary in nature and can be mitigated through Project-specific measures.
Land Use and Communities: Electric and Magnetic Fields (EMF)	**No** Not Applicable.	**Yes** Potential for increased EMF once the transmission line is energized.	**No** Not Applicable.	**No** Not Applicable.	**No** Not Applicable.	**No** Not Applicable.	**No** Not Applicable.	**No** EMFs are not expected to increase significantly with the development of a singular project once transmission lines are energized.	**Not Considered Significant** Organizations such as Health Canada, (WHO) and ICNIRP indicate members of the public in the vicinity of transmission lines do not need to take precautionary measures to protect from fields produced by electricity at extremely low frequencies because exposures, which includes transmission infrastructure. EMF values are expected to remain significantly below the ICNIRP exposure guidelines.
Land Use and Communities: Noise & Vibration	**Yes** Potential disturbance as a result of potential use of implosive splicing and their	**No** Not Applicable.	**Yes** Noise from construction-related activities could potentially cause	**Yes** Noise mitigation was reviewed at specific locations across the proposed	**Yes** Noise from construction-related activities could potentially cause temporary nuisance	**Yes** Potential disturbance as a result of noise associated with periodic blast required for operational	**Yes** Noise from construction-related activities could potentially cause temporary nuisance or disturbance effects for	**Yes** Several projects have indicated a potential for increased noise and vibration during operations and maintenance phases. Once built, these	**Not Considered Significant** Noise and vibration during construction and maintenance is temporary in nature. Specific operations are required to comply with site specific Environmental Compliance Approvals,

Environmental Concern	Welland Thorold Transmission Line		13030 Lundy's Lane		Upper's Quarry		Cumulative Effects Analysis		Determination of Significance
	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	
	associated increased vibrations levels.		temporary nuisance or disturbance effects for local residents.	development. The assessment concluded that noise effects from stationary noise sources associated with residential homes such as heating/cooling units could not yet be determined. However, long term noise effects from residential home activities are likely anticipated as result of this development.	or disturbance effects for local residents.	activities. A Blast Impact Analysis was conducted for the Project site, determining that vibration levels will be in compliance with the MECP's guidelines.	local residents. Should several projects proceed at the same time these effects could be compounded.	projects combined could have an increased negative effect resulting from increased background noise and vibration.	Licenses, authorizations and/or noise regulations.
Natural Environment Resources - Physical Environment: Spills	**Yes** Potential inadvertent release of deleterious substances including oil, gasoline or other liquids.	**Yes** Potential inadvertent release of deleterious substances including oil, gasoline or other liquids as a result of periodic maintenance activities.	**Yes** The environmental impact assessment for the project outlines potential impacts of the development through soil erosion and sedimentation	**No** Not Applicable.	**Yes** Potential inadvertent release of deleterious substances including oil, gasoline or other liquids. Comprehensive sediment control measures are planned for Phase 1 and 2 of development.	**Yes** Potential inadvertent release of deleterious substances including oil, gasoline or other liquids as a result of operational activities. Monthly	**Yes** Several projects have identified the inadvertent release of deleterious substances as a potential during construction activities. Project-specific mitigation and spill response can be implemented to mitigate concerns.	**Yes** Several projects have identified the inadvertent release of deleterious substances as a potential during operation phases. Project-specific mitigation and spill response can be implemented to mitigate concerns.	**Not Considered Significant** While several projects have identified the risk of inadvertent release of deleterious substances the risk is at a Project-specific level, Project-specific mitigation plans and spill response plans can be developed to manage Project-specific risks.

Environmental Concern	Welland Thorold Transmission Line		13030 Lundy's Lane		Upper's Quarry		Cumulative Effects Analysis		Determination of Significance
	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	
			on downstream receiving waters. Standard mitigation measures of erosion/sedimentation controls are to be implemented during construction.			environmental monitoring is expected to take place during operations.			
Natural Environment Resources - Physical Environment: Waste Generation	**Yes** Solid and/or liquid waste will be generated during construction.	**No** Not Applicable.	**Yes** Surplus materials and waste will be generated during construction.	**Yes** The proposed residential development is expected to generate increased volumes of surplus materials and waste due to the long-term rise in population density and daily household activities.	**Yes** Solid and/or liquid waste will be generated during construction.	**Yes** Solid and/or liquid waste will be generated as a result of operational activities.	**Yes** Several projects have potential to generate waste materials during construction which may have effects to local communities if not handled properly. Project specific mitigation measures can be implemented to mitigate concerns.	**Yes** Several projects have potential to generate waste materials during maintenance and operational activities which may have effects to local communities if not handled properly. Project specific mitigation measures can be implemented to mitigate concerns.	**Not Considered Significant** Several projects have potential to generate waste materials during construction, operational and maintenance activities which may have effects to local communities if not handled properly. Project specific mitigation measures can be implemented to mitigate concerns.
Natural Environment Resources - Physical Environment:	**Yes** Excess materials including	**No** Not Applicable.	**Yes** Excess materials including	**No** Not Applicable.	**Yes** Excess materials including topsoil, subsoil and rock,	**Yes** Excess materials including topsoil, subsoil and rock,	**Yes** Several projects have potential to generate excess materials	**Yes** Several projects have potential to generate excess materials	**Not Considered Significant** Several projects have potential to generate excess materials during construction

Environmental Concern	Welland Thorold Transmission Line		13030 Lundy's Lane		Upper's Quarry		Cumulative Effects Analysis		Determination of Significance
	Temporary Effect	**Long-Term Effect**	**Temporary Effect**	**Long-Term Effect**	**Temporary Effect**	**Long-Term Effect**	**Temporary Effect**	**Long-Term Effect**	
Excess Materials Management	topsoil and subsoil, may be produced during site excavations.		topsoil and subsoil, may be produced during site excavations for the residential development.		may be produced during site excavations.	may be produced during site excavations as a result of operational activities.	during construction which may have effects to local communities if not handled properly. Project specific mitigation measures can be implemented to mitigate concerns.	during maintenance activities which may have effects to local communities if not handled properly. Project specific mitigation measures can be implemented to mitigate concerns.	and maintenance activities which may have effects to local communities if not handled properly. Project specific mitigation measures can be implemented to mitigate concerns.
Natural Environment Resources - Atmospheric Environment: Climate Change	**Yes** Emissions from vehicles and equipment during construction phases are anticipated	**Yes** Emissions from vehicles and equipment during maintenance activities are anticipated	**Yes** Emissions from vehicles and equipment during construction phases are anticipated	**Yes** Emissions will be generated due to the increase in population density and associated daily human activities such as transportation, waste generation, and energy consumption.	**Yes** Emissions from vehicles and equipment during construction phases are anticipated.	**Yes** Emissions from vehicles and equipment during operational activities are anticipated.	**Yes** Several projects have identified increased potential for greenhouse gas emission releases associated with construction equipment not normally in operation in the construction area. These releases have potential to contribute to climate change through greenhouse gas emission releases. When combined, these projects together may produce larger emissions than individually on their own.	**Yes** Several projects have identified increased potential for greenhouse gas emission releases associated with operational activities. These releases have potential to contribute to climate change through greenhouse gas emission releases. When combined, these projects together may produce larger emissions than individually on their own.	**Not considered significant** While it is acknowledged that these projects will create emissions during construction and operational phases contributing to greenhouse gas releases, the emission sources (individual vehicles) are not considered significant in the context of the small overlapping project areas.
Natural Environment Resources - Atmospheric	**Yes** Potential for fugitive dust	**Yes** Potential for fugitive dust and	**Yes** Potential for fugitive dust	**Yes** Increased population	**Yes** Potential for fugitive dust and impacts to	**Yes** Potential for fugitive dust and	**Yes** Several projects have identified increased	**Yes** Several projects have identified increased	**Not Considered Significant** Not considered significant because potential impacts

Environmental Concern	Welland Thorold Transmission Line		13030 Lundy's Lane		Upper's Quarry		Cumulative Effects Analysis		Determination of Significance
	Temporary Effect	**Long-Term Effect**	**Temporary Effect**	**Long-Term Effect**	**Temporary Effect**	**Long-Term Effect**	**Temporary Effect**	**Long-Term Effect**	
Environment: Air Quality	and impacts to air quality from vehicle emissions. Standard mitigation will be used for dust control during construction.	impacts to air quality from vehicle emissions as a result of periodic maintenance activities.	and impacts to air quality from vehicle emissions. It is reasonable to assume that standard mitigation will be used for dust control during construction.	density may lead to air quality impacts as a result of more vehicle emissions.	air quality from vehicle emissions. It is reasonable to assume that standard mitigation will be used for dust control during construction.	impacts to air quality from vehicle emissions and operational activities. It is reasonable to assume that standard mitigation will be used for dust control during operational activities.	potential for negative air quality effects through construction releases of dust and airborne particulates. These releases will be temporary in nature and Project-specific mitigation can be implemented to mitigate Project specific effects.	potential for negative air quality effects through operational activity releases of dust and airborne particulates. These releases will be temporary in nature and Project specific mitigation can be implemented to mitigate Project specific effects.	are temporary in nature and can be mitigated through Project specific measures.
Natural Environment Resources – Atmospheric Environment: Noise and Vibration	**Yes** Potential disturbance if construction includes the use of implosive splicing and their associated increased vibrations levels.	**Yes** Potential disturbance as a result of noise from periodic maintenance activities.	**Yes** Potential disturbance as a result of construction noise.	**Yes** Noise mitigation was reviewed at specific locations across the proposed development. The assessment concluded that noise effects from stationary noise sources associated with residential homes such as heating/cooling units could not yet be determined.	Potential disturbance as a result of construction noise.	**Yes** Potential disturbance as a result of noise, including potential use of explosives and their associated increased vibration levels. A Blast Impact Assessment was conducted and has met MECP guidelines.	**Yes** Several projects have identified noise and vibration effects associated with construction. Should several projects proceed at the same time these effects could be compounded.	**Yes** Several projects have indicated a potential for increased noise and vibration during operations and maintenance phases. Once built, these projects combined could have an increased negative effect resulting from increased background noise and vibration.	**Not Considered Significant** Noise and vibration during construction is temporary in nature. Specific operations are required to comply with site specific Environmental Compliance Approvals, Licenses, authorizations and/or noise regulations.

Environmental Concern	Welland Thorold Transmission Line		13030 Lundy's Lane		Upper's Quarry		Cumulative Effects Analysis		Determination of Significance
	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	
				However, long term noise effects from residential home activities are likely anticipated as result of this development.					
Natural Environment Resources - Surface Water Resources: Soil Rutting & Vegetation Removals	**Yes** Potential for vehicles and equipment to create rutting in soils, creating ponding or channelization leading to additional erosion of soils during construction. Vegetation removals have the potential for increases in both overland flow and water temperature, as well as mobilization and transport of organic debris and sediment to nearby	**Yes** Low potential for vehicles and equipment to create rutting in soils, creating ponding or channelization leading to additional erosion of soils as a result of periodic maintenance activities.	**Yes** Potential for vehicles and equipment to create rutting in soils, creating ponding or channelization leading to additional erosion of soils during construction.	**No** It is reasonable to assume that impacts can be mitigated through the development of drainage ditches and stormwater management designs as part of the project.	**Yes** Potential for vehicles and equipment to create rutting in soils, creating ponding or channelization leading to additional erosion of soils. Vegetation removals have the potential for increases in both overland flow and water temperature, as well as mobilization and transport of organic debris and sediment to nearby watercourses and municipal drains.	**Yes** Potential for vehicles and equipment to create rutting in soils, creating ponding or channelization leading to additional erosion of soils as a result of operational activities. The project includes areas that will require the permanent removal of vegetation. Vegetation removals have the potential for increases in both overland flow and water temperature, as	**Yes** Several projects have identified soil rutting and vegetation removals effects associated with construction.	**Yes** Several projects have indicated a potential for soil rutting and vegetation removals during operational phases.	**Not Considered Significant** Not considered significant because potential impacts are temporary in nature and can be mitigated through Project-specific measures.

Environmental Concern	Welland Thorold Transmission Line		13030 Lundy's Lane		Upper's Quarry		Cumulative Effects Analysis		Determination of Significance
	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	
	watercourses and municipal drains.					well as mobilization and transport of organic debris and sediment to nearby watercourses and municipal drains as a result of operational activities.			
Natural Environment Resources - Surface Water Resources: Dewatering	**Yes** Potential increase in surface water flows resulting from dewatering activities.	**No** Not Applicable.	**Yes** Dewatering activities are anticipated to take place during the construction phase, specifically in relation to the construction of the basements of the residential dwellings.	**No** Not Applicable.	**Yes** Potential increase in surface water flows resulting from dewatering activities.	**Yes** Potential increase in surface water flows resulting from dewatering activities associated with operations. Watercourses and wetlands will be recipient of dewatering discharge water various locations along watercourses as extraction progresses.	**Yes** Several projects have identified potential negative effects from dewatering activities during construction. These effects are temporary in nature and Project-specific mitigation can be utilized to mitigate Project specific concerns.	**No** Not Applicable.	**Not Considered Significant** Not considered significant because potential impacts are temporary in nature and can be mitigated through project specific measures.
Natural Environment Resources - Surface Water Resources:	**Yes** Potential for erosion, sedimentation and soil loss	**No** Not Applicable.	**Yes** The environmental impact assessment	**No** Not Applicable.	**Yes** Potential for erosion, sedimentation and soil loss during site preparation and	**Yes** Monthly environmental monitoring is expected to take	**Yes** Several projects have identified increased potential for erosion and sedimentation	**No** Not Applicable.	**Not Considered Significant** Not considered significant because potential impacts are temporary in nature and

Environmental Concern	Welland Thorold Transmission Line		13030 Lundy's Lane		Upper's Quarry		Cumulative Effects Analysis		Determination of Significance
	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	
Erosion and Sedimentation	during site preparation and construction.		for the project outlines potential impacts of the development through soil erosion and sedimentation on downstream receiving waters. Standard mitigation measures of erosion/sedimentation controls are to be implemented during construction.		construction. Comprehensive sediment control measures are planned for Phase 1 and 2 of development.	place during operations.	during construction activities. Project specific mitigation measures can be implemented to manage erosion and sedimentation issues.		can be mitigated through project specific measures.
Natural Environment Resources - Surface Water Resources: Construction work within areas regulated by Conservation Authorities	**Yes** Potential for infrastructure (towers, watercourse crossings) to be located within Conservation Authority Regulated Areas.	**No** Not Applicable.	**Yes** Construction is located within Conservation Authority Regulated Areas and subject to regulations under the Conservation Authority Act	**Yes** Development is located within Conservation Authority Regulated Areas and subject to regulations under the Conservation Authority Act	**Yes** Quarry construction is located within Conservation Authority Regulated Areas and subject to regulations under the Conservation Authority Act.	**Yes** Quarry operations are located within Conservation Authority Regulated Areas and subject to regulations under the Conservation Authority Act	**Yes** Several projects propose construction activities within Conservation Authority Regulated Areas. Project specific mitigation measures can be implemented to mitigate concerns.	**Yes** Several projects have proposed development within Conservation Authority Regulated Areas. Project specific mitigation measures can be implemented to mitigate concerns.	**Not Considered Significant** Not considered significant because project specific mitigation measures can be implemented to mitigate concerns.
Natural Environment	**Yes**		**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**	**Not Considered Significant**

Environmental Concern	Welland Thorold Transmission Line		13030 Lundy's Lane		Upper's Quarry		Cumulative Effects Analysis		Determination of Significance
	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	
Resources - Source Water Protection: Source Water Protection (SWP)	Potential for contamination of surface water through spills or leaks during construction. Potential for impacts during construction to designated surface water Intake and Wellhead Protection Area(s) and Significant Groundwater Recharge Areas. Potential for impacts to private drinking water wells during construction.	**No** Not Applicable.	Potential for contamination of surface water through spills or leaks during construction. Potential for impacts during construction to designated surface water Intake and Wellhead Protection Area(s) and Significant Groundwater Recharge Areas. Potential for impacts to private drinking water wells during construction.	Not Applicable.	Potential for contamination of surface water through spills or leaks during construction. Potential for impacts during construction to designated surface water Intake and Wellhead Protection Area(s) and Significant Groundwater Recharge Areas. Potential for impacts to private drinking water wells during construction.	Potential for contamination of surface water through spills or leaks as a result of operational activities. Potential for impacts to designated surface water Intake and Wellhead Protection Area(s) and Significant Groundwater Recharge Areas as a result of operational activities. The Level 1 and 2 Water Report indicates there is a predicted reduction in the available drawdown in the bedrock aquifers in the vicinity of the proposed quarry. However, the proposed quarry dewatering is not predicted to	Several projects have identified potential for effects to source water protection during construction activities. Project specific mitigation measures can be implemented to manage potential temporary effects.	One project has identified potential for effects to source water protection during operational activities. Project specific mitigation measures can be implemented to manage potential effects.	Not considered significant because potential impacts are temporary in nature and can be mitigated through project specific measures.

Environmental Concern	Welland Thorold Transmission Line		13030 Lundy's Lane		Upper's Quarry		Cumulative Effects Analysis		Determination of Significance
	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	
						adversely impact surface water features within the study area. The predicted aquifer impacts can be mitigated where private drinking water wells are situated within close proximity to the Site.			
Natural Environment Resources - Groundwater Resources: Groundwater Quality and Quantity	**Yes** Disturbance of contaminated soil has the potential to contribute to groundwater contamination. Dewatering activities / removal of groundwater have the potential to result in temporary lowering of aquifers.	**No** Not Applicable.	**Yes** Disturbance of contaminated soil has the potential to contribute to groundwater contamination. Disturbance and compaction to soil has the potential to inhibit infiltration. Dewatering activities / removal of groundwater have the potential to result in	**No** Not Applicable.	**Yes** Disturbance of contaminated soil has the potential to contribute to groundwater contamination. Disturbance and compaction to soil has the potential to inhibit infiltration. Dewatering activities / removal of groundwater have the potential to result in temporary lowering of aquifers.	**Yes** A defined portion of the groundwater quantity in the study area aquifers is expected to be impacted by operations. The predicted aquifer impacts can be mitigated where private drinking water wells are situated within close proximity to the Site.	**Yes** Several projects have identified potential for effects to groundwater quality during construction activities. Project specific mitigation measures can be implemented to manage potential temporary effects.	**No** Not Applicable.	**Not Considered Significant** Not considered significant because potential impacts are temporary in nature and can be mitigated through project specific measures.

Environmental Concern	Welland Thorold Transmission Line		13030 Lundy's Lane		Upper's Quarry		Cumulative Effects Analysis		Determination of Significance
	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	
			temporary lowering of aquifers.						
Natural Environment Resources - Designated or Special Natural Areas: Significant Woodlands	**Yes** Removal of portions of woodlands (transition to compatible vegetation) within the ROW.	**Yes** Vegetation management within the ROW to ensure that incompatible vegetation does not threaten the safe and reliable operation of the transmission line.	**No** Not Applicable.	**No** Not Applicable.	**No** Not Applicable	**No** Not Applicable	**No** Project specific mitigation measures can be implemented to manage potential temporary effects.	**No** Project specific mitigation measures can be implemented to manage potential effects.	**Not Considered Significant** Not considered significant because project specific mitigation measures can be implemented to mitigate concerns. No significant woodlands overlap between projects.
Natural Environment Resources - Designated or Special Natural Areas: Significant Valleylands	**Yes** Potential for vegetation removal within significant valleylands.	**Yes** Vegetation management within significant valleylands to ensure that incompatible vegetation does not threaten the safe and reliable operation of the transmission line.	**No** Not Applicable.	**No** Not Applicable.	**No** Not Applicable.	**No** Not Applicable.	**No** Project specific mitigation measures can be implemented to manage potential temporary effects.	**No** Project specific mitigation measures can be implemented to manage potential effects.	**Not Considered Significant** Not considered significant because project specific mitigation measures can be implemented to mitigate concerns. No significant valleylands overlap between projects.
Natural Environment Resources - Designated or Special Natural Areas: Significant Wetlands	**No** Not Applicable.	**No** Not Applicable.	**No** Not Applicable.	**No** Not Applicable.	**No** Not Applicable.	**No** Not Applicable.	**No** Not Applicable.	**No** Not Applicable.	**No** Not Applicable.

Environmental Concern	Welland Thorold Transmission Line		13030 Lundy's Lane		Upper's Quarry		Cumulative Effects Analysis		Determination of Significance
	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	
Natural Environment Resources - Natural Heritage Features: Vegetation	**Yes** The project includes the temporary loss of 50.78 ha of compatible vegetation.	**Yes** The project includes the permanent loss of 1.35 ha of incompatible vegetation.	**No** Not Applicable. No natural vegetation communities exist in the project site.	**No** Not Applicable. No natural vegetation communities exist in the project site.	**Yes** Based on project reporting, it is reasonable to assume potential removal or fragmentation of existing natural vegetation	**Yes** It's reasonable to assume the removal of natural vegetation communities for the operation of the quarry. A portion of the lands will accommodate enhancement plantings and additional mitigation measures.	**Yes** Several projects have identified potential for effects to vegetation during construction activities. Project specific mitigation measures can be implemented to manage potential temporary effects.	**Yes** Several projects have identified the potential for long-term effects on vegetation. Project-specific mitigation measures can be implemented to manage potential long-term effects.	**Not Considered Significant** Vegetation removal is required for several projects, however within the area of overlap there are minimal vegetation removals anticipated. Project specific mitigation measures can be implemented to restore vegetation where possible. Compared to the larger landscape the anticipated project footprint areas are not expected to result in a significant level of vegetation removal.
Natural Environment Resources - Natural Heritage Features: Fish and Fish Habitat	**Yes** Potential disturbance to fish and fish habitat as a result of vegetation loss, soil erosion, sedimentation, etc. during construction	**No** Not Applicable.	**No** Not Applicable.	**No** Not Applicable.	**Yes** Potential disturbance to fish and fish habitat as a result of vegetation loss, soil erosion, sedimentation, etc. during construction	**Yes** The Environmental Impact Study indicates that direct impacts to fish habitat could potentially occur during blasting, sump discharge during quarry cut and floor dewatering, and during soil disturbance	**Yes** Several projects have identified potential for effects to fish and fish habitat during construction activities. Project specific mitigation measures can be implemented to manage potential temporary effects.	**Yes** The quarry project has potential for impacts to fish and fish habitat during operations.	**Not Considered Significant** Project specific mitigation measures carried out through permitting, approvals and license requirements can mitigate project specific concerns at the project level.

Environmental Concern	Welland Thorold Transmission Line		13030 Lundy's Lane		Upper's Quarry		Cumulative Effects Analysis		Determination of Significance
	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	
						associated with local grading and establishment of sinking cuts, which if unchecked, could result in the transport of sediment from exposed soil surfaces to watercourse receivers. Direct impacts to fish habitat that will occur include the removal of headwater features that provide ephemeral contributions to the existing watercourse and realignment of the existing watercourse to a new, realigned channel along the west boundary of the Subject Property.			

Environmental Concern	Welland Thorold Transmission Line		13030 Lundy's Lane		Upper's Quarry		Cumulative Effects Analysis		Determination of Significance
	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	
Natural Environment Resources - Natural Heritage Features: Woodlands	**Yes** Removal of woodlot (transition to compatible vegetation) within the transmission ROW.	**Yes** Vegetation management within the transmission ROW to ensure that incompatible vegetation does not threaten the safe and reliable operation of the transmission line.	**No** Not Applicable.	**No** Not Applicable.	**No** Removal of woodlots within the excavation site are considered permanent. .	**Yes** Removal of woodlots within the excavation site. Off-site woodland compensation planting will occur as part of the Rehabilitation Plan outlined for the project.	**Yes** Several projects have identified potential for effects to woodlands during construction activities. Project specific mitigation measures can be implemented to manage potential temporary effects.	**Yes** Several projects have identified potential for effects to woodlands during maintenance and operational activities. Project specific mitigation measures can be implemented to manage potential effects.	**No** Woodland removal is required for several projects. Project specific mitigation measures can be implemented to restore vegetation where possible. Compared to the larger landscape the anticipated project footprint areas are not expected to result in a significant level of woodland removal.
Natural Environment Resources - Natural Heritage Features: Wetlands	**Yes** Potential impacts during construction due to vegetation removal, soil erosion, sedimentation, etc.	**Yes** Potential impacts to 4 ha of wetlands (includes 0.98 ha of PSW).	**No** Not Applicable.	**No** Not Applicable.	**Yes** Proposed quarry will alter surface flow and temporarily alter water table levels, which may affect some of the non-provincially significant wetland areas on-site.	**Yes** Numerous wetlands feature directly within the PSA will be removed and relocated elsewhere along the property.	**Yes** Several projects have identified potential for effects to wetlands during construction activities. Project specific mitigation measures can be implemented to manage potential temporary effects.	**No** Although several projects have identified potential effects to wetlands, project specific mitigation measure are being implemented to reduce the impact.	**No** Wetland removal is required for several projects. Project specific mitigation measures can be implemented to restore vegetation where possible. Compared to the larger landscape the anticipated project footprint areas are not expected to result in a significant level of wetland removal.
Natural Environment Resources - Natural Heritage Features: Species at Risk (SAR)	**Yes** Potential disturbance or loss of SAR and/or SAR habitat during construction.	**Yes** Potential disturbance or loss of SAR and/or SAR habitat during maintenance activities.	**No** Not Applicable. The Environmental Impact Study indicates that there were no SAR	**No** Not Applicable. The Environmental Impact Study indicates that there were no SAR constraints to	**Yes** Potential disturbance or loss of SAR and/or SAR habitat during construction.	**Yes** Potential disturbance or loss of SAR and/or SAR habitat during operations.	**Yes** Several projects have identified potential for effects to species at risk during construction activities. Project specific mitigation measures can be implemented	**Yes** Several projects have identified potential for effects to species at risk during construction activities. Project specific mitigation measures can be implemented	**Not Considered Significant** Not considered significant because potential impacts are temporary in nature and can be mitigated through project specific mitigation measures, including those carried out through potential permitting and/or through

Environmental Concern	Welland Thorold Transmission Line		13030 Lundy's Lane		Upper's Quarry		Cumulative Effects Analysis		Determination of Significance
	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	
			constraints to the proposed development, at the time of reporting.	the proposed development, at the time of reporting.			to manage potential temporary effects.	to manage potential effects.	conditional exemptions under the Endangered Species Act, 2007.
Natural Environment Resources - Natural Heritage Features: Wildlife Habitat	**Yes** Potential disturbance or loss of wildlife habitat, including habitat fragmentation during construction.	**Yes** Potential disturbance or loss of wildlife habitat, including habitat fragmentation during maintenance activities.	**No** The Environmental Impact Study indicated that there were no wildlife present that would be a constraint to development.	**No** The Environmental Impact Study indicated that there were no wildlife present that would be a constraint to development.	**Yes** It is reasonable to assume that wildlife habitat will be removed during construction.	**Yes** The Environmental Impact Study indicated that although the loss of woodland on the Subject Property would result in localized impacts to some common wildlife habitat, the removal of an isolated 2 ha patch of woodland in a landscape with approximately 18% woodland cover will have negligible effects on broad landscape level ecological processes. The project proposes several	**Yes** Several projects have identified potential for effects to wildlife and wildlife habitat during construction activities. Project specific mitigation measures can be implemented to manage potential temporary effects.	**Yes** Several projects have identified potential for effects to wildlife and wildlife habitat during maintenance activities. Project specific mitigation measures can be implemented to manage potential effects.	**Not Considered Significant** Not considered significant because potential impacts are temporary in nature and can be mitigated through project specific measures. Permanent impacts associated with the quarry will be compensated through plantings.

Environmental Concern	Welland Thorold Transmission Line		13030 Lundy's Lane		Upper's Quarry		Cumulative Effects Analysis		Determination of Significance
	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	
						mitigation and compensation measures which includes 4 ha of compensation woodlands.			
Natural Environment Resources - Natural Heritage Features: Invasive Species	**Yes** Potential for inadvertent spread of invasive species propagules through the movement of soil, debris and/or plant material via construction vehicles and equipment.	**No** Not Applicable.	**Yes** Potential for inadvertent spread of invasive species propagules through the movement of soil, debris and/or plant material via construction vehicles and equipment.	**No** Not Applicable.	**Yes** Potential for inadvertent spread of invasive species propagules through the movement of soil, debris and/or plant material via construction vehicles and equipment.	**Yes** Potential for inadvertent spread of invasive species propagules through the movement of soil, debris and/or plant material via vehicles and equipment during operational activities.	**Yes** Several projects have identified potential for effects from invasive species during construction activities. Project specific mitigation measures can be implemented to manage potential temporary effects.	**No** Not Applicable.	**Not Considered Significant** Not considered significant because potential impacts are temporary in nature and can be mitigated through project specific measures.
Indigenous community valued components and interests	**Yes** Potential to affect traditional territories of Indigenous communities impacting areas of harvesting and hunting in the	**No** Not Applicable. .	**No** Not Applicable.	**No** Not Applicable.	**No** Not Applicable.	**No** Not Applicable.	**Yes** The Welland to Thorold project has identified potential for temporary effects to Indigenous communities from construction activities including lands with potential for harvesting and hunting activities.	**No** Not Applicable.	**Not Considered Significant** Not considered significant because potential impacts are temporary in nature

Environmental Concern	Welland Thorold Transmission Line		13030 Lundy's Lane		Upper's Quarry		Cumulative Effects Analysis		Determination of Significance
	Temporary Effect	**Long-Term Effect**	**Temporary Effect**	**Long-Term Effect**	**Temporary Effect**	**Long-Term Effect**	**Temporary Effect**	**Long-Term Effect**	
	ROW during construction.								
Recreational Resources	**Yes** Potential for temporary disturbance to tourism and enjoyment of recreational resources (e.g., trails, etc.) from construction equipment.	**Yes** Potential for temporary disturbance to tourism and enjoyment of recreational resources (e.g., trails, etc.) from maintenance activities.	**No** Not Applicable.	**No** Not Applicable.	**No** Not Applicable.	**No** Not Applicable.	**No** Project specific mitigation measures can be implemented to manage potential temporary effects.	**No** Project specific mitigation measures can be implemented to manage potential effects.	**Not Considered Significant** Not considered significant because potential impacts are temporary in nature and can be mitigated through project specific measures.
Visual and Aesthetic Resources: Visibility of the Project by Sensitive Receptors	**Yes** Potential visual impacts to sensitive receptors with views of the Project during construction.	**Yes** Potential permanent visual impacts to sensitive receptors with views of the Project during its operation.	**No** Not Applicable.	**No** Not Applicable.	**Yes** Potential visual impacts to sensitive receptors with views of the Project during construction.	**Yes** The Visual Impact Assessment report indicates there are numerous properties with potential for visual impacts. Mitigation measures are anticipated to mitigate these impacts.	**Yes** Several projects have identified potential for negative visual effects associated with construction activities. the quarry. Multiple projects being constructed in the same area could compound this effect	**Yes** Several projects have identified potential for negative visual effects associated with permanent operation of the transmission lines and active quarry.	**Not Considered Significant** Not considered significant because potential impacts associated with the quarry and transmission line will be mitigated.
Technical Considerations: Infrastructure Crossings	**Yes** Temporary construction activities overhead of	**Yes** Permanent overhead crossing of Highway 140.	**No** Not Applicable.	**No** Not Applicable.	**No** Not Applicable.	**No** Not Applicable.	**No** Project specific mitigation measures can be implemented	**No** Project specific mitigation measures can be implemented	**Not Considered Significant** Not considered significant because potential impacts are temporary in nature and

Environmental Concern	Welland Thorold Transmission Line		13030 Lundy's Lane		Upper's Quarry		Cumulative Effects Analysis		Determination of Significance
	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	Temporary Effect	Long-Term Effect	
	Highway 140 Temporary construction activities over underground utility crossing. Temporary construction activities overhead of existing railway line ROWs.	Permanent underground utility crossing. Permanent overhead crossing of the existing railway line ROWs.					to manage potential temporary effects.	to manage potential effects.	can be mitigated through project specific measures.

7.13.4. Summary of Cumulative Effects

The potential cumulative effects for the Project were assessed by considering potential effects from other undertakings that interact and overlap with the Project LSA (500 m from the Preferred Route Alternative for the Project). Potential effects were determined based on publicly available information from completed EAs where possible or based on anticipated potential project effects from another Hydro One projects being planned nearby.

The CEA determined that there are no areas of environmental concern that will result in a significant cumulative effect. The mitigation measures outlined for the Project, summarized in **Section 7.0**, provide adequate Project-specific mitigation that remain effective after considering cumulative effects from the other projects. In the event some or all of the projects identified proceed concurrently, temporary construction-related effects can be further coordinated for mitigation with project proponents.

8.0 Effects Monitoring

The purpose of effects monitoring is to confirm the extent of the proposed Project's environmental effects by comparing the actual effects with the predicted effects, to verify the effectiveness of mitigation measures, and to determine whether additional measures are warranted. Monitoring also confirms that the commitments, conditions of approval, where applicable, and compliance with other environmental legislation are met. An Environmental Specialist will be assigned to the Project for the duration of construction to monitor construction activities and provide guidance on needed field changes.

As previously noted in **Section 7.0**, a Project-specific (EMP) will be prepared following the completion of the Class EA process and before the start of construction. The (EMP) will:

- Summarize legislative requirements;
- Summarize environmental commitments set out in the final ESR, and terms and conditions of approval, if any;
- Ensure the documentation of pre-construction site conditions, where necessary;
- Provide specific directions to construction personnel on the implementation of environmental mitigation measures, response plans, and other information (e.g., identification of SAR);
- Ensure supporting protection plans have been implemented during construction;
- Describe the environmental monitoring process and frequency to be undertaken during construction;
- Outline steps to be taken when documenting monitoring and identify procedures for follow-up actions, as required; and
- Provide specific directions on the post-construction restoration of work areas and access locations.

Indigenous communities may express an interest in participating in environmental monitoring during construction of the Project. With regards to environmental monitoring during construction, in the interest of prioritizing the safety of all parties it has not been Hydro One's historic practice to invite external monitors onto active construction sites. However, in recognition of the interest expressed by some Indigenous communities in

monitoring during construction, Hydro One will work with its construction contractor to identify opportunities to safely involve Indigenous community staff in environmental monitoring work during construction should this be of interest to the Indigenous communities.

At the end of construction, an as-constructed plan will be prepared to guide ongoing operation and maintenance activities. The plan will document “as constructed” conditions as well as ongoing monitoring requirements, if required.

9.0 Conclusion

Hydro One is seeking approval under the *EA Act* to construct a new 230 kV double-circuit transmission line based on direction from the IESO in the "Niagara Integrated Regional Resource Plan" (December 22, 2022), and the "Niagara Regional Infrastructure Plan" (July 12, 2023). The new 230 kV transmission line will be approximately 18.5 km in length and will extend from an existing Hydro One corridor in Thorold and connecting into the Crowland TS in Welland. As the Preferred Route Alternative will repurpose a portion of an existing 115 kV transmission corridor, the Project will also involve removal of the existing transmission structures, conductor and components associated with the existing 115 kV transmission corridor section that will be repurposed. The Project will also involve an expansion of the Crowland TS to facilitate the connection of the new transmission line.

The purpose of the Project is to ensure sufficient bulk transfer capabilities to supply the forecast load in the Niagara region and surrounding area in the near- to mid-term, and address asset replacement needs for the Crowland TS.

Following direction from the IESO in the "Niagara Integrated Regional Resource Plan" (December 22, 2022), and the "Niagara Regional Infrastructure Plan" (July 12, 2023), Hydro One conducted a preliminary assessment to identify viable route alternatives for the new 230 kV transmission line. As a result of this exercise, three viable route segments and their corresponding route alternatives, were identified

Since the NoC in November 2024, municipal, provincial and federal government officials, staff and agencies, Indigenous communities, potentially affected and interested persons, and interest groups were consulted. Two COHs for the general public and stakeholders were held. Additionally, an interactive online mapping platform was hosted on the Project web page since the commencement of the Class EA process, with regular updates to reflect the progress of the Project and Class EA.

Feedback received from the public engagement activities were used to complete a MCDA in support of the Class EA. The results of this analysis determined that route alternative A1/B2/C1/C2 was selected as the Preferred Route Alternative.

Potential short-term and long-term environmental effects were identified for the proposed Project and corresponding mitigation measures were developed to address these effects. Based on information collected, project design and implementation of the proposed mitigation measures, no significant net adverse environmental effects are expected.

Upon filing of this ESR with the MECP, the proposed Project will be implemented in full compliance with the requirements of the Class EA process as outlined in the ESR, incorporating input obtained throughout the planning process. Hydro One will obtain the necessary environmental approvals and permits required for the proposed project prior to construction.

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