CLARINGTON TRANSFORMER STATION

Class Environmental Assessment
Draft Environmental Study Report

hydro one

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Class Environmental Assessment
Environmental Study Report

November 2012

Report Number: 590-CLEA-12-11

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Environmental Services and Approvals
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EXECUTIVE SUMMARY

Introduction

The proposed Clarington Transformer Station (TS) project is subject to the "Class Environmental Assessment for Minor Transmission Facilities" (Class EA) process, in accordance with the Ontario *Environmental Assessment Act (EA Act)*. This draft Environmental Study Report (ESR) has been prepared in compliance with the requirements of the *EA Act* and describes the Class EA process that has been undertaken for the proposed project.

Proposed Project

The proposed undertaking involves a new 500/230 kilovolt (kV) transformer station and the associated line work. The proposed Clarington TS is to be located on Hydro One Networks Inc. (Hydro One) property, in the Regional Municipality of Durham, in the Municipality of Clarington, bordering the east side of the City of Oshawa, northeast of Concession Road 7 and Townline Road North.

The station will transform electricity voltages from 500 kV to 230 kV by connecting to two of four existing 500 kV circuits and to all five of the existing 230 kV circuits located on or adjacent to the proposed Clarington TS site. The station will consist of two 500/230 kV transformers, a 500 kV switchyard, a 230 kV switchyard, two relay buildings, one electrical panel building, the associated connection facilities and equipment. The station will be serviced by a 44 kV distribution circuit supplied from Wilson TS.

The previously approved Enfield TS (230 kV/44 kV) will also be constructed within the same property when it is required by local demand. Also, space has been reserved for two additional 500/230 kV transformers and associated facilities to be installed on the same property at a later date to accommodate for future demand.

Contingent on the successful completion of the Class EA process, construction will start in March 2013 to achieve the planned in-service date of spring 2015.

Project Need

The Ontario Power Authority (OPA) has advised Hydro One that Ontario Power Generation's (OPG) Pickering Nuclear Generating Station (NGS) is approaching its final years of operation and will be retired between 2015 and 2020. Pickering NGS is the largest generation facility in the Greater Toronto Area (GTA) and currently supplies the GTA (including the Regional Municipality of Durham) with more than 25 percent of its peak electricity demand. When the generating station is removed from service, its 3,000 megawatts (MW) of capacity must be replaced by a corresponding amount of power through Hydro One's transmission system. The OPA recommended that Hydro One install the station by the spring of 2015 to address the possibility of the retirement of Pickering NGS by that time thereby preventing unacceptable reliability to the eastern portion of the GTA under an early retirement scenario.

The Clarington TS property was acquired via expropriation in 1978 for the purpose of installing a 500 / 230 kV transformer station. It is Hydro One's understanding that installing the station facilities at Clarington TS property is the only reasonable alternative from a technical and economic perspective.

Class EA Process

The Class EA process for the proposed Clarington TS project included an assessment of the existing natural and social environment and their sensitivity to the proposed project, prediction of potential effects, identification of mitigation measures as well as public and agency consultation.

Project Consultation

Since May 3, 2012, Hydro One has conducted extensive public and government agency consultations to inform stakeholders about the proposed project, as well as identify and resolve any potential concerns. First Nations and Métis communities, government agencies and officials, interest groups, affected property owners and the public were consulted by way of meetings and/or written or telephone communications.

Public Information Centres (PICs) were held for the project on May 23, 2012 and November 8, 2012. The area residents and key interest groups were notified about the proposed project and the PICs through public notices in local newspapers, letters via hand delivery and courier, and email. A project website www.HydroOne.com/Projects/Clarington was also established to keep interested parties informed about the status of the proposed project.

Draft Environmental Study Report Review Period

Hydro One is providing a 30-day review period to allow First Nations and Métis communities, government agencies and officials, affected property owners and interested public to review the draft Environmental Study Report (ESR). This draft ESR is being made available for review and comment from Thursday November 15, 2012 to Monday December 17, 2012.

Hydro One will respond to and make best efforts to resolve any issues raised by concerned parties during the review period. If no concerns are expressed, Hydro One will finalize the ESR and file it with the Ministry of the Environment. The project will then be considered acceptable and may proceed as outlined in the ESR.

If an individual is dissatisfied with the Class EA process or with Hydro One's project recommendations, he or she can make a written request within the review period to the Minister of the Environment to ask for a higher level of assessment. This request for a higher level of assessment is referred to as a Part II Order request.

This proposed project will be implemented in full compliance with the requirements of the Class EA process as outlined in ESR, incorporating input from the public, municipalities, agencies and other potentially affected parties. Hydro One will seek all environmental approvals and permits required for the proposed project.

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ACRONYMS AND MEASUREMENT UNITS

Acronyms

AANDC	Aboriginal Affairs and Northern Development Canada
ANSI	Area of Natural and Scientific Interest
ASI	Archaeological Services Inc.
BSC	Bird Studies Canada
Class EA	Class Environmental Assessment for Minor Transmission Facilities
CLI	Canada Land Inventory
CLOCA	Central Lake Ontario Conservation Authority
MOE Code	MOE Code of Practice for Preparing, Reviewing and Using Class Environmental Assessments in Ontario
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
COSSARO	Committee on the Status of Species at Risk in Ontario
DFO	Department of Fisheries and Oceans Canada
Durham Region	Regional Municipality of Durham
EA Act	*Environmental Assessment Act*
EA	Environmental Assessment
EAAB	Environmental Assessment and Approvals Branch
EA Guide	Guide to Environmental Assessment Requirements for Electricity Projects
ECA	Environmental Compliance Approval
EEA	Enniskillen Environmental Association
EMF	Electric and magnetic fields
EMS	Emergency Medical Services
EPA	*Environmental Protection Act*
ERP	Emergency Response Plan
ESA	Environmental Sensitive Area
ESR	Environmental Study Report
FPTRPC	Federal Provincial Territorial Radiation Protection Committee
GDP	Gross Domestic Product
GS	Generating Station
GTA	Greater Toronto Area

GTAA	Greater Toronto Airports Authority
Hydro One	Hydro One Networks Inc.
IESO	Independent Electricity System Operator
IGF	Information Gathering Form
IO	Infrastructure Ontario
IPSP	Integrated Power System Plan
JCT	Junction
KNHF	Key Natural Heritage Features
LDC	Local distribution company
MAA	Ministry of Aboriginal Affairs
MAH	Ontario Ministry of Municipal Affairs and Housing
MNR	Ontario Ministry of Natural Resources
MOE	Ontario Ministry of the Environment
MTCS	Ontario Ministry of Tourism, Culture and Sport
MTO	Ontario Ministry of Transportation
NGS	Nuclear Generating Station
NHIC	Natural Heritage Information Centre
OEB	Ontario Energy Board
OGS	Ontario Geological Survey
OMAFRA	Ontario Ministry of Agriculture, Food and Rural Affairs
OP	Official Plan
OPA	Ontario Power Authority
OPG	Ontario Power Generation
ORMCP	Oak Ridges Moraine Conservation Plan
ORTAC	Ontario Resources and Transmission Assessment Criteria
OWES	Ontario Wetland Evaluation System
PIC	Public Information Centre
PIF	Partners in Flight
POR	Point of reception
PPF	Project Participation Form
PPS	Provincial Policy Statement
PSW	Provincially Significant Wetland

Project	Clarington TS Project
PTTW	Permit-To-Take-Water
ROW	Right-of-way
SAR	Species at risk
SARA	*Species at Risk Act*
SARO	Species at Risk in Ontario
SWMHYMO	Stormwater Management Hydrologic Model
TS	Transformer station

Measurement Units

%	percent
AMSL	above mean sea level
dBA	A-weighted decibel
ha	hectare
km	kilometre
km^2	square kilometre
kV	kilovolt
L	litre
m	metre
MVA	mega volt-ampere
MW	megawatt
V	volt

1. Introduction

Hydro One Networks Inc. (Hydro One) is planning to construct a new transformer station (TS) within the Municipality of Clarington, just east of the City of Oshawa, in the Regional Municipality of Durham (Durham Region). The location of the proposed Clarington TS project is provided in **Figure 1-1**. To meet the requirements of the *Environmental Assessment Act* (*EA Act*), Hydro One followed the Ontario Hydro (1992) "Class Environmental Assessment for Minor Transmission Facilities" (Class EA) process, which is approved under the *EA Act*. The proposed project falls within the definition of the projects covered under this Class EA. This draft Environmental Study Report (ESR) has been prepared in accordance with the requirements of the Class EA process.

1.1 Need for the Undertaking

The Ontario Power Authority (OPA) has advised Hydro One that Ontario Power Generation's (OPG) Pickering Nuclear Generating Station (NGS) is approaching its final years of operation and will be retired between 2015 and 2020. Pickering NGS is the largest generation facility in the Greater Toronto Area (GTA) and currently supplies the GTA (including the Regional Municipality of Durham) with more than 25 percent of its peak electricity demand. When the generating station is removed from service, its 3,000 megawatts (MW) of capacity must be replaced by a corresponding amount of power through Hydro One's transmission system. The OPA recommended that Hydro One install the station by the spring of 2015 to address the possibility of the retirement of Pickering NGS by that time thereby preventing unacceptable reliability to the eastern portion of the GTA under an early retirement scenario.

The OPA has provided the evidence attached as **Appendix A** in support of Hydro One's 2013/ 14 Transmission Revenue Requirement Application to the Ontario Energy Board, which outlines the rationale for selecting the Clarington TS site.

The Clarington TS property was acquired via expropriation in 1978 for the purpose of installing a 500 / 230 kV transformer station. It is Hydro One's understanding that installing

the station facilities at Clarington TS property is the only reasonable alternative from a technical and economic perspective.

Ontario Power Authority Documents

In 2007, the OPA Integrated Power System Plan (IPSP) indicated the purpose of the "Oshawa Area Transformer Station" project (now Clarington TS)

> "is to address the potential impact associated with the retirement or refurbishment of the Pickering B generating station. It also addresses potential regional supply needs and the long term potential to incorporate new generation at Darlington."

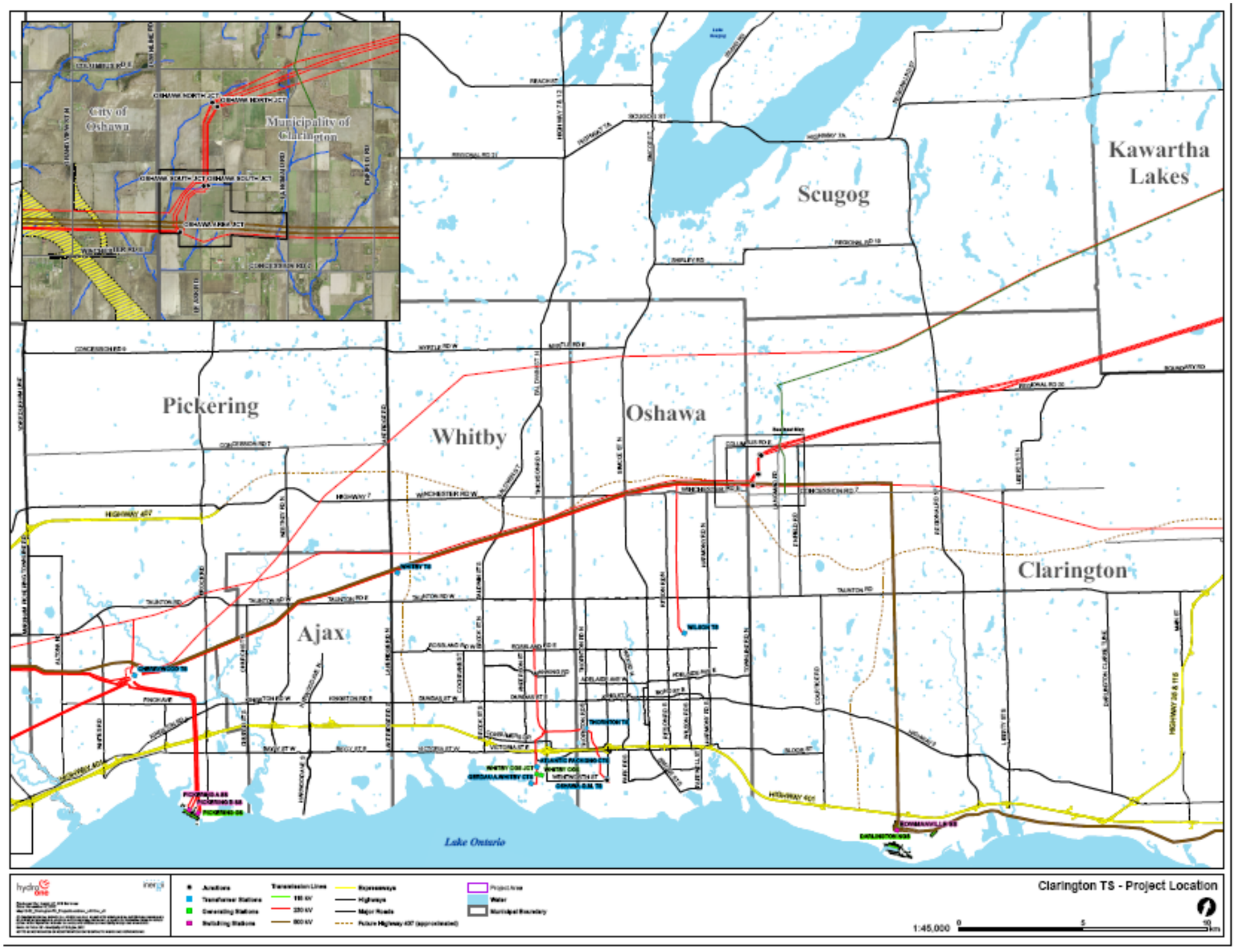
Two letters were received from the OPA in October 2011 and January 2012 regarding "the need for an implementation plan to incorporate additional 500-230 kV auto-transformation capacity in the east GTA by spring of 2015 given risk of early retirement of Pickering GS".

See **Appendix A** for the above-mentioned OPA documents supporting the need for the project.

Enfield TS

It is important to note that the proposed project shares the same property as a smaller station known as Enfield TS. The Enfield TS is required to meet the anticipated electricity load growth in the Oshawa and Clarington areas and improve reliability of electricity supply to area customers. The Class EA process for the Enfield TS project was completed in 2008. Construction of the station has been postponed because electricity demand in the area has grown slower than originally forecasted due to the recession. Enfield TS is not part of this Class EA process.

Figure 1-1: Project Location



1.2 Purpose of the Undertaking

The purpose of the undertaking, hereafter referred to as the "proposed project" or "project" is to implement the recommendations of the OPA. The proposed project involves a new 500/230 kV Transformer Station (TS) which will ensure continued safe and reliable supply of power to the GTA including Durham Region, that will be required resulting from the retirement of Pickering NGS.

The proposed Project will transform power flow from Hydro One's 500 kilovolt (kV) network to the 230 kV network in order to offset the loss of 3,000 MW of supply that will occur with the retirement of the Pickering NGS. The OPA has recommended installing the station by the spring of 2015 to address the possibility of Pickering NGS retiring by that time.

The subject 500/230 kV transformer station includes new switching facilities that provide improved load restoration capabilities to the Pickering, Ajax, Whitby, Oshawa and Clarington areas. Existing supply facilities serving these areas are not capable of meeting existing load restoration requirements specified within the Ontario Resources and Transmission Assessment Criteria (ORTAC) document issued by the Independent Electricity System Operator (IESO). The subject 500/230 kV transformer station would enable meeting the requirements specified in ORTAC (IESO, 2007).

1.3 Alternatives to the Undertaking

The recommendations of the OPA are the product of their independent planning process. Consequently, the only alternative to the undertaking is the null or "Do Nothing" alternative. It is Hydro One's conclusion that that there no reasonable alternatives to the proposed undertaking.

The "Do Nothing" alternative is unacceptable because of the consequences to area power supply reliability with the retirement of Pickering NGS. Approximately 3,000 MW of power must be replaced when the station is removed from service. The Hydro One transmission

network is the only economic and technically viable source of power within the time available. These considerations fall exclusively within the mandate and authority of the OPA.

The Ministry of Environment's (MOE) (2009) "Code of Practice for Preparing, Reviewing and Using Class Environmental Assessments in Ontario" (MOE Code) provides specific guidance for projects which result from previous planning studies (Section 8.2 of the MOE Code). Consistent with the MOE Code, the OPA is a recognized decision-making body which develops recommendations in an open transparent manner consistent with Provincial Policy (e.g., the 2005 Provincial Policy Statement [PPS]). It is in Hydro One's opinion that the proposed project is a priority initiative to ensure the security and reliability of supply to the GTA following the retirement of Pickering NGS. The OPA have concluded based on their technical and economic analysis that the Clarington TS is the only reasonable alternative to ensure a safe and reliable source of energy following the retirement of Pickering NGS.

1.4 Description of the Undertaking

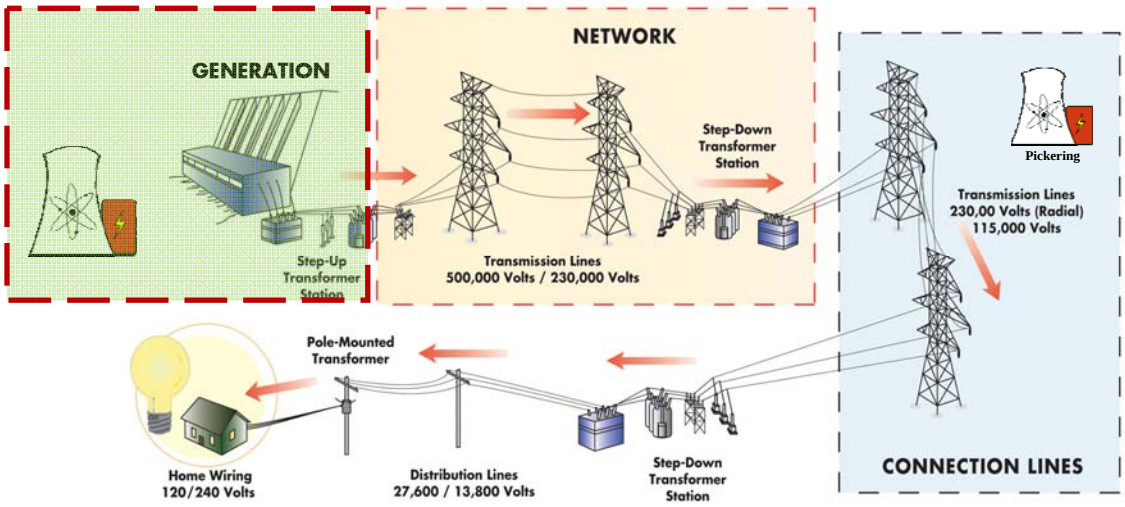
1.4.1 Introduction to Power Generation and Transmission

The role of a TS within the electric power system is illustrated in **Figure 1-2**. Electricity is produced at nuclear, fossil fuel and hydroelectric generating stations, at wind generation facilities or other industrial facilities throughout the Province of Ontario (Ontario). Hydro One's transmission network transmits electricity throughout the Province at high voltages (e.g., 500 kV, 230 kV and 115 kV) for maximum efficiency. There are approximately 300 transmission stations (which include TSs, switching stations and regulating stations) strategically located around the Province to step down voltages consistent with the needs of energy customers.

Hydro One's transmission network supplies large industrial customers and local distribution companies (LDCs). The LDCs directly supply customers (i.e., residential, farm and commercial properties) through their distribution infrastructure which consists of

distribution stations and distribution lines with pole-mounted and pad-mounted transformers.

Figure 1-2: Role of Transmission Facilities in the Power System



1.4.2 The Proposed Undertaking

The proposed undertaking involves a new 500/230 kV TS and the associated line work. The proposed Clarington TS is to be located on Hydro One property, in the Regional Municipality of Durham, in the Municipality of Clarington, bordering the east side of the City of Oshawa, northeast of Concession Road 7 and Townline Road North.

The station will transform electricity voltages from 500 kV to 230 kV by connecting to two of four existing 500 kV circuits and to all five of the existing 230 kV circuits located on or adjacent to the proposed Clarington TS site. The station will consist of two 500/230 kV transformers, a 500 kV switchyard, a 230 kV switchyard, two relay buildings, one electrical panel building, the associated buswork and equipment. The station will be serviced by a 44 kV distribution circuit supplied from Wilson TS.

The previously approved Enfield TS (230 kV/44 kV), as noted in **Section 1.1**, will also be constructed within the same property when it is required by local demand. Also, space has

been reserved for two additional 500/230 kV transformers and associated facilities to be installed on the same property at a later date to accommodate for future demand.

The existing 230 kV wood pole lines located on the property will be relocated within the property on and replaced with new 230 kV steel structures. Associated tapping structures will be erected to connect the existing 230 kV lines and the station. A temporary bypass line will be installed to facilitate the construction of the new line structures. All necessary line work would be undertaken within the Hydro One property.

An access road will be installed off from Townline Road North on the western edge of the property. The road is the municipal boundary between the Municipality of Clarington and the City of Oshawa.

The station transformers will be equipped with spill containment systems designed to prevent the loss of transformer insulating oil from entering the surrounding environment. The only source of station discharge will be runoff from precipitation. The containment and drainage systems are subject to an Environmental Compliance Approval (ECA) under the *Environmental Protection Act* (*EPA*). The approval covers not only the proposed facilities but also the Emergency Response Plan (ERP). Hydro One has obtained several hundred such approvals demonstrating that effects can be readily managed through conventional controls.

Noise levels will meet *EPA* requirements. An ECA for Noise will be obtained from the MOE prior to the installation of the transformers.

There will be no air emissions associated with the operation of the station.

A vegetative restoration and screening plan will be developed and implemented to minimize the visibility of the station. A chain-link fence will be installed around the station site for public safety and station security and site access will be gated. The station will be unmanned and operated remotely.

Contingent on the successful completion of the Class EA process, construction will start in March 2013 to achieve the planned in-service date of spring 2015.

The conceptual layout of the proposed project is shown in **Figure 1-3**. An example of a similar TS, Parkway TS, in the Town of Markham, in the Regional Municipality of York, is shown in **Figure 1-4**.

Figure 1-3: Conceptual Layout

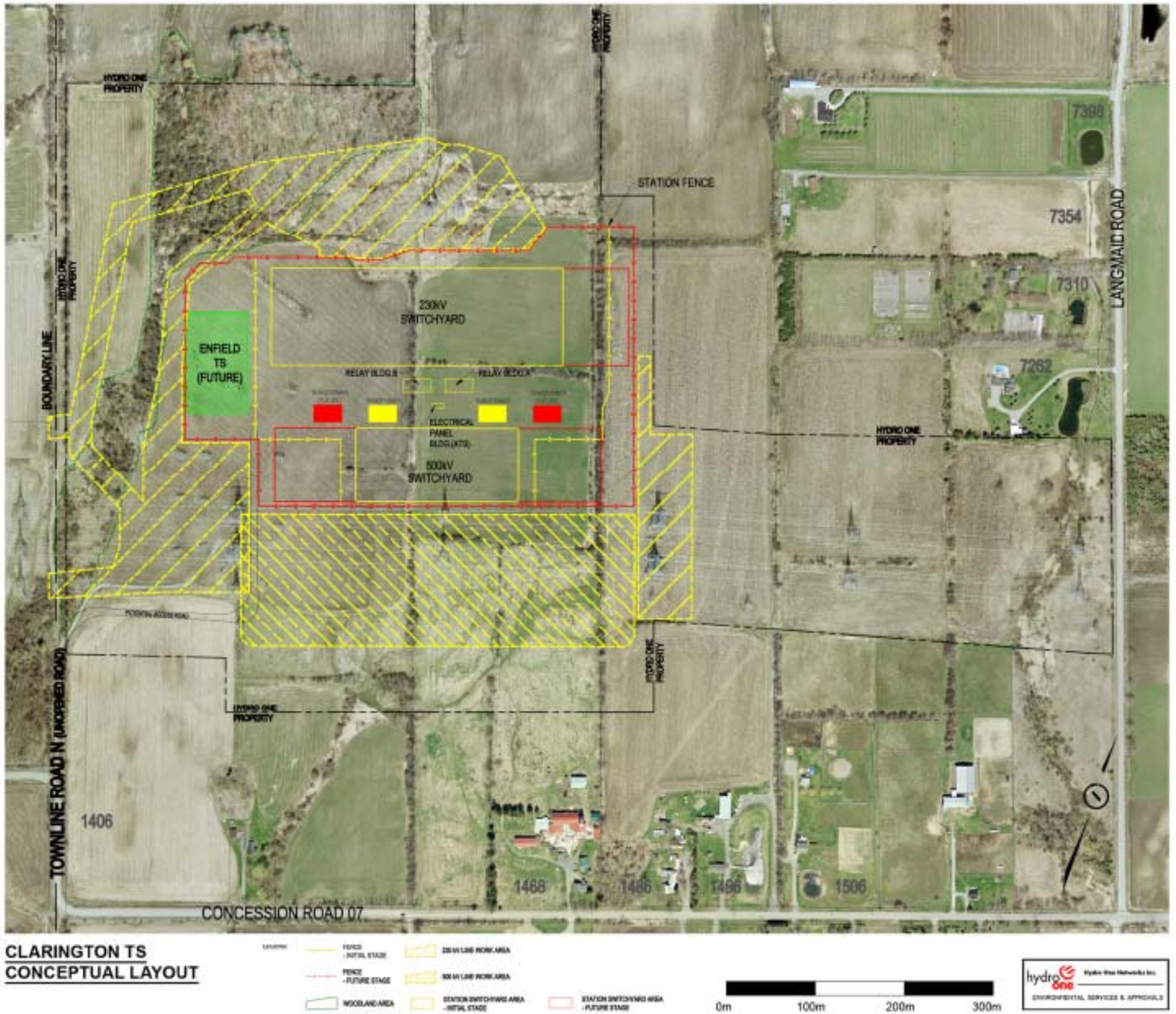


Figure 1-4: Parkway Transformer Station

1.5 Approval Process and Regulatory Requirements

1.5.1 Environmental Assessment Act Approval

This draft ESR has been prepared in conformance with the Ontario Hydro (1992) Class EA, which was approved under the *EA Act*. The Class EA defines an environmental planning process which meets all requirements of the *EA Act*. It also includes the process for Initial and Final Notification for a proposed undertaking, an associated public consultation process, a review and comment period for the draft ESR, and the filing of a final ESR with the MOE. The Class EA process is illustrated in **Figure 1-5**. The Class EA document also defines the specific types of transmission projects that fall within the specified Class definition. The Class EA is consistent with the Category B screening process described in the MOE (2001) "Guide to Environmental Assessment Requirements for Electricity Projects" (EA Guide). As a result, projects subject to the Class EA are also consistent with Category B transmission projects that are not associated with a Category B generation project.

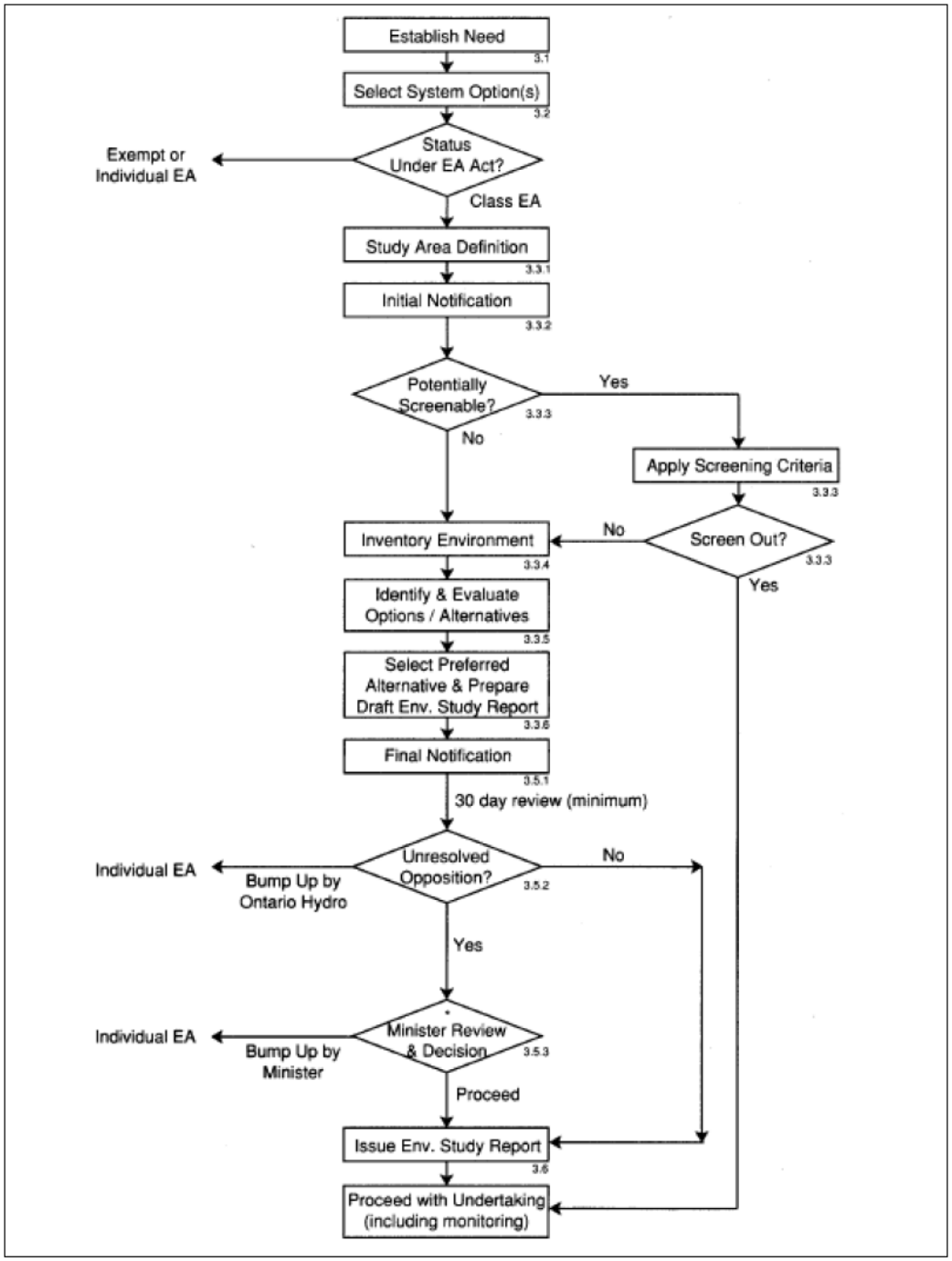
Transmission facilities covered under the Class EA include:

- 115 kV transmission lines greater than 2 km in length;
- Transmission lines greater than 115 kV and less than 500 kV (generally 230 kV) which are greater than 2 km and less than 50 km in length;
- 115 kV, 230 kV or 500 kV stations; and
- Telecommunication towers.

Transmission facilities that exceed these criteria, such as 230 kV lines longer than 50 km or a new 500 kV (or greater) line more than 2 km in length, fall outside of the Class EA definition and are automatically categorized as an Individual EA (i.e., Category C projects listed in the EA Guide).

Distribution facilities (i.e., less than 115 kV) fall outside of the *EA Act* threshold and are not subject to *EA Act* requirements (i.e., Category A projects listed in the EA Guide).

Figure 1-5: Class EA Process



Source: *Class Environmental Assessment for Minor Transmission Facilities, Revision 6 April 1992.*

The Class EA process can also identify whether there are substantive issues or effects which could potentially trigger the project to a higher level of assessment (referred to as a Part II Order request to elevate the project status to an Individual EA). Should an Individual EA

be required, Hydro One would decide whether to submit an Individual EA or to cancel the project.

Upon completion of the draft ESR for the proposed undertaking, Hydro One will issue a Final Notification to First Nations and Métis communities; federal, provincial and municipal agencies and officials; interest groups; and the affected property owners and interested public. This draft ESR is being made available for a review and comment period for 30 days, hereinafter referred to as "Review Period." Hydro One will respond to and make best efforts to resolve any issues raised by concerned parties during the Review Period. Any issues and resolutions will be documented and summarized in the final ESR.

After the Review Period, the final ESR will be finalized and filed with the MOE and the proposed project is considered to be acceptable and can proceed as described in the ESR.

If Hydro One cannot resolve the environmental issues and concerns raised during the Class EA process, the objector(s) may request a Part II Order to elevate the status of the project to an Individual EA by writing to the Minister of the Environment. If Hydro One disagrees with a request then the written objection along with the Hydro One response and the draft ESR will be forwarded to the Minister of the Environment for a decision.

It should be noted that a project status elevation from a Class EA to an Individual EA is unlikely to require a new assessment. All information collected as part of the Class EA process would remain relevant. An Individual EA process would delay the project.

1.5.2 Other Permits, Licenses and Approvals

Generally, in addition to *EA Act* approval, there is a series of permits, licenses and approvals that may be required under federal and provincial legislation for Hydro One projects. During the EA process, Hydro One contacted all applicable regulatory agencies to confirm requirements, and that approvals are obtained in a timely manner following *EA Act* approval.

Permits and approvals likely applicable to the proposed project include:

- Watercourse crossing permits from the Central Lake Ontario Conservation Authority (CLOCA) for the crossing of tributaries of the Harmony Creek and/or Farewell Creek
- Butternut removal approval from the Ontario Ministry of Natural Resources (MNR)
- ECA for Noise from the MOE
- ECA for Industrial Sewage from the MOE
- Building permits from the Municipality of Clarington
- Tree Cutting permit from Durham Region
- Archaeological Assessment Clearance Letters from the Ministry of Culture, Tourism and Sport (MTCS)
- Class 2 System Permit from Durham Region Health Department
- Permit/approval from Municipality of Clarington regarding water supply
- Permit for access and use of Townline Road North from the Municipality of Clarington and the City of Oshawa
- Transformer Haul Route approval/permit from Durham Region, Municipality of Clarington and City of Oshawa

It is noted that Hydro One projects are exempt from municipal approvals as authorized under Section 62 of the *Planning Act* if approval is obtained under the *EA Act*. However, Hydro One will consult with the municipalities regarding construction planning, schedules and local traffic management.

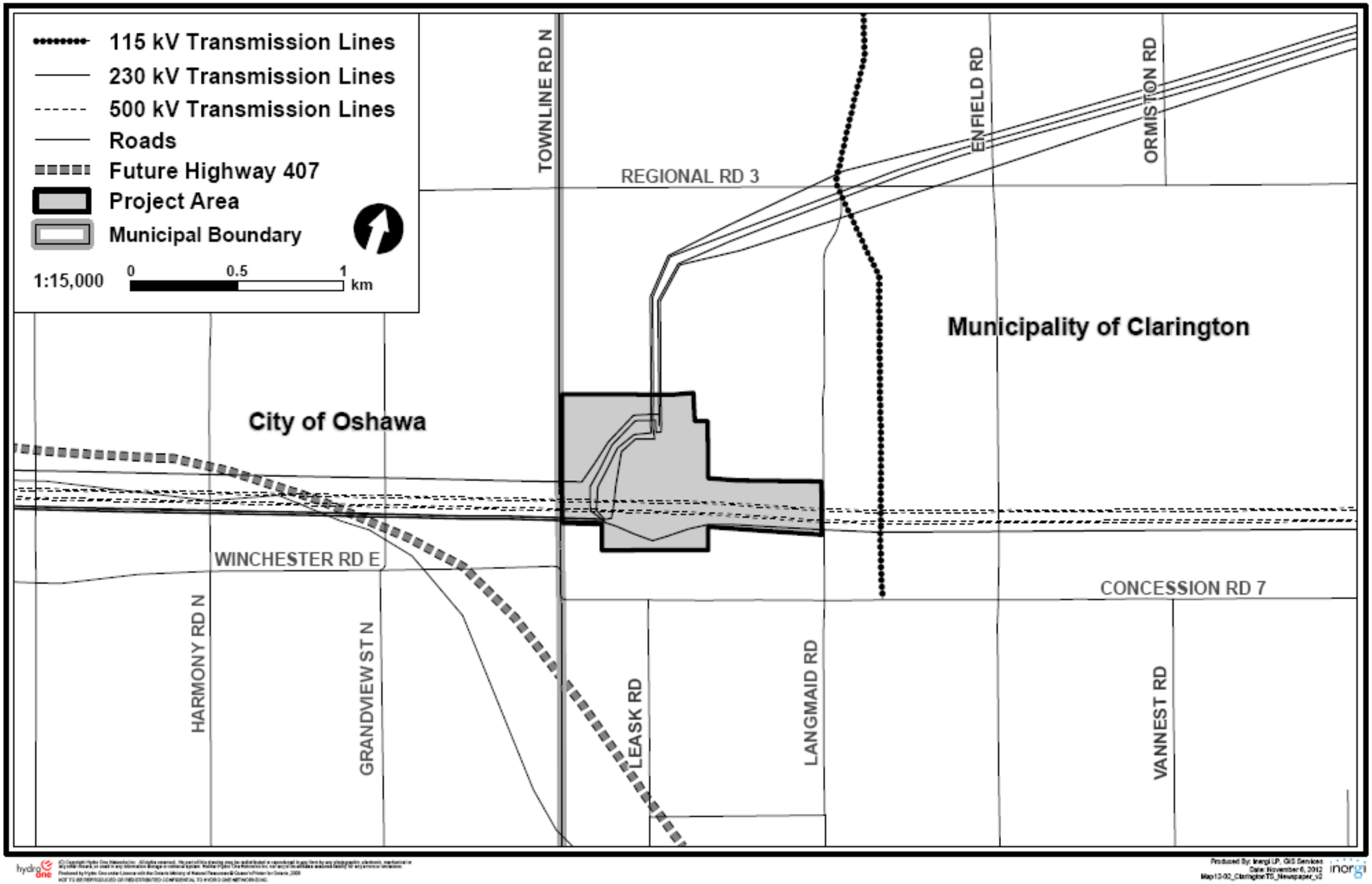
2. Class Environmental Assessment Process

2.1 Study Area Definition

The study area is broadly defined as the zone of influence of the proposed project related to such aspects of noise and visual effects, and is generally consistent with the road system now bordering the project area (i.e., Concession Road 7, Langmaid Road, Regional Road 3, and Grandview Ave).

The project area was defined by the Hydro One property within which the proposed project would be situated. The Hydro One property, hereinafter referred to as the "project area" is located in Durham Region, in the Municipality of Clarington, Part Lots 33, 34 and 35, Concession Road 7. The property is described as being north of Concession Road 7 between the unopened Townline Road North and Langmaid Road. A map of the project area is provided in **Figure 2-1**.

Figure 2-1: Project Area



2.2 Initial Notification

As part of the Class EA process, initial project notification is to be provided to First Nations and Métis communities, government agencies and officials, interest groups, affected property owners and the public. The government agencies as well as the affected municipal government will be asked to provide comments with respect to potential concerns relating to their specific policies, mandates and/ or jurisdictions. The initial notification may be provided via letter, email, public notice, meeting and telephone.

Refer to **Section 4.1** for more details on the Initial Notification and **Section 4** for information on the consultation activities undertaken for the proposed project.

2.3 Environmental Inventory

As delineated in the Class EA process (Ontario Hydro, 1992), information should be collected for the following natural environment and socio-economic factors:

- Biological resources (i.e., terrestrial and aquatic resources);
- Forestry resources;
- Agricultural resources;
- Human settlement;
- Mineral resources;
- Recreational resources;
- Appearance of the landscape (i.e., visual and aesthetic resources); and
- Heritage resources (i.e., built heritage resources, cultural heritage landscapes, and archaeological sites).

Information for the factors was based on literature review, personal contacts and/or field surveys. Environmental baseline conditions of the area surrounding the proposed project have been documented in a number of publications and reports. This information was augmented and updated by data obtained from the MOE, MNR, CLOCA, the Municipality of Clarington and the City of Oshawa. The environmental baseline conditions are

summarized in **Section 3**. This information was considered in assessing the potential effects of the proposed project.

2.4 Identification and Evaluation of Alternatives Methods

The *EA Act* and the Class EA process require identification and evaluation of alternative methods. Alternative methods are different means of carrying out the undertaking. They can include different locations, connection points, access road location and configuration, etc. Potential methods are identified based on past experience, cost and design standards, environmental inventory, etc. If these options pass technical feasibility and cost criteria, they are considered alternative methods. Comparison criteria are developed and normally described at public information centres, in project web sites, etc.

The identification of alternative sites is based on knowledge of the project area, design requirements and input received during consultation. For the proposed project, other station locations were rejected for technical or economic grounds. Had reasonable alternatives been identified, they would have been evaluated based on a number of evaluation criteria.

Although the factors used to select each alternative differs, the objective is to present an understandable rationale for selection of project alternatives based on economic, technical, environmental and socio-economic criteria or considerations. As will be explained in subsequent sections, Hydro One has concluded that there is only one reasonable location for the proposed Clarington TS. This site was selected over 30 years ago and expropriated for the purposes of a transformer station consistent with the proposed project.

Section 1.3 and **5.1** provide additional information on the rationale for selection of the Clarington site. **Section 5.2** describes the rationale for selection of station layout within the Clarington property. **Section 5.3** describes the rationale for location of new lines connecting the existing transmission lines to the station within the Clarington property.

2.5 Final Notification and Draft ESR Review Period

This draft ESR describes and documents the Class EA process undertaken for the planning of the proposed project including the environmental inventory undertaken for the study area and all consultation activities, and the comments and issues raised during these activities. It describes the project area, the station location, the station layout and the preferred alternative for the connection of the 230 kV transmission lines to the station. The draft ESR also describes the potential short-term and long-term environmental effects identified through the Class EA process, and the proposed corresponding mitigation measures.

Upon the completion of the draft ESR, a final project notification is to be provided to First Nations and Métis communities, government agencies and official, interest groups, affected property owners and interested public to announce the draft ESR review period.

Details of the Final Notification and the draft ESR review period can be found in **Section 4.9**.

The comments received and the responses provided by Hydro One during the review period will be summarized and documented in the final ESR.

3. Environmental Features

The following summarizes the natural and socio-economic environment baseline conditions in the project area. The data were compiled from published literature and maps, Official Plans, legislation, discussions with agencies and municipalities, and information gathered during field surveys.

3.1 Natural Environment Features

This section addresses the Key Natural (terrestrial and aquatic) Heritage Features (KNHF) as set out for investigation in the following documents: the PPS (2005), Oak Ridges Moraine Conservation Plan (ORMCP) (2002), and Greenbelt Plan (2005). This assessment follows the "Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement" (MNR, 2010). In addition, the Regional and Municipal Official Plans identify three planning designations within the proposed project area: Protected Countryside, Countryside Area, and Natural Linkage Area. **Figure 3-1** presents the ORMCP and Greenbelt Plan Area Planning Designations.

The following presents the KNHF as defined in the PPS, ORMCP, and Greenbelt Plan. Further it presents the differences in KNHFs amongst these documents and states those which do not occur in the study area or project area and, as a result, will not be considered further.

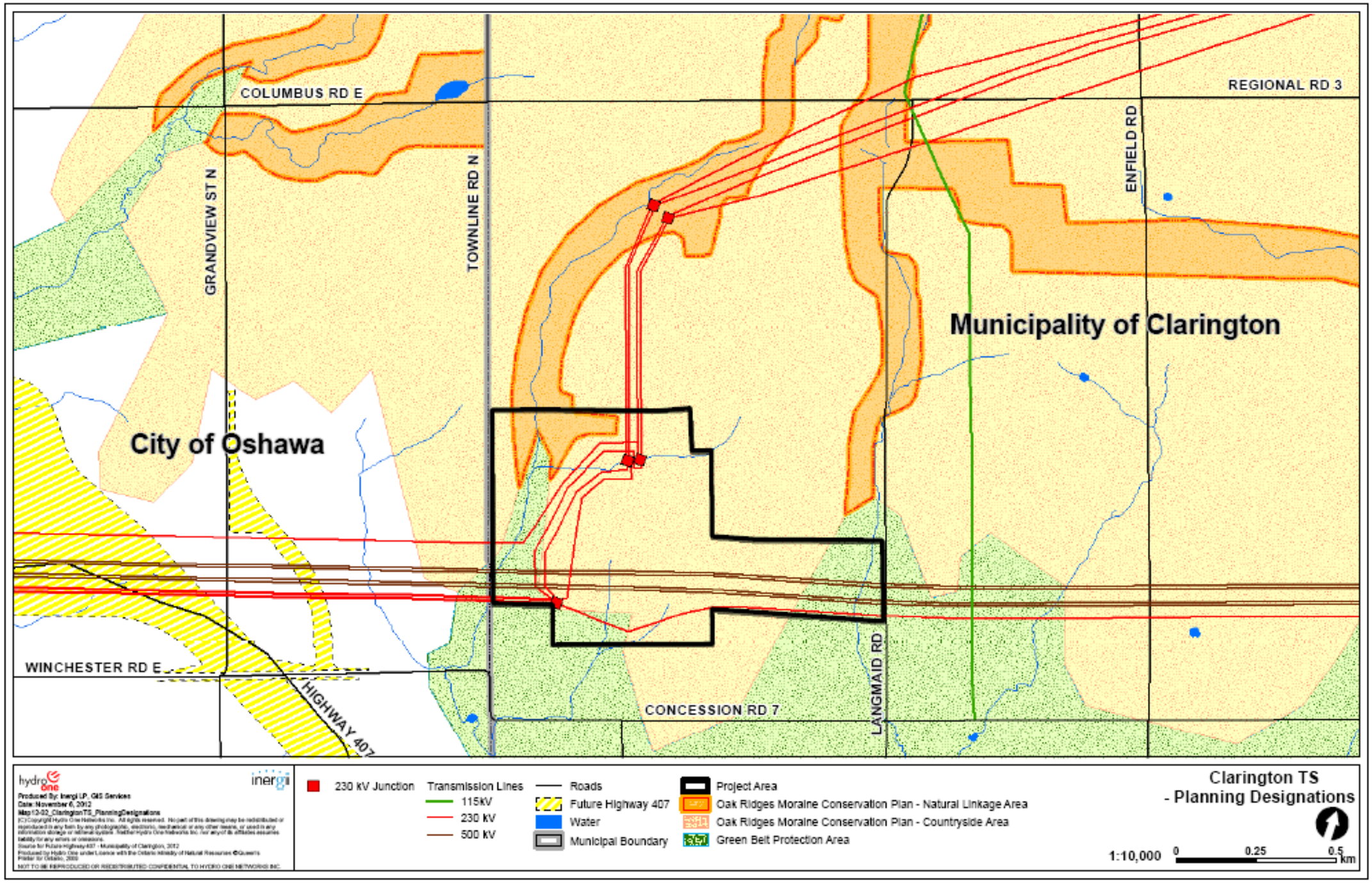
Provincial Policy Statement (2005)

The KNHFs presented in Section 2.1 of the PPS are as follows:

- Significant habitat of endangered and threatened species;
- Provincially significant wetlands (PSWs);
- Significant woodlands;
- Significant valleylands;
- Significant wildlife habitat;
- Significant Areas of Natural and Scientific Interest (ANSIs); and
- Fish habitat.

Generally these seven natural heritage features encompass the main KNHF found in the other provincial plans namely the ORMCP, and Greenbelt Plan and are applicable to this study area and project area.

Figure 3-1: Planning Designations



Significant woodlands and valleylands have been defined for the project area in the Municipality of Clarington Official Plan. ANSIs do not occur within the project area and, as a result, will not be considered further.

Field investigations have been undertaken to determine the status of the remaining four KNHFs.

Oak Ridges Moraine Conservation Plan (2002)

The KNHFs of the ORMCP plan are similar to those in the PPS (those that are different are shown in bold and italics).

- ***Wetlands***;
- Significant ***portions*** habitat of endangered, ***rare*** and threatened species;
- Fish habitat;
- Significant ANSIs (***Life Science***);
- Significant valleylands;
- Significant woodlands;
- Significant wildlife habitat; and
- ***Sand Barrens, savannahs and tall grass prairies***

The ORMCP includes all wetlands, not only PSWs as KNHFs. In addition to endangered and threatened species habitats, the ORCMP includes "rare" species habitats. The definition of "rare" in the Plan is similar to Species of Conservation Concern including "Special Concern" species, which these are addressed in the Significant Wildlife Habitat analysis of this report. The ORMCP natural heritage features focus on only "life science", ANSIs (Earth Science ANSI are not considered KNHFs).

Sand barrens, savannahs, tall grass prairies and ANSIs are not found in the project area and, as a result, will not be discussed further.

The hydrologically sensitive features to be considered under this plan include:

- Permanent and intermittent streams;
- Wetlands;

- Kettle Lakes; and
- Seepage areas and springs

Kettle lakes are not found on or adjacent to the project area and, as a result, will not be discussed further.

Greenbelt Plan (2005)

The KNHFs within the Greenbelt Plan consist of the following (those that are different than those in PPS are shown in bold and italics):

- Significant habitat of endangered species, threatened species and ***special concern species***;
- Fish habitat;
- ***Wetlands***;
- Life Science ANSIs;
- Significant valleylands;
- Significant woodlands;
- Significant wildlife habitat;
- ***Sand barrens, savannahs and tallgrass prairies***; and
- ***Alvars***.

The Greenbelt Plan, similar to ORMCP, considers all wetlands, not only PSWs as KNHFs. Species of Special Concern are considered in the Greenbelt Plan and they are addressed in the Significant Wildlife Habitat in **Section 3.1.7**.

Key hydrologic features of the Green Belt include:

- Permanent and intermittent streams;
- Lakes (and their littoral zones);
- Seepage areas and springs; and
- Wetlands.

As noted in the ORMCP section above, sand barrens, savannahs, tallgrass prairies and ANSIs are neither within or adjacent to the project area and are not considered further. This also extends to lakes and alvars.

Municipality of Clarington Official Plan (2012)

The Municipality of Clarington Official Plan (2012) conforms to the ORMCP. The KNHFs within the Official Plan are the same as those of the ORMCP.

3.1.1 Natural Setting

The study area lies within the South Slope physiographic region, located north of the Iroquois Plain and south of the Oak Ridges Moraine physiographic region (OGS, 2012). Bedrock underlying the project area consists of the Blue Mountain Formation, consisting of blue-grey non-calcareous shales (MNDM, 2012). Surficial geological conditions in the project area consist of stone-poor, sandy silt to silty sand-textured till on Paleozoic terrain; a minor portion of the project area consists of modern alluvial deposits (i.e., clay, silt, sand, gravel and may contain organic remains) (MNDM, 2012).

The dominant soil type in the study area is Bondhead Loam (grey brown loam over light brown loam over brownish clay loam over grey stony loam; high in lime; few stones), and is associated with rolling to hilly topography and good drainage (Webber *et al.*, 1946). Land lying along the watercourse on the west side of the project area is characterized as bottomlands, areas subject to flooding and surface-depositions materials carried by the stream (Webber *et al.*, 1946).

The soils are classified as 80 percent Class 1, with no significant limitations for agriculture; under good management they are moderately-high to high in productivity for a wide range of field crops (CLI, 1968). The soils are 20 percent Class 4, with severe limitations due to adverse topography (either steepness or the pattern of slopes limit agricultural use) (CLI, 1968).

The topography of the project area is rolling agricultural land typical of the Oak Ridges Moraine and varies in elevation approximately from 235 to 270 metres above mean sea level (AMSL).

The study area is located in the transition zone between the Niagara Section of the Deciduous Forest Region (commonly referred to as the Carolinian Zone) to the south and the Huron-Ontario Forest Section of the Great Lakes-St. Lawrence Forest Region to the north (Rowe, 1972). The forest communities of the Niagara Forest Section are dominated by broad-leaved trees with sugar maple (*Acer saccharum* spp. *saccharum*) and American beech (*Fagus grandifolia*) as characteristic species. The Deciduous Forest Region is the most southerly forest region in Ontario and houses 90 per cent of Ontario's population (MNR, 2012). Agriculture and urban development in this region have resulted in scattered smaller woodlots representative of the original communities. The Huron-Ontario Forest Section of the Great Lake-St. Lawrence Forest Region is a transitional vegetation type between the southern deciduous and northern coniferous forests, and as such is dominated by mixed wood forests (Rowe, 1972). **Figure 3-2** shows the location of natural environmental features both adjacent to and within the project area.

The study area lies within the Northern Lake Ontario drainage basin (Chapman and Putnam, 1984), with all project area watercourses draining to Lake Ontario. The watercourses arise either within the Oak Ridges Moraine or on the ground moraine, resulting in watercourses with relatively small drainage basins and limited base flows. Drainage is generally from north to south, but the pattern of headwater tributaries and in-stream meander result in many local exceptions to the general pattern of north-south flow. The project area is primary located within the headwaters of two watersheds, the Harmony and Farewell Watersheds (**Figure 3-3**).

Figure 3-2: Natural Features

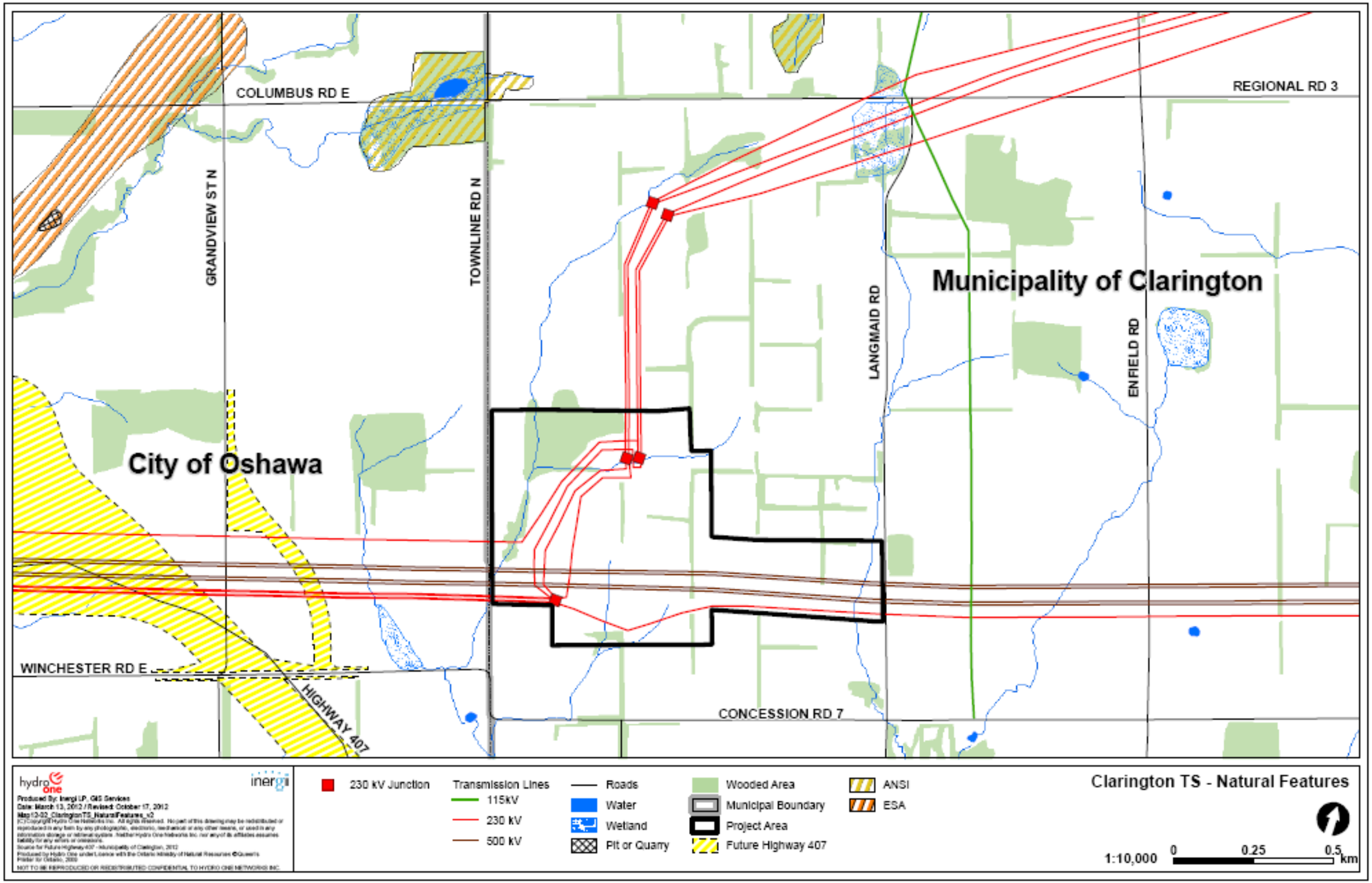
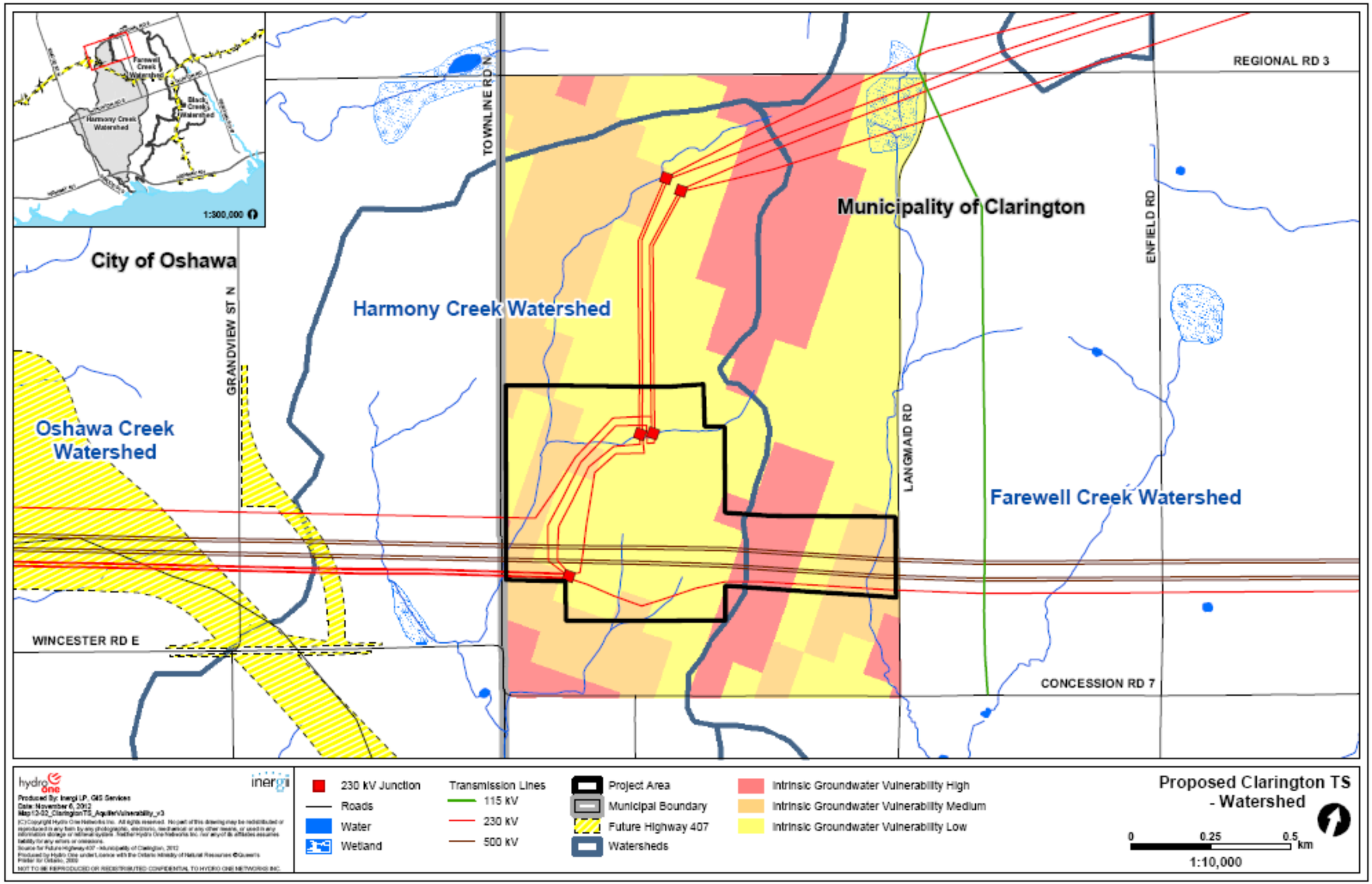


Figure 3-3: Harmony and Farewell Watersheds



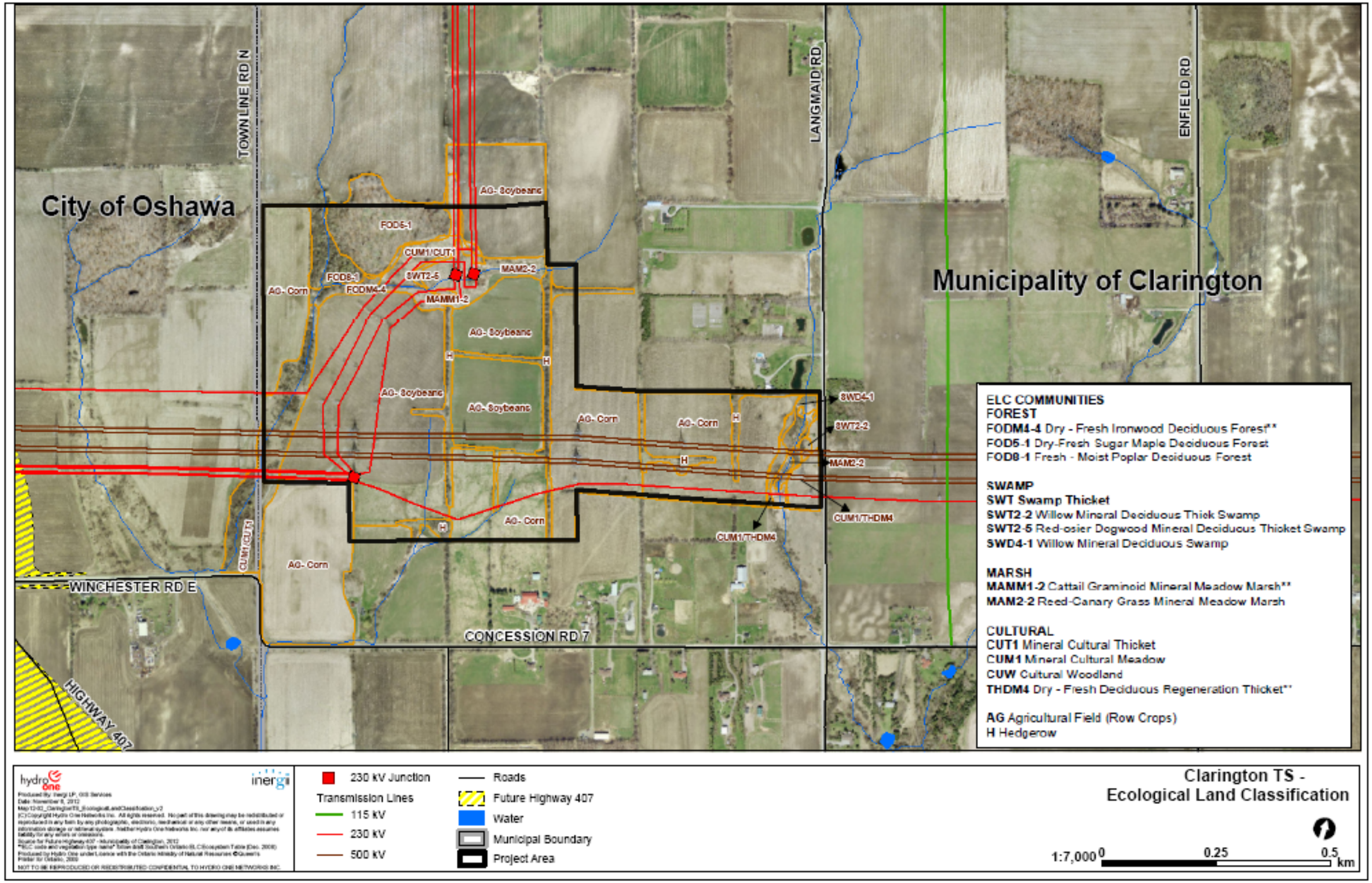
3.1.2 Vegetation

Within the project area, there is only one woodland located in the northwest corner, which is approximately 4.7 ha in size. The woodland has been designated as a "significant woodland" by the Municipality of Clarington (Clarington, 2012) (see **Section 3.1.7**) based on it being greater than 4 ha in size. Other wooded areas coincide with the valleylands associated with the Harmony Creek Tributary (west side of project area) and the hedgerows.

The vegetation communities in the project area were classified using the Ecological Land Classification (ELC) system for southern Ontario in the spring and summer of 2012. Additionally, a vascular plant survey was also conducted. The ELC surveys recorded the presence of three forest communities within the woodland: Dry-Fresh Ironwood Deciduous Forest, Dry-Fresh Sugar Maple Deciduous Forest and Fresh-Moist Poplar Deciduous Forest (Stantec, 2012). Bordering the woodland to the east and south are Mineral Cultural Thickets and Mineral Cultural Meadows. The northeast corner of the project area is bordered by a low-lying area with the following ELC communities: Red-osier Dogwood Mineral Deciduous Thicket Swamp, Cattail Graminoid Mineral Marsh Meadow and Reed-Canary Grass Mineral Meadow Marsh (Stantec, 2012). The ELC communities are illustrated in **Figure 3-4**. A detailed description of each ELC community and the results of the floral inventory are provided in **Appendix C**.

The ELC also identified butternut (*Juglans cinerea*) which is listed as Endangered federally (COSEWIC, 2012). The Endangered status of butternut in Ontario is based on observed and predicted declines due to Butternut Canker, a fungal disease that often results in tree mortality (MNR, 2011a). Butternut is protected under Section 9 of the *Endangered Species Act* (*ESA*), prohibiting against the killing, harming, taking, possessing, buying and selling of butternut. These prohibitions do not apply to those affected by Butternut Canker to such a degree that they are not necessary to retain for the purpose of supporting the protection or recovery of the species. These trees are known as non-retainable butternuts.

Figure 3-4: Ecological Land Classification



Forty-six (46) butternut trees were identified in the ELC vegetative inventory within the woodland and western riparian valley along a tributary of the Harmony Creek. In May and June 2012, a butternut assessment was conducted in accordance with the protocol provided in the Butternut Health Assessment in Ontario (FGCA, 2008). This assessment identified 36 Butternut trees that are considered retainable.

A search of the Natural Heritage Information Centre (NHIC, 2010a) database indicated that no other plant species at risk (SAR) have been observed in the general proximity of the project area, and no recent (post-1989) observations of any plant species tracked by the NHIC have been recorded in the general proximity of the project area. This was supported by the ELC and the vascular plant survey.

3.1.3 Hydrology and Hydrogeology

Surface Hydrology

The Harmony Creek watershed is primarily located on the glaciolacustrine Iroquois Plain and arises to the north in the South Slope till plain. The headwaters are intermittent exhibiting zero to low summer stream flow. The lower reaches of Harmony Creek are surrounded by an urban area and as a result function mainly to convey urban drainage.

The Farewell Creek drainage basin also extends beyond the Iroquois Plain into the till plain but just south of the Oak Ridges Moraine. The major area of the watershed occupies the Iroquois Plain which has its greatest breadth in this area. Downstream of the headwaters in the till plain, the extensive occurrence of high water table and wetland areas ensures year-round flow in the middle reaches of Farewell Creek and its major tributary, Black Creek. The headwaters are intermittent exhibiting zero to low summer stream flow.

The Farewell Creek and Harmony Creek converge downstream and discharge into Lake Ontario. Historical hydrological data are available from Water Survey of Canada stream flow gauge locations for each of the watercourses (**Table 3-1**). These data indicate that the greatest stream flows occur during the spring freshet in March and April, with lowest flows occurring during the summer.

Table 3-1: Monthly Mean Discharge Data for the Harmony Creek and Farewell Creek[1]

	January	February	March	April	May	June	July	August	September	October	November	December	Annual Mean
Harmony Creek at Oshawa[2]													
Mean (m3/s)	0.491	0.685	0.868	0.732	0.395	0.322	0.263	0.191	0.258	0.264	0.421	0.523	0.443
Minimum (m3/s)	0.065	0.059	0.256	0.195	0.108	0.069	0.044	0.048	0.046	0.061	0.115	0.078	0.267
Maximum (m3/s)	2.31	1.77	1.87	1.69	1.05	2.13	1.35	0.896	1.28	1.14	1.11	1.34	0.853
Farewell Creek at Oshawa[3]													
Mean (m3/s)	0.556	1.27	1.57	1.75	0.573	0.350	0.194	0.211	0.401	0.371	0.726	0.755	0.705
Minimum (m3/s)	0.150	0.126	0.633	0.458	0.145	0.141	0.079	0.063	0.086	0.140	0.314	0.260	0.486
Maximum (m3/s)	1.56	3.03	2.48	4.95	1.13	1.32	0.48	0.758	1.60	0.642	2.14	1.51	1.04

1 Source: http://www.wsc.ec.gc.ca/applications/H2O/index-eng.cfm

2 Station O2HD013; Latitude: 43°53'19"N, Longitude: 78°49'29"W; Gross Drainage area: 41.60 km^2; Period of record: 1980-2010.

3 Station O2HD014; Latitude: 43°53'18"N, Longitude: 78°49'16"W; Gross Drainage area: 58.50 km^2; Period of record: 1980-1993.

These gauge locations are downstream from the project area and do not adequately reflect the water flows in these onsite tributaries. Based on field investigations (2012), the Harmony Creek tributary was dry from May onward and the Farewell Creek tributary was dry from July onward.

There are four points of defined surface water discharge from the site boundaries, including two intermittent watercourses. Of the two watercourses located within the project area, one is a tributary to the Harmony Creek, located within the woodlot north and the valleyland west of the project area, and the second is a tributary to Farewell Creek on the eastern limit of the project area just west of Langmaid Road. In addition, two low-lying surficial drainage features with no defined watercourse attributes (i.e., bed and banks) drain to the south from the middle of the project area, confluencing immediately downstream at Concession Road 7 and flow into the Harmony Creek system. The four catchment areas associated with these discharge points are shown in **Figure 3-5** where they are denoted as catchments A, B, C and D with respective sizes of 24, 78, 142 and 23 ha.

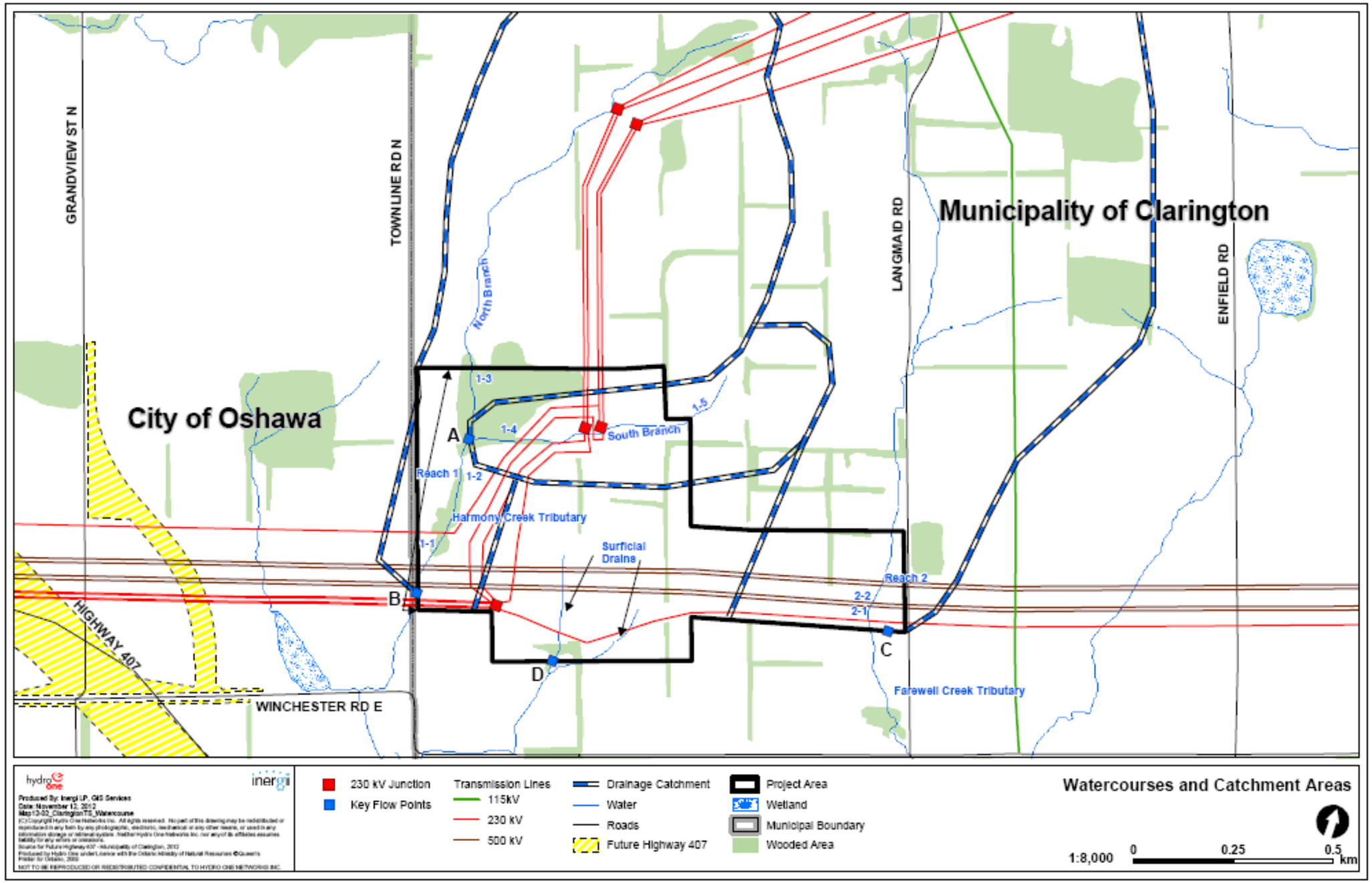
A hydrologic model was created to provide quantitative estimates of the flows to and across the site using the Stormwater Management Hydrologic Model (SWMHYMO) and return-period rainfall events (1:2-year, 1:5-year and 1:100-year). The rainfall events were derived from Intensity-Duration-Frequency data applicable to the Burketon McLaughlin rainfall gauge located approximately 7 km from the site. Six- and 24-hour storm durations were used to understand the hydrologic characteristics under a range of conditions. **Table 3-2** presents a summary of the input rainfall depth and durations.

Table 3-2 Design Rainfall Parameters – Burketon McLaughlin Gauge

Return Period	6-hr Storm Event Depth (mm)	24-Hr Storm Event Depth (mm)
2-year	37.9	47.1
5-Year	50.0	59.2
100-Year	83.1	92.4

To reflect the existing site hydrologic conditions and using CLOCA detailed recommendations for the SWMHYMO model development, the peak flows and runoff

Figure 3-5: Watercourses and Catchment Areas



volumes for the storm durations and events were calculated for each of the catchment areas (**Table 3-3**).

Table 3-3: Existing Conditions Hydrologic Model Results

Subcatchment Area	Storm Duration (hrs)	Storm Event Return Period					
		2-Year		5-Year		100-Year	
		Peak Flow (m3/s)	Runoff Volume (m3)	Peak Flow (m3/s)	Runoff Volume (m3)	Peak Flow (m3/s)	Runoff Volume (m3)
A	6	0.25	1700	0.46	3020	1.22	7700
B	6	0.93	7670	1.69	13560	4.41	34290
C	6	1.06	10760	1.90	19170	4.92	48370
D	6	0.33	1760	0.61	3110	1.59	7830
A	24	0.29	2680	0.46	4190	1.06	9250
B	24	1.07	12040	1.71	18740	3.86	40970
C	24	1.21	17040	1.93	26470	4.34	57740
D	24	0.39	2760	0.61	4300	1.38	9350

The existing conditions model results for peak flow discharges provide considerations that should be taken into account for development designs related to drainage.

Based on field investigations associated with the aquatic survey (**Section 3.1.5**), it was found that the creek systems had no apparent support from ground seepage. The dry nature of the tributaries indicated that they are not supported by groundwater, but rely upon overland flow.

Groundwater Hydrology

The project area lies within the South Slope physiographic region, a drumlinized till plain (Chapman and Putnam, 1984). This large area of gently sloping ground occurs between the highlands of the Oak Ridges Interlobate Moraine to the north and the lowland Iroquois Plain bordering Lake Ontario to the south. The South Slope physiographic region is

underlain by a dense and competent glacial till material. As such, this landform and its materials have very little sensitivity relating to human activities (Gartner Lee, 1978).

Based on a geotechnical investigation within the project area (Geo-Canada Ltd, 2012) reported that between the overlying topsoil and the borehole depth of about 14 metres there are two deposits of dense to very dense sandy silt till separated by a layer of very dense, saturated silty fine sand/fine sandy silt about 3.2 metres thick. Both deposits of sandy silt till contain wet seams, as well as occasional boulders and cobbles. The layer of silty sand/sandy silt occurs at 5.5 metres below ground surface (BGS) and extends to a depth of 8.3 metres. Additional borehole information from an investigation undertaken on the project area in 2012 confirms these findings showing a consistent overburden comprised of sandy silt till with isolated lenses of silty sand and sand at similar depth approximating 5 to 10 metres BGS. Profile locations and profiles of the overburden are shown in **Figures 3-6** to **3-8**.

It is expected that these sand lenses whose continuity is unknown, may be the water source for the shallow wells in the area and seepage areas noted by local residents. The sandy silt till generally extends from ground surface (within 30 centimetres) to the base of the boreholes at 10 to 15 metres BGS. The sandy silt till retards water penetration and is referred to as an "aquatard." This supports the Gartner Lee (1978) findings stated above and CLOCA (2011) findings which indicate that the lands upon which the project area is located are not considered an area of Significant Groundwater Recharge, nor within an Intake Protection Zone (CLOCA, 2011).

Aquifer vulnerability is a measure of a groundwater system's intrinsic susceptibility, as a function of the thickness and permeability of overlying layers, to contamination from both human and natural impacts (MAH, 2002). Layers of low permeability material, such as the clayey material identified in MOE water well records (see below), restrict the upward or downward movement of water and, therefore, decrease the vulnerability of the aquifer to contamination (CLOCA, 2011). Although portions of the surrounding area are categorized by CLOCA as having medium or high aquifer vulnerability, the entirety of the land within the proposed station is considered to have low aquifer vulnerability (**Figure 3-3**).

CLOCA (2011) mapping indicates that no potential groundwater discharge areas (i.e., areas where the interpreted water table surface occurs within 1 metre of the ground surface) have been identified within the project area. One area of potential groundwater discharge and of high volume recharge is located south of the intersection of Townline Road North and Concession Road 7.

Figure 3-6: Hydrogeology Borehole Location Plan

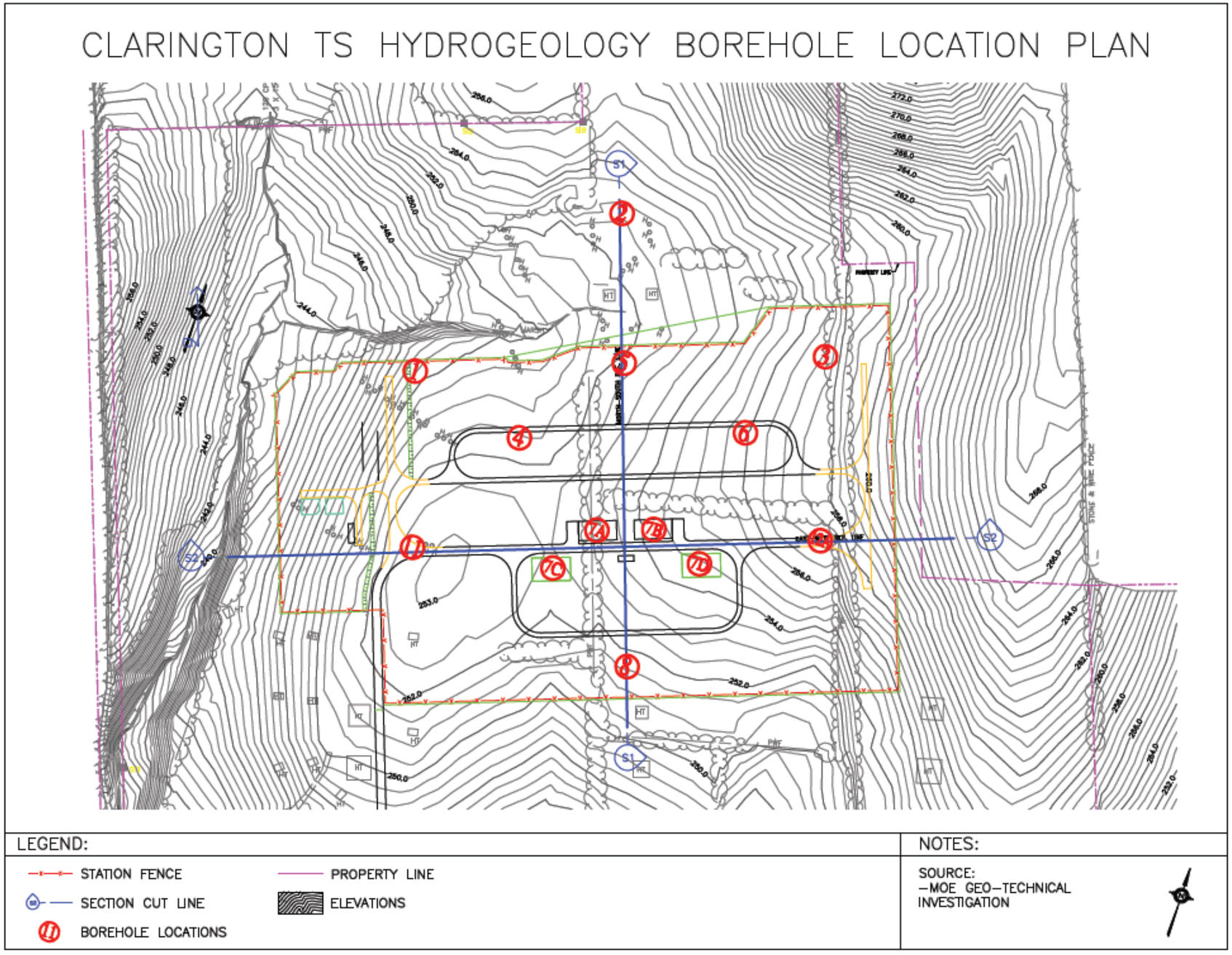


Figure 3-7: Hydrogeology Cross-Section "S1"

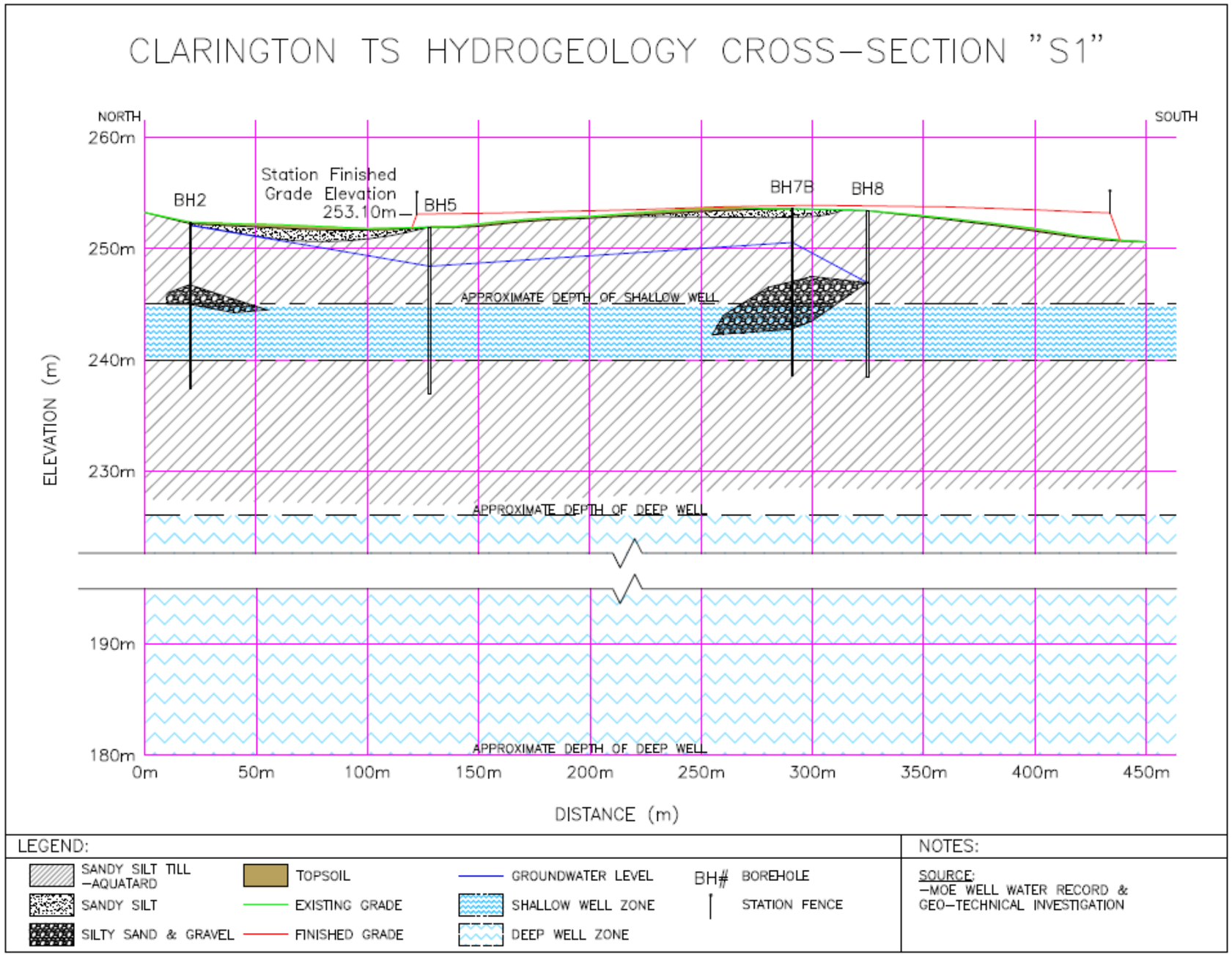
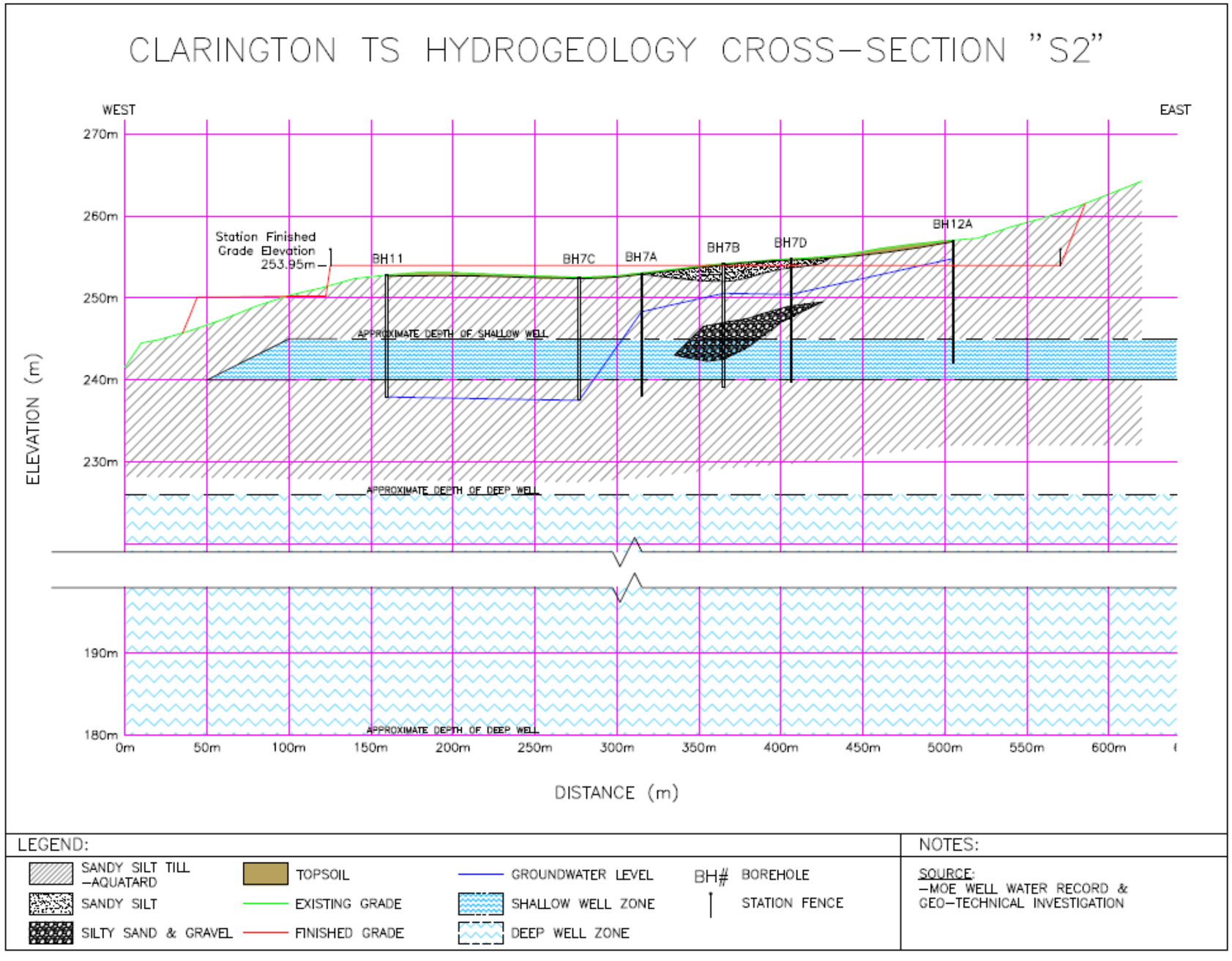


Figure 3-8: Hydrogeology Cross-Section "S2"



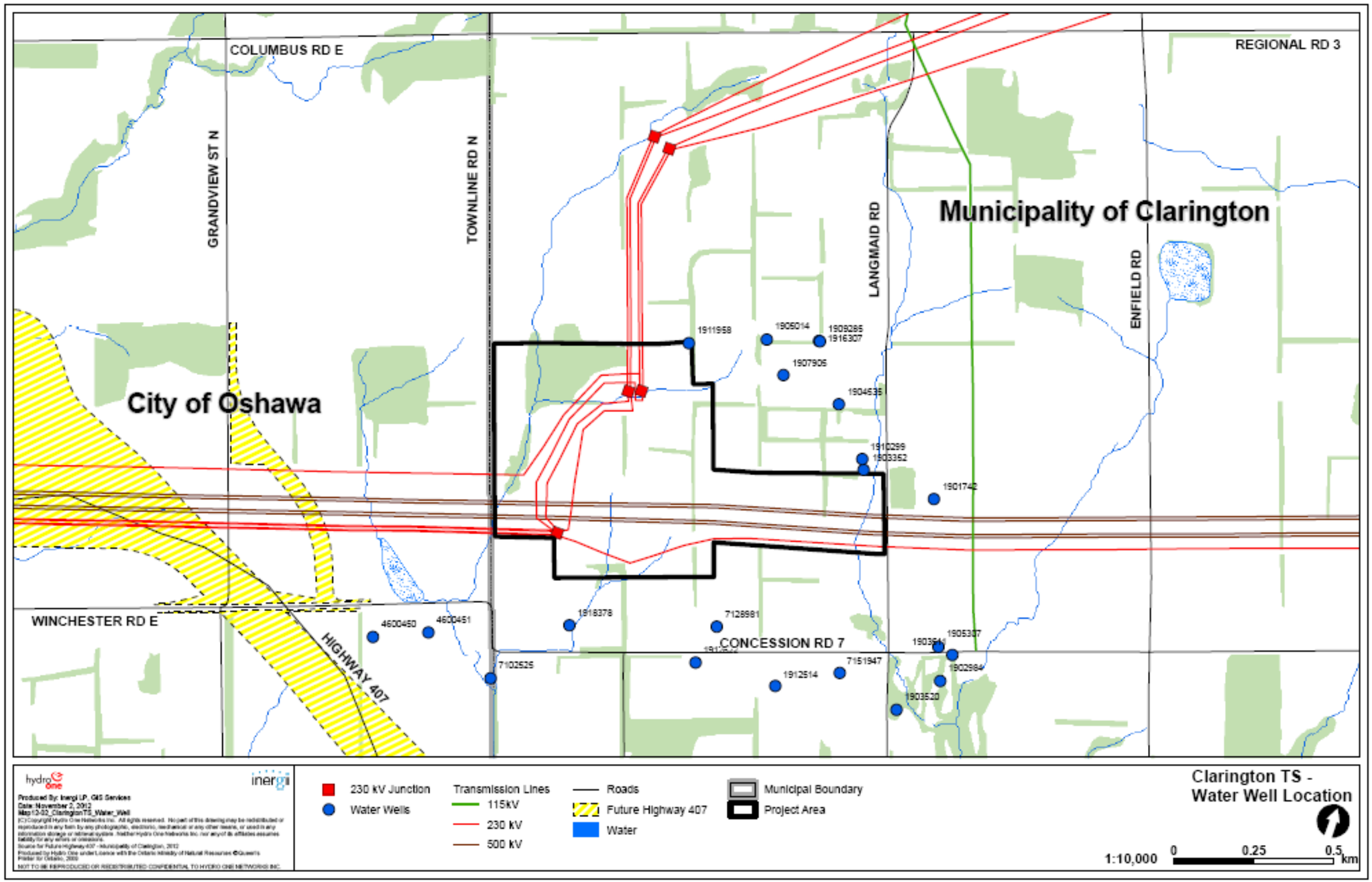
The MOE well water records (**Table 3-4**) for the area surrounding the site were obtained and reviewed. The well information further support the geotechnical borehole soil results showing that the overburden is typically a clayey material. Of the 21 nearby wells (**Figure 3-9**), 17 obtain water from elevations below 226 m above mean sea level (AMSL) with the majority (11) below 200 m AMSL. Given that the site ranges from 235 to 270 m in elevation, these wells are overlain by 10 to approximately 90 m of clayey material. The MOE records for the three remaining nearby wells indicate that they are screened at higher elevations of 240 to 248 metres AMSL, with a surficial clayey material extending only 2.4 metres to 14 metres BGS.

Table 3-4: MOE Water Well Records[1]

Well ID	Bottom Depth (m BGS[2])	Ground Elevation (m AMSL[3])	Bottom Elevation (m AMSL)	Static Water Level (m BGS)
1901742	68.9	248.2	179.3	44.2
1902984	11.3	231.6	220.4	8.5
1903352	15.2	241.4	226.2	7.3
1903511	12.2	233.1	221.0	3.4
1903520	9.8	228.6	218.9	7.6
1904535	5.2	250.6	245.4	2.4
1905014	97.5	269.5	171.9	49.4
1905307	58.2	234.2	175.9	27.4
1907905	108.2	268.4	160.2	46.3
1909285	15.2	260.4	245.1	2.1
1910299	65.8	242.6	176.7	29.0
1912514	61.0	241.1	180.1	32.0
1912622	67.1	251.3	184.3	38.4
4600450	19.2	232.9	213.7	5.5
4600451	42.7	226.7	184.0	9.1
1916307	71.6	260.5	188.9	38.1
1918378	49.1	230.2	181.1	19.2
7102525	13.7	221.5	207.8	0.0
7128981	11.4	251.9	240.5	0.0
7157947	18.9	0.0	0.0	0.0
1911958	71.3	275.7	204.4	45.7

[1] MOE Well Water Records (1899-2012), Durham.
[2] m BGS = Metres Below Ground Surface
[3] m AMSL = Metres Above Mean Sea Level

Figure 3-9: Well locations



The overburden amounts indicated by the well records provides further evidence of the low permeability of the soils, and demonstrate why the project area is not considered a major contributor to groundwater recharge in the area and is classified as an area of low aquifer vulnerability.

Based upon where water was encountered in the borehole it would appear that groundwater flows west to south towards the tributaries of the Harmony Creek in the project area. Three monitoring wells are currently being installed in order to better define the flow direction. At the time of the investigations, as noted above, these tributaries were dry. This leads to the assumptions that the tributaries are minimally, if at all, supported by groundwater.

3.1.4 Aquatic Features

The project area falls within the Harmony Creek and Farewell Creek watersheds in the Municipality of Clarington, and is located within the jurisdiction of the CLOCA.

The Harmony Creek and Farewell Creek watersheds are known to support 33 native species and five introduced species (CLOCA, 2007). Species composition includes primarily cold/cool water fish, representative of the cool water temperature regime of the sub-watershed. The high number of forage fish is indicative of a healthy fish community and provides a prey base for bass and salmonids (CLOCA, 2007).

According to the Department of Fisheries and Oceans (DFO) mapping (DFO, 2012), there are no aquatic (fish or mussel) SAR within the Harmony Creek and Farewell Creek watersheds. Thirteen of the 38 recorded fish species, representing 34% of the documented fish community, are highly sensitive to sediment and turbidity (MTO, 2009). These species include salmonids, bass, pike, alewife, crappie, perch, and chub.

Migratory salmonids use the watersheds for spawning and rearing, while resident trout use them for all life stages. Brook Trout (*Salvelinus fontinalis*) is the only native trout species found within the watersheds. Competition between the native Brook Trout and introduced Rainbow and Brown Trout have most likely limited the distribution of Brook Trout within

the watersheds. Currently, Brook Trout are typically found only in the upper reaches of the watersheds, along the Oak Ridges Moraine (CLOCA, 2007).

Aquatic habitat assessments were completed in the Harmony Creek and Farewell Creek tributaries and addressed herein as Reach 1 and 2, respectively. Within Reach 1, a tributary to Harmony Creek, flows from north to south on the west side of the project area; this branch is referred to as "Reach 1 North Branch". An associated branch referred to as "Reach 1 South Branch" flows from the northeast corner of the project area and converges with the main channel of Reach 1 near the northwest portion of the project area (**Figure 3-5**). Reach 2, a tributary of Farewell Creek, is located on the eastern limit of the project area. A third feature was surveyed at the southern end of the project area. It is a low lying, surficial drainage feature, with no defined channel (**Figure 3-5**).

Inventory points were established to measure characteristics of the tributaries to Harmony Creek and Farewell Creek within the project area. A summary of the field findings, water quality results, and habitat descriptions for each inventory point in Reach 1 and 2 are provided in **Appendix C**.

Fisheries collections were conducted utilizing a Smith-Root Model 12 backpack electrofisher. In order to electro-fish an adequate volume of water is required to immerse the conductors and net fish species. During the fisheries surveys the water levels on the property were low and of insufficient depth to support electrofishing surveys. These conditions were noted throughout the season as observed during other ecological surveys. No fish were observed in the shallow waters during the investigations along the reaches.

Due to insufficient water in each channel investigated, no fish were observed or caught; however, Reach 1 and 2 appeared to be a favourable, seasonally direct fish habitat. Within the project area, tributaries of the Harmony Creek and Farewell Creek had good canopy cover, undercut banks and in-stream debris. Based on observed conditions and the results of the background review, the on-site habitats are considered fish habitat. This has also been confirmed in personal communication to Hydro One by CLOCA. Therefore, any proposed

works within the watercourse(s) would be first discussed with CLOCA who would determine the need for the inclusion of DFO under the *Fisheries Act*.

3.1.5 Wetlands

Two wetlands in the project area were identified during the ELC survey (**Figure 3-4**), both contain three wetland communities and were measured as 2.0 ha and 0.7 ha, respectively in size. Neither contained suitable habitat for amphibians or reptiles and no SAR or rare plant species occur in these wetlands. Furthermore, their wildlife function is also considered minimal as they contain no open water for waterfowl stopovers/staging and they are isolated in the landscape with no linkage to other wetlands. From a hydrological perspective, the wetlands are cumulatively small (2.7 ha) and transition from wet to dry in a very short period of time thus signifying limited storage and retention in providing a significant hydrologic function.

These two wetlands, which have not been previously evaluated by MNR, are not considered provincially significant. This is owing to the fact that they do not occupy the same watershed (forming a complex), nor do they occur within a distance (750 metres) appropriate to be considered for completing with other PSW wetlands found regionally. Further, in consideration of the Ontario Wetland Evaluation System (OWES) evaluation method, and its four main components (i.e., Biological, Social, Hydrological, Special Feature), the above two wetland areas are not considered PSW.

3.1.6 Wildlife

Terrestrial wildlife habitats within the project area include agricultural fields, cultural thickets/meadows, dry marsh communities and woodland areas. A wildlife species survey was conducted for the project area (**Appendix C**).

Field surveys of potential amphibian habitat indicated no appropriate habitat (i.e., vernal pool, marsh with standing water, backwater area, etc.) is present on site that would support breeding amphibians. Two northern leopard frogs (*Lithobates pipiens*) were observed during aquatic surveys, but no other incidental amphibians or reptiles were observed within the project area.

A total of 52 bird species were identified during breeding bird surveys, 47 of which were likely breeding in the project area. All species observed were ranked S4 (apparently secure) or S5 (secure), with the exception of European starling (*Sturnus vulgaris*) and house finch (*Carpodacus mexicanus*), which are ranked SNA (i.e., rank not applicable as they are non-native species). Five other species observed are not expected to be breeding at the site because of the nonexistence of suitable habitat. These included great blue heron (*Ardea Herodias*), turkey vulture (*Cathartes aura*), ring-billed gull (*Larus delawarensis*), yellow-rumped warbler (*Dendroica coronate*) and a hermit thrush (*Catharus guttatus*). A complete list of bird species identified during the field investigations, and the habitat within which they were observed, is provided in **Appendix C**. Barn swallow, listed as Threatened provincially (MNR, 2009), was observed during field reconnaissance. Federally, barn swallow has been assessed by COSEWIC as threatened but it is currently not listed on a schedule under the federal *Species at Risk Act* (*SARA*). Barn swallow favours artificial structures (i.e., barns, bridges, etc.) for nesting and roosting of which none are present and/or being affected by the proposed project (COSEWIC, 2011). Therefore although barn swallow was observed in the project area, it is not considered to be nesting within the project area.

Four of the species observed (ovenbird [*Seiurus aurocapillus*], mourning warbler [*Oporornis philadelphia*], American redstart [*Setophaga ruticilla*], and black-and-white warbler [*Mniotilta varia*]) are considered as area-sensitive; however, these birds require forest tracks from 20 – 100 ha in size of which there are none within the subject site. As a result, these species are not considered to be nesting within the project area.

Partners in Flight (PIF) is an international coalition in Ontario by the Ontario Region Canadian Wildlife Service and MNR in partnership with Bird Studies Canada (BSC). This organization identifies species that are considered conservation priorities. PIF-identified species are considerations in the evaluation of significance in the Species of Conservation Concern analysis in the Significant Wildlife Habitat assessment. Ten priority species were observed during the survey: four prefer open woodlands or woodland edge, three prefer forests, two prefer shrublands and one prefers grasslands.

Another group of species of conservation relates to those identified as being at risk to common activities and their presence may result in the area being designated as significant wildlife habitat. An inactive red-tailed hawk (*Buteo jamaicensis*) nest was observed at the western edge of the forest. However, this species commonly occurs in smaller fragmented habitats and is not considered susceptible to disturbance.

Incidental wildlife observations recorded during field surveys included a variety of common mammal and bird species, such as raccoon (*Procyon lotor*), coyote (*Canis latrans*), skunk (*Mephitis mephitis*), white-tailed deer (*Odocoileus virginianus*), red-winged blackbird (*Agelaius phoeniceus*), turkey vulture (*Cathartes aura*), wild turkey (*Meleagris gallopavo*), northern flicker (*Colaptes auratus*) and blue jay (*Cyanocitta cristata*).

A search of the NHIC (2010a) database indicated that no mammal, bird, insect or amphibian SAR have been recorded recently (post-1989) in the project area.

The NHIC has a record of one bird SAR, Loggerhead Shrike (*Lanius ludovicianus*), observed in the general proximity of the project area in 1977. Loggerhead shrike is listed as Endangered federally (COSEWIC, 2012) and provincially (MNR, 2009). In Ontario, loggerhead shrike prefers pasture or other grasslands with scattered low trees and shrubs, living in fields or areas of exposed bedrock with short grass. No suitable loggerhead shrike habitat is present on the subject property and none were observed during field surveys. The Atlas of the Breeding Birds of Ontario (Cadman *et al*, 2007) does not list loggerhead shrike as being recorded in the project area.

Bobolink (*Dolichonyx oryzivorus*) and eastern meadowlark (*Sturnella magna*) are also native to this area and are both designated as threatened federally (COSEWIC, 2012) and provincially (MNR, 2009). Bobolink is a grassland species which nests primarily in forage crops with a mixture of grasses and broad leafed forbs. Eastern Meadowlark is a ground-nesting species which prefers habitats modified by humans, such as hayfields, meadows, pastures and grasslands. Surveys conducted in spring 2012 found that the agricultural fields within the project area, which consisted entirely of row crops (i.e., corn and soybeans), supported neither bird species and in both cases did not provide the required habitat type.

3.1.7 Key Natural Heritage Features

The KNHF that were defined in the PPS, ORMCP and Greenbelt Plan that needed to be considered in the project area were identified. Based on field investigations and findings, the following sections provide a summary of each of these KNHF.

Significant Wetlands and Wetlands

No PSWs were identified on or adjacent to the project area. The other wetlands within the project area would not be considered significant under the OWES owing to their low hydrologic, biologic, social values, and the inability to be considered for complexing.

Significant Woodlands

The woodland located within the project area is considered a significant woodland within the Municipality of Clarington Official Plan (2012) and as a "Natural Linkage" area within the ORMCP (MAH, 2002). With the exception of butternut, no other floral, bird, mammal, reptile, or amphibian SAR were identified within the subject significant woodland during field investigations. Additionally, Species of Conservation Concern, although observed during field reconnaissance, were not considered to inhabit the area (see **Section 3.1.6** for Wildlife).

Significant Valleylands

Criteria for determining designated significant valleylands include prominence as a distinctive landform, degree of naturalness, importance of its ecological functions, restoration potential and historic and cultural values (MNR, 2000). The designation of significant valleylands is the responsibility of the planning authority and the Municipality of Clarington. According to Schedule Map C2 of the Municipality of Clarington (2012) Official Plan, the lands directly surrounding the tributaries of Harmony Creek and Farewell Creek located within the project area are designated as significant valleylands. Similar to the significant woodlands, with the exception of butternut, no other floral, bird, mammal, reptile, or amphibian SAR were found within the subject significant valleylands during field investigations. Additionally, Species of Conservation Concern although observed were not considered to inhabit the area (see **Section 3.1.6** for Wildlife).

Significant Wildlife Habitat

Significant Wildlife Habitat, pursuant to the Significant Wildlife Habitat Technical Guide (MNR, 2010), fall into four general types: 1) seasonal concentration areas, 2) rare or specialized habitat, 3) habitat for Species of Conservation Concern, or 4) animal movement corridors. Based on project-specific field surveys, the following was determined to be true regarding the project area.

- No concentration areas for large number of species or the congregation of several species are present (for example deer yards, bat hibernacula, waterfowl staging, etc.).
- No rare habitats have been identified by MNR. MNR which ranks certain rare habitats as S1 to S3. None of the ELC communities in the project area are within this ranking.
- No specialized habitats (i.e., microhabitats critical to some wildlife species, habitats providing for sensitive species, forest providing a highly diversify of habitats, amphibian woodland breeding ponds etc.) are present.
- Species of Conservation Concern were observed but the habitat within the project area was deemed as unsuitable to support them (discussed in **Section 3.1.6**).
- No animal movement corridors are known to exist. Although areas are designated as Natural Linkage Areas in the ORMCP, based upon the Significant Wildlife Habitat Wildlife Guide, the site conditions and species observed, these areas do not support the existence of animal movement corridors. One of the prime requisites for the identification of corridors is the linkage of natural areas. In the project area the designated natural linkages are in essence truncated from the surrounding environment by agricultural land. Consequently, movement to other natural areas is fragmented such that the natural areas are in effect stranded on the landscape.

3.2 Socio-Economic Environment

3.2.1 Land Use

The project area is in active agricultural production and is prime agricultural land. The surrounding area is agricultural and residential within the Municipality of Clarington. The project area is within the Greenbelt Plan and on the Oak Ridges Moraine. The current land use designation is "utility" (for current and future use) and is zoned agricultural by the Durham Regional Official Plan (2008) and the Municipality of Clarington Official Plan (2012). The project area has been leased to local farmers since Ontario Hydro acquired the property in 1978. Refer to **Figure 3-10** for the Municipality of Clarington Official Plan Land Use Map.

Within the project area, there are further land designations under the Greenbelt Plan and the ORMCP. Within the ORMCP, the current agricultural land use is designated as Countryside Area, while the current natural features are designated as Natural Linkage Areas. The portions of the project area which are outside the Oak Ridges Moraine are governed by the Greenbelt Plan and are designated as Protected Countryside. Refer to **Figure 3-1** for reference to the Oak Ridges Moraine and Greenbelt areas within the project area.

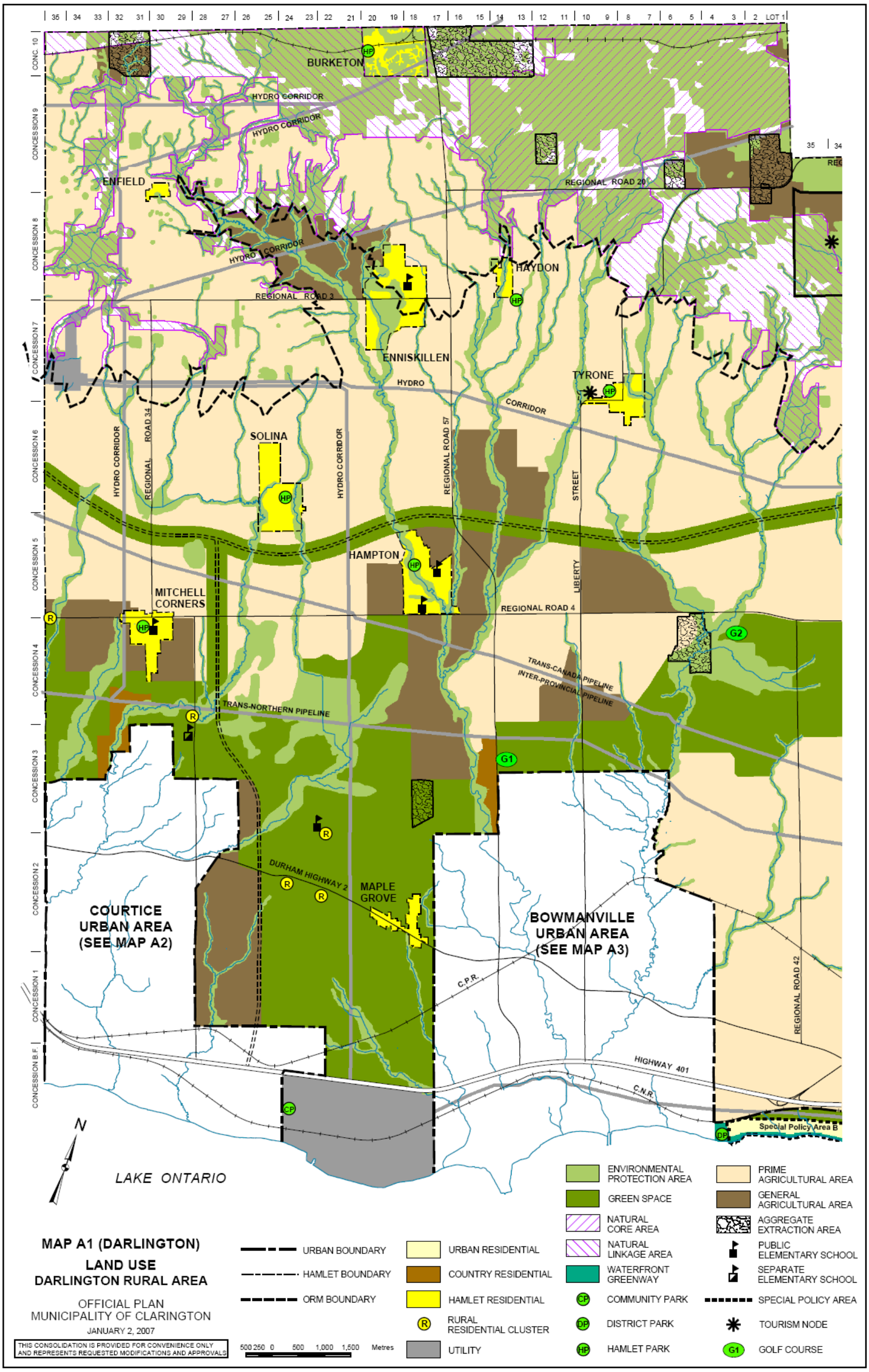
With respect to the all these designations, utility and infrastructure uses are permitted where there is a demonstrated need and there are no other reasonable alternatives.

Ontario Hydro installed the first 230 kV circuit in the project area in 1928, with three additional circuits installed in 1929, and the fifth 230 kV circuit installed in 1932. The property was expropriated in 1978 for the purpose of installation of the now existing four 500 kV circuits, and a future transmission station.

3.2.2 Human Settlement and Agricultural Resources

The local area is rural with agriculture being the primary industry with farms specializing in cash crop, vegetable, beef and dairy cattle farms. There are also a few local horse farms and

Figure 3-10: Municipality of Clarington Official Plan Land Use



non-farm residences within the local area. The project area in 2012 was composed of row crops. The major industries and commerce within the Municipality of Clarington include: agriculture and agriculture services, aggregate excavation and cement, tourism, manufacturing, utilities, retail and construction (Clarington, 2012).

Between 2006 and 2011, the Municipality of Clarington population increased by 8.6% compared to 5.7% provincially. Based on 2011 Statistics Canada data, the total population in the Municipality of Clarington was approximately 84,000 people. The average income with a family of 2 persons or more is $92,900 (Clarington, 2009).

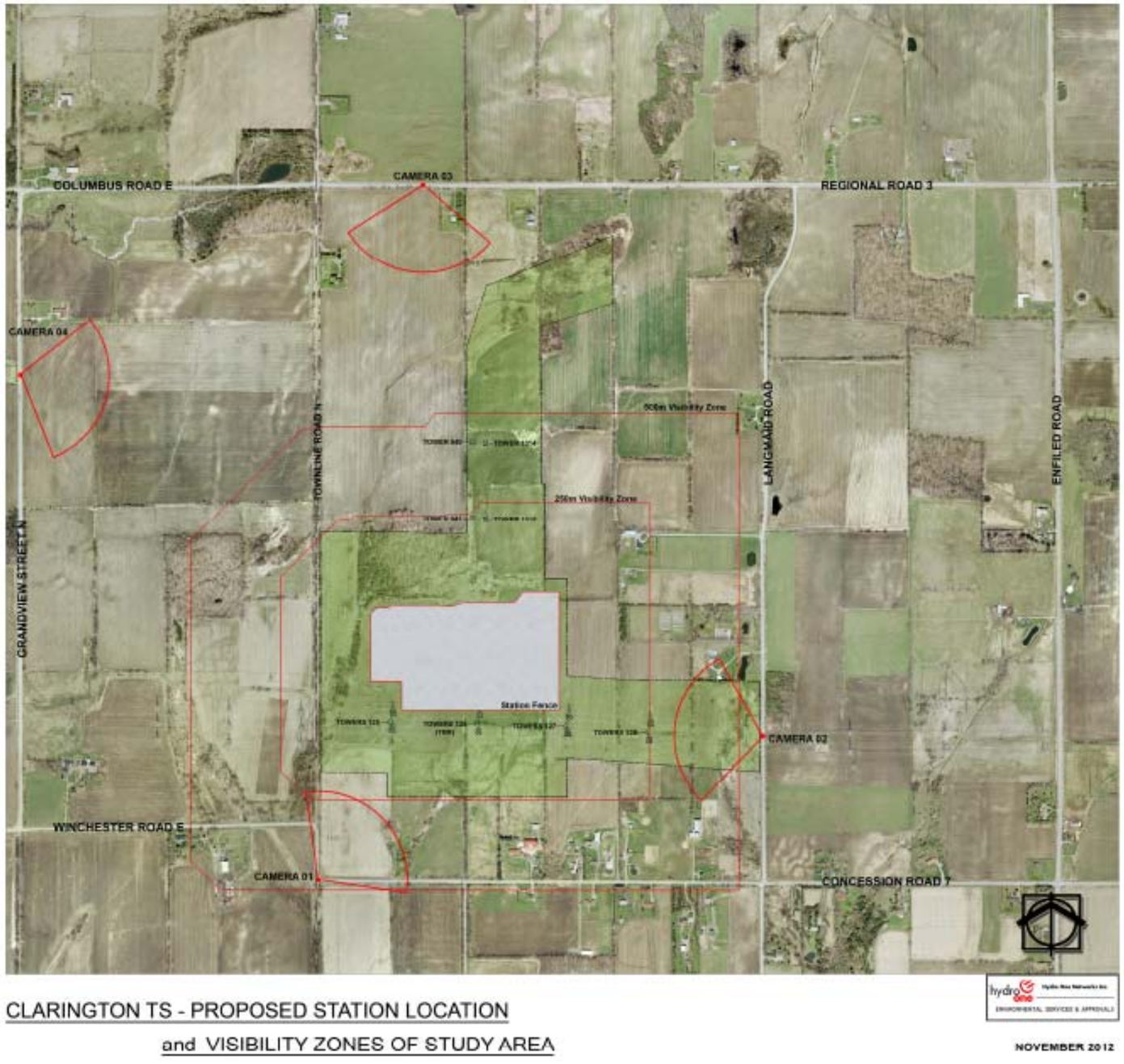
The nearest communities are Columbus and Solina, located approximately 3.5 km west and 2.5 km east, respectively from the project area limits. The project area is located approximately 4 km to the north of the urban areas of the City of Oshawa.

There are about 17 residences along Grandview Street North, Regional Road 3, Concession Road 7, and Langmaid Road that surround the project area.

3.2.3 Appearance of the Landscape (Visual Appearance)

The project area is visually characterized by rolling farmland with hedgerows, small woodlands, and natural areas. As well, a 230 kV four circuit transmission right-of-way runs through the study are in a north-east direction and a 500 kV four circuit transmission right-of-way runs east-west along the south side of the project area. A woodland is located to the north with two naturalized tributaries on east and west sides of the project area. Residences, farm buildings and farmland are located on the road system forming the perimeter of the project area. See **Figure 3-11** for the visual envelope.

Figure 3-11: Proposed Station Location and Visual Envelope



Public views into the project area are limited due to the rolling topography, roadside vegetation and distance (greater than 500 metres). On Regional Road 3 looking south, the project area is blocked by the woodland and the 230 kV transmission line on the east side. On Langmaid Road at the 500 kV transmission corridor, the project area is blocked by the topography. The only major public view of the project area on the south side is at the turn of the Concession Road 7 and Townline Road North. The topography here is sloping up towards the site but blocked because of the difference in elevation. The public view from the west is located at Grandview Street North. Again, the topography and hedgerows obscure the view of the project area. **Figure 3-11** shows the residences within the study area and views (camera position 1, 2, 3, and 4) towards the project area, as shown on **Figures 7-3 to 7-6**.

To further assess views of the proposed project, a viewing analysis was completed taking into consideration the distance from a viewing source to the station fence. The viewing source is considered to be the residential buildings. The distance measured provides a degree of visibility where the closer the viewing source is to the built facility the impact is of greater significant and vice versa. The high, moderate and low visibility zones are from 0 to 250 metres, 250 to 500 metres, and greater than 500 metres, respectively.

There are 2 properties within the high visibility zone, and there are 7 properties within the moderate visibility zone. This does not take into consideration of any intervening visual barriers such as outbuildings, landscaping, or topography.

3.2.4 Recreational, Mineral and Forestry Resources

There are no recreational, mineral and forestry commercial resources within the project area.

3.2.5 Cultural Heritage Resources

Cultural heritage resources is one of the environmental features to be considered in assessing environmental effects and mitigation. Factors to be considered include provincially and municipally designated historical sites, buildings of historical architectural significance, settlement patterns plus archaeology.

Subsequent to the approval of the Class EA under the *EA Act*, the *Ontario Heritage Act* has been amended and Standards and Guidelines have been issued by the Ministry of Tourism, Culture and Sport (MTCS). The goal has been to strengthen and improve heritage protection in Ontario. The MTCS Standards and Guidelines provide direction on the government ministries and prescribed public bodies (including Hydro One) in the management of properties in their ownership or under their control. Cultural heritage resources are defined as built heritage resources (one or more significant buildings, structures, earthworks, etc.), cultural heritage landscapes (a defined geographical area that human activity has modified) and archaeological sites.

Built Heritage Resources and Cultural Heritage Landscapes

Recent consultation with MTCS has also indicated an interest in adjacent properties. For the proposed project, adjacent properties are privately owned and not within the care or control of Hydro One. A map showing the project area and the surrounding area is shown on **Figure 3-12**.

It remains uncertain as to the accountability of project proponents for identifying built heritage resources and cultural heritage landscapes on private lands and evaluating the significance of those resources.

The studies to date have indicated that:

- The Clarington property is not designated under the *Ontario Heritage Act*. The same is true for adjacent properties.
- The Clarington property does not have an Ontario Heritage Trust easement. The same is true for adjacent properties.
- The Clarington property is not a National Historic Site and there are no federal or provincial plaques on or near the property.
- There is no indication of Aboriginal value from First Nation or Métis communities
- The Clarington site has not undergone any evident man made alternations with the exception of major transmission corridors (500 kV and 230 kV lines) running east-west

through the property. There is also a 230 kV corridor running to the northeast from a junction at the western edge of the property.

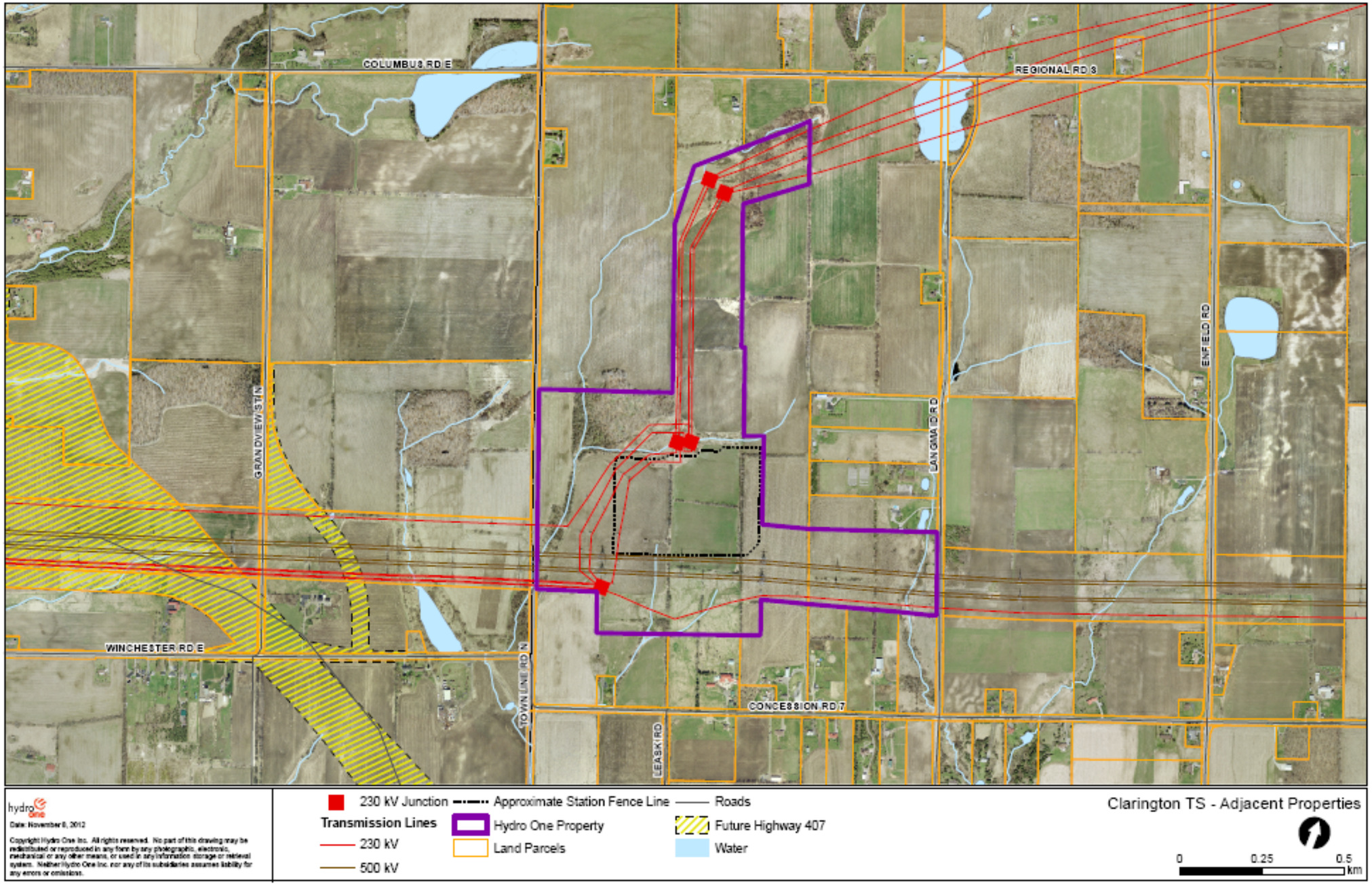
- The future 407 Highway will cross adjacent properties to the west and proceed south of the station.

The Clarington property:

- Does not contain any building or structures over forty years
- Is not associated with a known architect or builder
- Is not associated with a person or event of historic interest and
- Has not been identified by municipal planners as having potential cultural heritage value.

With respect to cultural heritage landscapes, the Clarington property does not contain any of the significant features such as cemeteries, burial sites, parks, gardens, canals, or evidence of human-made alterations to the natural landscape (e.g., trails, markers, mounds, earthworks, non-native species.) There is no evident of trails, markers or mounds. Natural features or evidence of human-made alterations to the natural landscape is evident in the woodland and the two tributaries on the site. Agricultural fields dominate the landscape.

Figure 3-12: Adjacent Properties



The project site is owned by Hydro One and was expropriated for this use in the 1978 by Ontario Hydro. Other than development of the transmission facilities, currently on site, has been used for agricultural purposes under secondary land use agreements. As noted in **Section 1.3**, it the only reasonable location for a transformer station.

The Clarington property is an unusual shape because of the transmission corridors. It is set back from all bordering roads (i.e., Winchester Road East/ Concession Road 7 to the south, Langmaid Road to the east, Regional Road 3 to the north and Grandview Street North to the west). Immediately west of the property is an unopened road allowance (i.e., Townline Road North). The station site is centrally located, bounded by transmission corridors to the south, west and north.

Adjacent Properties

Adjacent properties to the north include three properties which abut the Clarington property. All are agricultural, there are no buildings on site. Some of the properties have been subdivided with threet lots having frontages on Regional Road 3 but do not adjoin the Clarington property. A fourth lot is located on Townline Road North, the unopened portion of the road allowance, and does not adjoin the Clarington property. Distances to the station boundary exceed 500 metres.

Adjacent properties to the west include an agricultural property north of the east west corridor with no buildings or structures. A property further with includes a building fronton Grandview Street North. South of the corridor are two properties, which are in the path of the planned Highway 407 extension.

Adjacent properties to the east include six properties which abut Langmaid Road. One property immediately abuts the Clarington property. It is agricultural land and has no buildings or structures. A second property abuts the east-west transmission corridor but is not contiguous with the station site.

To the south, six properties along Concession Road 7 abut the transmission corridor. Two properties have been subdivided and the subdivided lots abut the road but not the

transmission corridor. One of these properties is in the 1878 Belden Atlas of Durham and Northumberland Counties.

The new TS will be visible to properties to the east, west and south. The existing transmission corridors are visible components of the area landscapes.

MTCS has recommended that heritage valuation be carried out on adjacent properties. This was provided late in the process and was not expected. Hydro One believes strongly that information about private properties and home owners does not belong in public documents. Out of respect for privacy and personal interests, it would be inappropriate to make judgments about the heritage value of non-designated private properties. It is also our conclusion that such studies would not meaningfully influence mitigation decisions**.**

Archaeological Sites

A number of archaeology studies have been carried out on the Clarington site beginning in 2006 (Mayer, 2006). At that time, the studies were part of the Class EA process for the Enfield transformer station. As previously indicated in Section 1.1, Enfield TS was approved but has not been constructed because of a decline in electricity demand in the Oshawa and Clarington areas. Stage I studies concluded that the area had a moderate to high potential for discovery of pre-contact Aboriginal and Euro-Canadian archaeological resources.

A commitment was made in the Enfield Environmental Study Report to conduct a Stage 2 assessment prior to construction.

The Stage II work has subsequently been carried out as part of this assessment for the proposed project (ASI, 2012). The Stage II assessment was carried out in accordance with MCTS guidelines. It included a pedestrian survey following ploughing of the property. A systematic test pit survey was also conducted in areas where ploughing was not possible.

One archaeological site was found near the eastern boundary of the site. Information was provided to First Nations communities who expressed an interest in the studies (see **Section 4.2** for further details) and arrangements were made for a monitor from the Alderville First

Nation for the subsequent Stage III studies of this site. A controlled surface pick-up was conducted along with 1 metre square test units in a 5 metre grid. The recommendation of the licensed archaeologist is no further assessment.

Both the Stage 2 and Stage 3 reports have been submitted to MTCS.
It is important to note that the area of the studies will not be affected by the proposed project. Although the station access road was initially proposed to cross this area, it will now be located on the west side of the site.

An additional Stage 2 work was undertaken on the property for the station access road. Nothing was found on the property and upon completion of the report, ASI will submit to MTCS.

3.2.6 Acoustic Environment

As described in **Section 3.2.1**, the project area is in active agricultural production and is prime agricultural land. The surrounding area is agricultural and residential within the Municipality of Clarington and contains sensitive noise receptors such as residences. The nearest noise receptor is a residence located at approximately 290 m away from the nearest transformer on site. Based on field observation, the existing acoustical environment is dominated by noise from agricultural activities and natural sounds. Overall, the area fits the description of a Class 1/ 2 acoustical environment. See **Section 7.1.1** for details on noise mitigation and **Appendix D** for the Preliminary Noise Evaluation undertaken for the proposed project.

4. Project Consultation

Consultation is an important component of the EA process. An integrated consultation program ensures that First Nations and Métis communities, government agencies and officials, interest groups, affected property owners and the public are aware of the proposed project and have an opportunity to provide input through the planning process.

The consultation process for the proposed project included the following elements:

- Initial Notification and Final Notification of the project
- Two Public Information Centres (PIC)
- Community Information Meeting
- Notification and consultation via public notices, letters, emails, telephone and meetings
- Project website
- Dedicated project contact person
- Draft ESR Review Period

All input was addressed by the project team and incorporated into the project where appropriate.

A contact list of government agencies was developed for the proposed project, based on the MOE Government Review Team list. First Nations and Métis communities, government officials, as well as interest groups were also included on the project contact list (**Appendix B1**).

The results of the consultation program are summarized in the sections below. Copies of the consultation program materials, such as public notices, notification letters and PIC displays are included in **Appendix B**. A copy of the project consultation log is provided in **Appendix B7**.

4.1 Initial Notification

Initial notification for the proposed project was provided to First Nation and Métis communities on April 5, 2012 via email and letters. A meeting with the Municipality of

Clarington officials took place on April 13, 2012. The City of Oshawa officials were notified on May 3, 2012 by email. Government agencies and interest groups were notified on May 3, 2012 via email and letters. The area residents within approximately 2 km radius of the project area were notified on May 3, 2012 with notification letters via hand delivery and courier.

Along with the initial project notification letter, a Project Participation Form (PPF) was provided for all interested parties to specify their interest in, and to provide their initial comments on the project. Copies of the notification letters and PPF are provided in **Appendix B2**.

A public notice was also published in local newspapers to announce the project initiation and to invite interested public to attend the first PIC (see **Section 4.7.5**).

A project website www.HydroOne.com/Projects/Clarington, a dedicated project contact person, a toll-free telephone line and email were also established to provide project information and updates.

4.2 First Nations and Métis Communities

Project notification was sent to the Ministry of Energy and Ministry of Aboriginal Affairs (MAA) on January 20, 2012 to obtain a list of potentially affected and interested First Nations and Métis communities. Hydro One provided a list of communities based on an internal assessment of Treaties and traditional land use to the Ministry of Energy to confirm which communities should be consulted. Hydro One received information back from the Ministry of Energy on March 5, 2012 indicating that there is a "very low likelihood the proposed project will potentially affect any First Nation or Métis rights."

MAA did not provide any further comments.

First Nations and Métis communities that were identified were initially contacted on April 5, 2012 of the project and on May 3, 2012 were notified of PIC#1. The following

communities were identified by Hydro One and will be kept informed throughout the stages of the project:

- Alderville First Nation
- Chippewas of Georgina Island First Nation
- Chippewas of Rama First Nation
- Curve Lake First Nation
- Hiawatha First Nation
- Huronne Wendat
- Métis Nation of Ontario
- Mississaugas of Scugog Island First Nation
- Oshawa and Durham Region Métis Council

The following three communities responded to the initial notification:

- Alderville First Nation
- Mississaugas of Scugog Island First Nation
- Chippewas of Rama First Nation

The correspondence between Hydro One and the three Communities is detailed in the sections following.

4.2.1 Alderville First Nation

Alderville First Nation on May 16, 2012 indicated that the proposed project, as per the Community's Consultation Protocol, the proposed Clarington TS is a level 3, "having minimal potential" to impact the Community's First Nations' rights. Alderville First Nation requested Hydro One to keep the Community informed of any archaeological findings, burial sites or any environmental impacts and that they wished to be kept informed through all phases of the project.

The Stage 2 Archaeological Assessment recommended a Stage 3 assessment on the potential site. Alderville First Nation was contacted on June 26, 2012 regarding the Stage 3 Archaeological investigation and provided an Aboriginal Liasion Monitor for the

investigation. As indicated in **Section 3.2.5**, the Stage 3 Archaeological Assessment did not recommend further investigation because no archaeological or cultural heritage significance was identified. The First Nation was notified on July 27, 2012.

Alderville First Nation was notified on October 17, 2012 regarding an additional Stage 2 Archaeological Assessment for the proposed west-side access road into the station (see **Section 4.7.5**). Hydro One will continue to keep Alderville First Nation informed of any archaeological findings and the status of the project.

Information panels displayed at PIC #1 (**Appendix B3**) and a copy of the Stage 3 Archaeological Assessment were provided. Hydro One has offered to meet with the Community since initial project notification.

4.2.2 Mississaugas of Scugog Island First Nation

Mississaugas of Scugog Island First Nation on May 2, 2012 indicated that the project is on First Nation treaty land and the Community is interested in evaluating potential impacts to First Nation rights and interest.

The Stage 2 Archaeological Assessment recommended a Stage 3 assessment on the potential site. Mississaugas of Scugog Island First Nation was contacted on June 26, 2012 regarding the Stage 3 Archaeological investigation and indicated they would like additional information regarding the Stage 3 Archaeological Assessment. A conference call was held between Hydro One and the Community to discuss the findings of the Stage 2 Archaeological Assessment the First Nation was notified that Alderville First Nation would be providing an Aboriginal Liaison Monitor for the assessment. Mississaugas of Scugog Island First Nation accepted Alderville First Nation's Monitor to represent the Williams Treaty. As indicated in Section 3.2.5, the Stage 3 Archaeological Assessment did not recommended further investigation there is no archaeological or cultural heritage significance. The First Nation was notified of the findings on July 27, 2012.

Mississaugas of Scugog Island First Nation was also notified on October 17, 2012 regarding an additional Stage 2 Archaeological Assessment for the proposed west-side access road (**Section 4.7.5**). Hydro One will continue to keep Mississaugas of Scugog Island First Nation informed of any archaeological findings and the status of the project as it moves through its phases.

Information panels displayed at PIC #1 (**Appendix B3**) and a copy of the Stage 3 Archaeological Assessment were provided. Hydro One has offered to meet with the Community since initial project notification.

4.2.3 Chippewas of Rama First Nation

Chippewas of Rama First Nation on April 18, 2012 requested that the Barrister and Solicitor of the Williams Treaty First Nations receive all project notifications.

The Stage 2 Archaeological Assessment recommended a Stage 3 assessment on the potential site. Chippewas of Rama First Nation and the Barrister and Solicitor of the Williams Treaty First Nations were contacted on June 26, 2012 regarding the Stage 3 Archaeological investigation. As noted, the Stage 3 Archaeological Assessment did not recommended further investigation. The First Nation and the Williams Treaty Barrister and Solicitor were notified of the findings on July 27, 2012.

Chippewas of Rama First Nation and the Barrister and Solicitor of the Williams Treaty First Nations were notified on October 17, 2012 regarding an additional Stage 2 Archaeological Assessment to take place for the option Hydro One is seeking for a proposed access road into the station. Hydro One will continue to keep the Chippewas of Rama First Nation and the Barrister and Solicitor of the Williams Treaty First Nations informed of any archaeological findings and the status of the project.

Information panels displayed at PIC #1 were provided (**Appendix B3**). Hydro One has offered to meet with the Community since initial project notification.

4.3 Federal Government Agencies

4.3.1 Aboriginal Affairs and Northern Development Canada (AANDC)

AANDC indicated that they wished to be kept on the project mailing list for the duration of the project.

Information panels displayed at the PIC #1 (see **Appendix B3**) were provided. No further comments were received.

Invitation to PIC #2 was provided and a response was received from AANDC indicating that

> "AANDC officials do not participate in environmental assessments that pertain to projects off-reserve, nor does the department track how other parties carry out their EA or consultation activities where no reserve lands or AANDC programs are involved. Therefore in future, please omit AANDC officials from your public information notification for projects that do not intersect with reserve lands or engage AANDC programs".

Since the proposed project does not involve reserve lands or AANDC programs, AANDC has been removed from the contact list from this point onwards.

4.3.2 Transport Canada (TC)

TC indicated that they are responsible for the administration of the *Navigable Waters Protection Act* and *Railway Safety Act*. In order to determine lighting and marking requirements in accordance with the Canadian Aviation Regulations 621.19, Hydro One is required to complete an Aeronautical Obstruction Clearance Form. TC also suggested NAV Canada be contacted on potential effects to air navigation systems.

Hydro One confirmed that the proposed project will not affect navigable waters and railways. The new 230 kV and 500 kV line structures will not be taller than 90 m, therefore

will not require lighting and marking. The current corridor runs east-west and there are no lighting and marking installed on the structures that are in the vicinity of the proposed site. Hydro One also indicated that it has been in contact with NAV Canada and will be submitting the Land Use submission form once the locations of the structures have been finalized.

Information panels displayed at the PIC #1 (see **Appendix B3**) were provided. No further comments were received.

Invitation to PIC #2 was provided, no further comment were received.

4.3.3 NAV Canada

NAV Canada provided information to Hydro One to submit a Land Use submission form along with the GPS locations of the structures in a spreadsheet. The NAV Canada Land Use File # 12-2154).

Hydro One indicated to NAV Canada that they will submit the requested Land Use submission form and the associated spreadsheet once the locations of the structures have been finalized.

Information panels displayed at the PIC #1 (see **Appendix B3**) were provided. No further comments were received.

Invitation to PIC #2 was provided, no further comment were received.

4.3.4 Greater Toronto Airport Authority (GTAA)

GTAA is interested in the potential effects of project alternatives on the future Pickering Airport design and operations including:

- Effects on potential energy supply (i.e., source, system capacity, availability)

- Potential effects on future air navigation, communication, and surveillance equipment and signals
- Potential implications with respect to compatibility with airport zoning requirements, flight operations, and takeoff and approach surfaces

They also indicated that they would like to review design drawings of the transmission line structures, locations and ground elevations of the line structures, as well as the technical specifications of the transformer equipment to assess the electromagnetic effects.

Hydro One agreed to share the information with GTAA when it was available. Hydro One also provided information on Electric and Magnetic Fields (EMF) and indicated that "results from our preliminary EMF modeling indicated that at 100 metres above ground level (i.e., a mere 40 metres over the tower), the electric and magnetic fields have already mostly dissipated. At 200 metres above ground level, they would be practically undetectable."

Information panels displayed at the PIC #1 (see **Appendix B3**) were provided. No further comments were received.

Invitation to PIC #2 was provided, no further comments were received.

4.4 Provincial Government and Agencies

4.4.1 Provincial Officials

The Member of Provincial Parliament's (MPP) office was contacted on April 5, 2012 to provide project contact person information. The office indicated that it will be in touch with Hydro One if a project briefing is required.

A Hydro One representative met with the MPP, Mr. John O'Toole on May 23, 2012 to discuss the proposed project. Mr. O'Toole was briefed on the need, the differences between the proposed project and the approved Enfield TS, and what the proposed project involved.

Mr. O'Toole was also shown the PIC #1 panels and the project maps. A representative from Mr. O'Toole office attended PIC#1 on his behalf.

Mr. O'Toole presented a petition to the Legislative Assembly of Ontario on September 10, 2012 regarding the proposed project being built on the Greenbelt and Oak Ridges Moraine.

Mr. O'Toole was notified of the Community Information Meeting and participated at the event on September 11, 2012. He indicated he would raise his concerns to the Minister of Energy and would support his constituents.

Information panels displayed at the PIC #1 (**Appendix B3**), the Community Information Meeting Report (**Appendix B4**), a letter from the OPA to Hydro One indicating the need for the project, and invitation to the PIC #2 were provided.

Invitation to PIC #2 was provided, no further comments were received.

4.4.2 Ministry of the Environment (MOE)

The MOE indicated, in a letter, a number of areas of interest with respect to the undertaking including the followings:

- Ecosystem protection and restoration
- Surface water
- Groundwater
- Air quality
- Dust and noise
- Servicing and facilities
- Contaminated soils
- Mitigation and monitoring
- Planning and policy
- Class EA process
- Aboriginal consultation

Hydro One confirmed that the Class EA process would address the identified areas of interest in the corresponding sections of the ESR:

- Ecosystem protection and restoration – **Sections 3 and 7**
- Surface water – **Sections 3 and 7**
- Groundwater – **Sections 3 and 7**
- Air quality – **Section 7**
- Dust and noise – **Section 7**
- Servicing and facilities – **Sections 1.4.2 and 4.5.3**
- Contaminated soils – **Section 7**
- Mitigation and monitoring – **Sections 7 and 8**
- Planning and policy – **Sections 3 and 5**
- Class EA process – **Section 2**
- Aboriginal consultation – **Section 4**

Information panels displayed at the PIC #1 (see **Appendix B3**) were provided, no further comments were received.

A meeting with a representative of the MOE Central Regional Office was held on August 27, 2012 for Hydro One to provide an overview of the proposed project, update on the environmental inventory and findings, update on consultation activities and project timeline. A follow up letter was sent to the MOE on October 3, 2012 to reaffirm Hydro One's position on the rationale for having only one viable site for the project (i.e., no alternative sites) as well as provide the updated project timeline including upcoming consultation activities.

A notification email as well as a follow up email on the Community Information Meeting was sent (see **Section 4.7.6** for details of the Community Information Meeting). A summary report on Community Information Meeting held on September 11, 2012 (see **Appendix B4**) was provided to the MOE. No further comments were received.

Invitation to PIC #2 was provided, no further comments were received.

4.4.3 Ministry of Natural Resources (MNR)

MNR requested submission of an Information Gathering Form (IGF) for activities that may affect species or habitat protected under the ESA. It was recognized by MNR that the completion of the IGF may take multiple sessions.

On June 13, 2012, Hydro One submitted the initial IGF which outlined studies that had been completed and those that were in the process of completion. Shortly after the initial IGF was submitted, Hydro One sent the Butternut Health Assessment to the MNR Forester on June 15. On June 25, a meeting took place with MNR on the project area to review the Butternut Health Assessment. Based on new findings, a revised assessment was submitted on June 26.

The IGF was updated on August 23 which included the report on all field surveys undertaken and an associated letter which updated MNR on all aspects of the project, including the schedule and a request for a meeting. On October 3, Hydro One followed up with MNR regarding the proposed project and included the tentative schedule for the upcoming PIC. Hydro One also requested a meeting and feedback on the submissions to date.

On October 4, Hydro One met with the MNR Forester on the project area to take DNA samples from the five retainable butternuts that are proposed to be removed as part of the proposed line work. This will indicate if the butternut are native or hybrid. During the on-site meeting, Hydro One and MNR discussed site development, scheduling and restoration along with Hydro One's interaction with other regulating agencies.

MNR informed Hydro One on October 10 that the IGF was incomplete with respect to the proposed project details. On October 18, Hydro One submitted an evaluation of the proposed line work, potential effects on SAR, mitigation and next steps.

MNR responded to Hydro One's submission on October 24 noting that key natural heritage features were affected and that the features are to be avoided by transmission projects

"unless there is no reasonable alternative and any adverse effects on ecological integrity, features and functions are kept to a minimum." Before the proposal is accepted, the MNR would like to see whether Hydro One's consultations with the municipalities, CLOCA and the public result in agreement with the proposed line work. MNR also indicated that replacement for woodland removal will need to allow for full height growth of representative trees (30 metres) with a block width of at least 40 metres. An area of approximately 3 hectares is required for a remedial planting area.

Hydro One will keep MNR apprised of public and regulatory agency feedback regarding the proposed line work and restorative requirements.

Information panels displayed at PIC #1 (see **Appendix B3**) were provided, no further comments were received.

Invitation to PIC #2 was provided, no further comments were received.

Hydro One will continue to work closely with the MNR throughout the project.

4.4.4 Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA)

OMAFRA expressed interest in providing input regarding the study. They also indicated that the PPS protects as a provincial interest, prime agricultural areas. OMAFRA's objectives through the environmental assessment process are as follows:

- Ensure that appropriate agricultural criteria area considered and applied equitably
- Ensure that consideration is given to avoiding prime agricultural areas and agricultural operations
- When it is shown that prime agricultural area cannot be avoided ensure that adverse effects are minimized

Hydro One indicated that it would ensure to provide further information regarding the project via email. Information panels displayed at the PIC #1 (see **Appendix B3**) were provided, no further comments were received.

A notification email as well as a follow up email on the Community Information Meeting was sent (see **Section 4.7.6** for details of the Community Information Meeting). No further comments were received.

Invitation to PIC #2 was provided, no further comments were received.

4.4.5 Ontario Ministry of Transportation (MTO)

Information panels displayed at the PIC #1 (see **Appendix B3**) were provided, no further comments were received.

Hydro One is not within 400 metres of a 400 series highway and therefore is not required to retrieve a Building and Land Use Permit from MTO.

Invitation to PIC #2 was provided, no further comments were received.

4.4.6 Ministry of Tourism, Culture and Sport (MTCS)

Information panels displayed at the PIC #1 (see **Appendix B3**) were provided, no further comments were received. Hydro One has offered to meet with the MTCS since initial project notification.

On October 17, a write up of the findings of the built cultural heritage, cultural heritage landscapes and archaeological sites, along with the completed MTCS heritage check list were provided for review and comment.

A letter was received on November 2 from the MTCS providing their preliminary comments indicating that MTCS has an interest in the conservation of cultural heritage resources

including archaeological resources, built heritage resources, and cultural heritage landscapes, and that they may have further comments during the review period of the draft ESR.

In the November 2 letter, MTCS indicated that based on the information provided on October 17, a Heritage Impact Assessment is recommended for this project and "should be completed prior to the completion of this EA and the report and its recommendations should be considered as part of the current overall EA." MTCS also indicated that "all archaeological assessments must be completed, reviewed by an Archaeology Review Officer and the recommendations accepted prior to the completion of this EA."

A response letter was sent on November 5 to MTCS to reaffirm Hydro One's position on conducting heritage assessment on privately owned properties, to confirm an assessment of visual effects as part of the Class EA process for the proposed project to address the cultural heritage landscapes, as well as to clarify the Class EA requirements related to archaeology and heritage assessments. A follow-up meeting has been scheduled for November 12 to further discuss the proposed project and the next steps. Given the precedence incurred, Hydro One is not prepared to delay the Class EA process.

Invitation to PIC #2 was provided, no further comments were received. Hydro One will continue to work closely with the MTCS throughout the project.

4.4.7 Ontario Ministry of Municipal Affairs and Housing (MAH)

Hydro One contacted the MAH and received confirmation from the MAH that the "section 30 of the ORMCP would not apply in this situation for a new TS proposal as development and site alteration as defined in the ORMCP is not being triggered". However "section 41 of the ORMCP contains detailed approval policies and standards for transportation, infrastructure and utilities proposals that would apply."

Section 30 of the ORMCP (2002) involves the Landform Conservation Areas.

MAH indicated that,

> "Section 41 provides detailed policies for an application for a utilities use on lands within the Natural Linkage and Natural Core Areas, and key natural heritage features or hydrologically sensitive features in any land-use designation addressing planning, design and construction practices.
>
> In particular, the policies require that need for the project has been determined to be necessary and there is no reasonable alternative, the area of construction disturbance to be kept to a minimum, protection of key natural heritage and hydrologically sensitive features and that planning, design and construction practices minimize any adverse impacts on the ecological integrity of the ORMCP, among other matters."

Information panels displayed at the PIC #1 (see **Appendix B3**) were provided. No further comments were received.

Invitation to PIC #2 was provided, no further comments were received.

4.5 Municipal Government and Agencies

4.5.1 Municipal Officials

City of Oshawa and Municipality of Clarington elected officials have been informed throughout the Class EA process.

Representatives of Hydro One and the OPA met with the Mayor, two Councillors and Planners from the Municipality of Clarington on April 13, 2012 at the municipal office to present the proposed project and gather initial comments and feedback.

The Mayor of the Municipality of Clarington, Regional Councillor for Durham Region, and Councillor for the Municipality of Clarington were in attendance of PIC #1.

The Mayor of the Municipality of Clarington was in attendance of the Community Information Meeting.

Information panels displayed at the PIC #1 (**Appendix B3**) and the Community Information Meeting Report (**Appendix B4**), and an invitation to the PIC #2 were provided. Hydro One received a request for further information on the items discussed at the Community Information Meeting be presented at PIC #2. This information is captured in the information panels presented at PIC #2. No further comments were received.

Invitation to PIC #2 was provided and the Mayor of the Municipality of Clarington and the Regional Councillor for Durham Region were in attendance of PIC #2.

4.5.2 Regional Municipality of Durham Planning Department

Hydro One contacted the Planning Department of Durham Region and they indicated that Hydro One should contact the Municipality of Clarington and the City of Oshawa directly to discuss details of the project.

Information panels displayed at the PIC #1 (see **Appendix B3**) were provided, no further comments were received.

A notification email as well as a follow up email on the Community Information Meeting was sent (see **Section 4.7.6** for details of the Community Information Meeting). No further comments were received.

Invitation to PIC #2 was provided and a representative of the Planning Department attended the PIC #2.

4.5.3 Regional Municipality of Durham Health Department

A representative of the Durham Region Health Department attended an initial project meeting on June 7 at the municipal office at Clarington, as one of the relevant agencies of

Clarington (see **Section 4.5.5**). The concern brought up by the Health Department related to the proposed installation of washroom facilities on site.

The Health Department were contacted on July 31, 2012 to further discuss the project and the permit requirements for the installation of washroom facilities. The Health Department informed Hydro One of the various permit requirements based upon the type of washroom facilities being considered. Hydro One was also advised that any water supply to the site was the mandate of the Municipality of Clarington.

Hydro One will continue to consult with the Health Department throughout the planning of the project regarding the washroom facilities.

Invitation to PIC #2 was provided, no further comments were received.

4.5.4 Municipality of Clarington Emergency and Fire Services

The Emergency and Fire Services Department at Clarington indicated in the PPF that they are not interested in providing input regarding the study but would like to be kept on the project's mailing list.

During the June 7, 2012 meeting with the Municipality of Clarington, a fire truck turning circle requirement was discussed with the Operations Department. A turning circle is being incorporated into the final station design.

Information panels displayed at the PIC #1 (see **Appendix B3**) were provided, no further comments were received.

Invitation to PIC #2 was provided, no further comments were received.

4.5.5 Municipality of Clarington Planning Department

Representatives of the Planning Department were present at the April 13 meeting where Hydro One and OPA presented the proposed project to the Municipality of Clarington (see **Section 4.5.1**).

Several representatives of the Planning Department attended the PIC #1 to obtain further information about the project. Information panels displayed at the PIC#1 (**Appendix B3**) were provided.

A meeting took place at the Municipal Office in Clarington to present the project and gather initial comments and feedback from the Planning Department on June 7, 2012. Representatives of the relevant agencies that were also present included: Engineering, Operations, Buildings, Durham Region Health Department, and CLOCA. The comments and issues discussed at the meeting included:

- Proposed washroom facilities on site – see **Section 4.5.3** for more information on consultation with Health Department
- Potential station access via the unopened Townline Road North – see below for the July 12 meeting discussion
- Potential road damage with the truck traffic and heavy loads
- Transformer transportation route – ongoing communication with Clarington will take place throughout the project
- Watercourse crossings, vegetation removal and restoration for the proposed project – see **Section 4.5.7** for more information on consultation with CLOCA
- Building permits – Hydro One will be applying for the building permits from Clarington for the proposed project see **Section 1.5.2**
- Site plan application – see below for the September 6 conference call discussion

A meeting took place on July 12 at the Municipal Office in Oshawa to discuss the Townline Road North license agreement for a potential station access road. Representatives from both Clarington and Oshawa were present. Ongoing communication between Hydro One and the municipalities will continue throughout the project. More information regarding the station

access road can be found in **Section 4.7.5**. At the meeting, transformer transportation route was discussed where the municipalities indicated that Hydro One should meet municipal requirements.

On September 6, a conference call was held. The purpose of the conference call was to provide an update of the Class EA process including the upcoming consultation activities and project timeline. Hydro One has informed Clarington that Hydro One is not willing to enter into a site plan agreement and is proceeding under Section 62 of the *Planning Act* (see **Section 1.5.2**). Hydro One will be making submissions of drawings only for municipal review and comment.

A notification email as well as a follow up email about the September 11 Community Information Meeting along with the summary report was provided (see **Section 4.7.6** for details of the Community Information Meeting).

Invitation to PIC #2 was provided and representatives of the Planning Department attended the PIC #2.

Hydro One will continue to work closely with the Clarington Planning Department throughout the project.

4.5.6 City of Oshawa Planning Department

The Planning Department indicated on the PPF that they have no specific concerns or comments at this point but may have comments upon future implementation of the project. They also indicated that the site is designated "Prime Agricultural Areas", within the Greenbelt Plan boundary of the Regional Official Plan. They would like to be kept on the project's mailing list.

A representative of the City of Oshawa Planning Department attended the PIC #1, and indicated that there is a potential re-routing of Winchester Road as a result of the future Highway 407 project. Further discussions concluded that this will not be an issue as the

expected timing of the two projects does not conflict. Information panels displayed at the PIC #1 (see **Appendix B3**) were provided.

A meeting took place on July 12 at the Municipal Office in Oshawa to discuss the Townline Road North license agreement for a potential station access road. Representatives from both Clarington and Oshawa were present. Ongoing communication between Hydro One and the municipalities will carry forward throughout the project. More information regarding the station access road can be found in **Section 4.7.5**. At the meeting, transformer transportation route was discussed where the municipalities indicated that Hydro One should meet municipal requirements.

A notification email as well as a follow up email about the September 11 Community Information Meeting along with the summary report was provided (see **Section 4.7.6** for details of the Community Information Meeting).

Invitation to PIC #2 was provided, no further comments were received.

Hydro One will continue to work closely with the Oshawa Planning Department throughout the project.

4.5.7 Central Lake Ontario Conservation Authority (CLOCA)

Information panels displayed at the Public Information Centre #1 (see **Appendix B3**) were provided, no further comments were received.

An initial project meeting was held on June 3 with representatives of CLOCA to present the circumstances behind the need for the proposed project, the site and station requirements to meet the need, timelines and intended studies to be undertaken to satisfy the Class EA requirements and those pertaining to both CLOCA and the Municipality of Clarington.

One June 7, a representative of CLOCA attended the initial project meeting with the Clarington Planning Department at the municipal office at Clarington as one of the relevant

agencies of Clarington. It was confirmed at the meeting that CLOCA will be addressing all environmental components of the project on behalf of Clarington.

An onsite meeting with representatives of CLOCA was held on July 19. The purpose of the meeting was to review the proposed station access road via Townline Road North, to discuss the proposed site layout, pre- and post-construction drainage site characteristics, and the results of terrestrial and aquatic field surveys. CLOCA had several requirements which resulted in the subsequent submission of the following deliverable:

- Rationale for one station drainage system outlet as opposed to two. The two outlets option was discussed by CLOCA to maintain current sub-catchment basin drainage characteristics
- Grading options and profiles outside the fence in the north and north-west sections of the site adjacent to the wooded area and creek system
- Access road location along and off of Townline Road North
- Map of the intended temporary and permanent creek crossings including data sheets providing the statistics on each crossing and the proposed crossing structures
- Findings of the terrestrial and aquatic field surveys
- Identification and evaluation of the alternative transmission lines reconfiguration and rationale for the preferred selection
- species list for remediation of creek and planting on station slopes

Further to the deliverables submitted, on October 23, Hydro One provided an impact statement associated with the proposed line work and the intended remediation, vegetative restoration and screening plan, as well as a revision to the station design in the north and north-west sections of the site adjacent to the woodland and creek. The location of the future Enfield TS has been shifted approximately 50 metres to the south thereby reducing the potential effects to the woodland and creek.

A meeting on October 26 was held with representatives of CLOCA to discuss the submissions, identify data gaps and receive feedback. CLOCA was agreeable in principle with the proposed project and the proposed vegetative restoration and screening plan. Further information was requested from CLOCA regarding the geotechnical investigation

report undertaken for the station and more information on the Hydro One spill containment system. Information was provided following the meeting for review.

Invitation to PIC #2 was provided, no further comments were received.

Hydro One will continue to work closely with CLOCA throughout the project.

4.6 Interest Groups

4.6.1 Friends of the Farewell

Friends of the Farewell is a local environmental group located in Courtice, Ontario. They indicated that they would like to receive detailed maps and information on the proposed station.

Information panels displayed at the PIC #1 (see **Appendix B3**) were provided. No further comments were received.

A representative of the Friends of the Farewell attended the Community Information Meeting that was held on September 11, 2012 (see **Section 4.7.6** and **Appendix B4**) and expressed concern on the Loggerhead Shrike. Refer to **Section 3.1.6** for more details on Loggerhead Shrike.

A follow up email on the Community Information Meeting along with the summary was provided (**Appendix B4**).

Invitation to PIC #2 was provided and a representative of Friends of the Farewell attended the PIC #2 to discuss their comments on the Loggerhead Shrike. Before PIC #2, a brief meeting was held to discuss two proposals from the Friends of the Farewell.

The first proposal was for funding as part for work being undertaken by CLOCA as part of the Great Lakes Guardian Fund. The funding would be for a native plant kit for planting the lower reaches of the Farewell Creek.

The second proposal was the discussion of habitat for the Loggerhead Shrike. Hydro One representatives discussed the proposed vegetation restoration plan for the site and indicated that Loggerhead Shrike habitat was something they would consider as part of the restoration. This proposal was previously discussed as part of the Enfield TS project.

Hydro One also indicated that there is a Loggerhead Shrike Recovery Program in Ontario and it would need to consider the program to ensure any work that would be undertaken would have the greatest net positive effect. Both parties agreed to continue the discussion of the two proposals at a later date.

4.6.2 Enniskillen Environmental Association (EEA)

EEA is an environmental group formed on September 4, 2012 (after the May 23 PIC #1) that is represented by approximately four members who reside in the vicinity of the proposed station. Before the EEA was formed, the members had expressed concern for the proposed project. Many of the initial concerns are addressed under Public Involvement (**Section 4.7**) and Summary of Public Concerns and Comments (**Section 4.8**) as the interest group was formed later in the process.

Correspondence between the Hydro One and EAA took place through email, telephone and letters. Hydro One provided maps, reports, statistics, and other requested information.

Members attended September 11 Community Information Meeting. A follow up email on the Community Information Meeting along with the summary was provided (see **Section 4.7.6** for details of the Community Information Meeting).

Hydro One sent a letter to EEA on October 5 regarding a potential meeting date to discuss their concerns. EEA responded on October 11 requesting October 15 as their meeting date.

The EEA requested for the minutes from the September 11 Community Meeting along with a large scale site map of the proposed project with the facility overlay. The EEA raised the following concerns in their letter:

- Timeline for the ESR is "unrealistic and unnecessary as the process for identifying an economical and practical site has yet to be fully established and demonstrated to all stakeholders;"
- Pickering NGS has the potential to operate until 2020, construction does not need to begin in 2013 if it will only take one year;
- Lack of justification for the cost of the proposed project;
- Explanation of how Hydro One will fund the proposed project;
- Justification for building on environmental sensitive lands; and
- Consideration of alternative sites.

As a follow up of the October 11 letter, the EEA suggested three sites to Hydro One to consider: Cherrywood TS, Pickering NGS, and Whitby TS. The EEA further stated that there are large parcels of flat land that border Lake Ontario between Pickering and Bowmanville (Darlington NGS).

Hydro One responded to the EEA's letter indicating that at the meeting on October 15, Hydro One would listen to their concerns and provide a large overlay of a similar looking station and provide it to the EEA at the meeting. Hydro One provided a proposed agenda for the meeting.

On October 13, the EEA responded to the proposed agenda, and indicated that they had not received the September 11 Community Information Meeting minutes and indicated that the October 15 meeting "will hinge directly on answers to our questions from September 11. The large issues you noted in your meeting agenda sent to us yesterday will require the whole community's attendance and their right to respond."

Hydro One provided a copy of the Community Information Meeting proceedings and indicated that the initial agenda provided was based on recurring questions that Hydro One noted by the EEA at the PIC #1 and Community Meeting.

Hydro One and the EEA met on October 15, 2012 to discuss their concerns and issues. Hydro One provided an updated Conceptual Layout, Natural Heritage Features map, Whitby TS and surrounding area map, Pickering NGS to Cherrywood TS corridor map, and OPA's evidence for Oshawa Area TS in support of Hydro One's 2013/2014 Revenue Requirement Application with the recommendation letters to Hydro One in October 2011 and January 2012 (see **Appendix A**). The meeting discussed the transmission network, integrated power system planning, need for proposed project, Pickering NGS, Cherrywood TS, area surrounding Cherrywood TS, Whitby TS and surrounding area, Wesleyville GS, Clarington site rationale, scope of Clarington TS, station access roads, private well on Hydro One property, hydrology and hydrogeology, stray voltage, EMF, SF6 and construction noise effects. Hydro One also provided information on the current EA timeline, public consultation, ongoing public engagement and next steps. Hydro One provided the EEA with the meeting notes.

On October 30, a representative of the EEA sent a letter to Hydro One regarding their previously proposed Pickering NGS site and raising a concern on oil spills. In regards to the suggestion of Pickering NGS, the following reasons were provided by EEA for why the proposed project should be relocated there:

- would save millions in costs;
- land is available to build the proposed project;
- there is room in the existing corridor from Darlington for an additional 500 kV line;
- entire infrastructure is already present; and
- all that would be required would be disconnecting one system and hooking up another.

The EEA further indicated that locating the proposed project at the Pickering NGS, it "would eliminate taking a pristine piece of the Oak Ridges Moraine." There was a concern that placing the proposed project at the current site and if there is a spill now or in the future that it "could totally destroy the whole watershed," in particular relating to groundwater. For information relating to Hydro One's spill containment system, refer to **Section 7.1.2**.

An email was received on November 2 from a member of the EEA inquiring whether Hydro One will be addressing the rest of the items on the October 15 meeting agenda prior to the PIC #2. Hydro One responded on November 5 that the project team has taken the community's questions into consideration and will provide information at the PIC on issues raised at the September 11 meeting.

On November 5, a member of the EEA sent an email to Hydro One posing a series of questions.

- What is the chain of approval process and the associated timelines?
- What other agencies or government bodies/ offices are involved in terms of approval for financing and construction?
- How can Hydro One justify the 2015 in service date? As their sources informed them that Pickering NGS will not be decommissioned before 2020.
- What is Hydro One's financial business plan for the project?
- Please provide the actual construction estimate
- Who is going to finance the project

The email further commented on the following:

- Hydro One did not give the "alternative sites" serious consideration, and that the technical explanations are insufficient
- The OPA evidence (see Appendix A) "did not make rational sense" and "is misleading", "not realistic", and "does not substantiate the risk of inadequate supply by early 2015"
- It's a "huge mistake by constructing this huge station in a natural valley with huge drainage issues among many other complicated environmental impact issues"
- Construction will destroy the ecological balance of the noted valley
- Project will put water wells at risk for contamination

Invitation to PIC #2 was provided and representatives of the Enniskillen Environmental Association attended the PIC #2. Comments and issues raised during the PIC has been summarized in **Section 4.7.7**.

Hydro One will continue to work closely with the EEA and the affected area residents throughout the project.

The following sections describe the sites that have been proposed by the EEA throughout the Class EA process and the reasons why Hydro One determined them to be not viable and are not considered further. The locations of the proposed sites are shown on **Figures 4-1 to 4-4**.

Pickering NGS

Constructing the 500/230 kV station at the site of the existing Pickering NGS is not viable due to technical reasons.

There is no 500 kV source at Pickering NGS. Therefore, a new double circuit 500 kV transmission line, approximately 7 km in length, connecting this site to Cherrywood TS would be required. There is not enough room within the existing transmission corridor to accommodate the new lines. Furthermore it would be very difficult to obtain new land rights through the densely populated urban area. Building new transmission lines would require OEB Section 92 approval. Even if new 500 kV lines could be built, this option is not technically viable as it would create unacceptable short circuit levels at Cherrywood TS posing safety risks as well as equipment failure risks.

Darlington NGS

Constructing the station at the site of the existing Darlington NGS is not viable due to economic reasons.

There is no 230 kV source at Darlington NGS site. In order to integrate this site to the 230 kV system, construction of approximately 25 km of new 230 kV transmission lines to the existing 230 kV transmission lines north of this site is required. Land rights for a new transmission corridor would be required to accommodate the new lines. Building new transmission lines would require OEB Section 92 approval. This option substantially increases the costs.

Wesleyville GS

Similar to Darlington NGS, constructing the station at the site of the Wesleyville GS is not viable due to economic reasons.

There is no 230 kV source at Wesleyville GS site. In order to integrate this site to the 230 kV system, construction of approximately 25 km of new 230 kV transmission lines to the existing 230 kV transmission lines north of this site is required. Land rights for a new transmission corridor would be required to accommodate the new lines. Building new transmission lines would require OEB Section 92 approval. This option substantially increases the costs.

Whitby TS and surrounding lands

Constructing the station at this site in the Whitby area is not viable due to economic and environmental impact reasons.

The existing 230 kV and 500 kV transmission lines run in parallel on the existing corridor adjacent to the site. A total of four 500 kV connections and ten 230 kV connections will be required to be built and connected to the station. This configuration would be extremely complicated and would require substantial land acquisitions from multiple property owners to accommodate the station and the associated line connections.

In addition, to provide the required level of transmission system reliability to the eastern portion of the GTA, this option would also require that a new 7-km 230 kV 2-circuit line be built between the Whitby TS junction and Columbus Junction to connect the Thornton TS supply pocket radially from a proposed new 500/230 kV transformer station near Whitby TS. Land rights for a new transmission corridor would be required to accommodate the new lines. Building new transmission lines would require OEB Section 92 approval.
This option substantially increases the costs.

"Seaton" lands and lands surrounding Cherrywood TS

Constructing the station at the site north of Cherrywood TS or any other site close to Cherrywood TS is not viable due to technical, economic and environmental impact reasons.

Placing the station in this area will require integration into the Cherrywood TS system with new 500 kV and 230 kV lines from Cherrywood TS. This option is not technically viable as it would create in unacceptable short circuit levels at Cherrywood TS posing safety risks as well as equipment failure risks. This option would require substantial land rights for station and transmission facilities. This option substantially increases the environmental impacts and costs.

This option would not provide the required level of transmission system reliability to the eastern portion of the GTA.

Rundle Road/ Taunton Road area

Similar to Darlington NGS, constructing the station at this site is not viable due to economic reasons.

There is no 230 kV source at this site. In order to integrate this site to the 230 kV system, construction of approximately 13 km of new 230 kV transmission lines to the existing 230 kV transmission lines north of this site is required. Land rights for a new transmission corridor would be required to accommodate the new lines. Building new transmission lines would require OEB Section 92 approval. This option substantially increases the costs.

Proposed Installation of One Autotransformer and related facilities at Clarington and one at Whitby to reduce the size of the Clarington Station

Distributing the transformation and switching facilities proposed for Clarington TS to two station sites such as Clarington TS and Whitby TS would require developing transformation and switching facilities at two station sites rather than just one as well as requiring the incorporation of all five 230 kV circuits and two 500 kV circuits into each station site. This two station approach would double the number of 230 kV and 500 kV switching facilities required as compared to installing both autotransformers at one site such as Clarington TS. Distributing the transformation and switching facilities proposed for Clarington TS to two station sites would therefore substantially increases the costs.

Figure 4-1: Pickering NGS to Cherrywood TS Existing Conditions

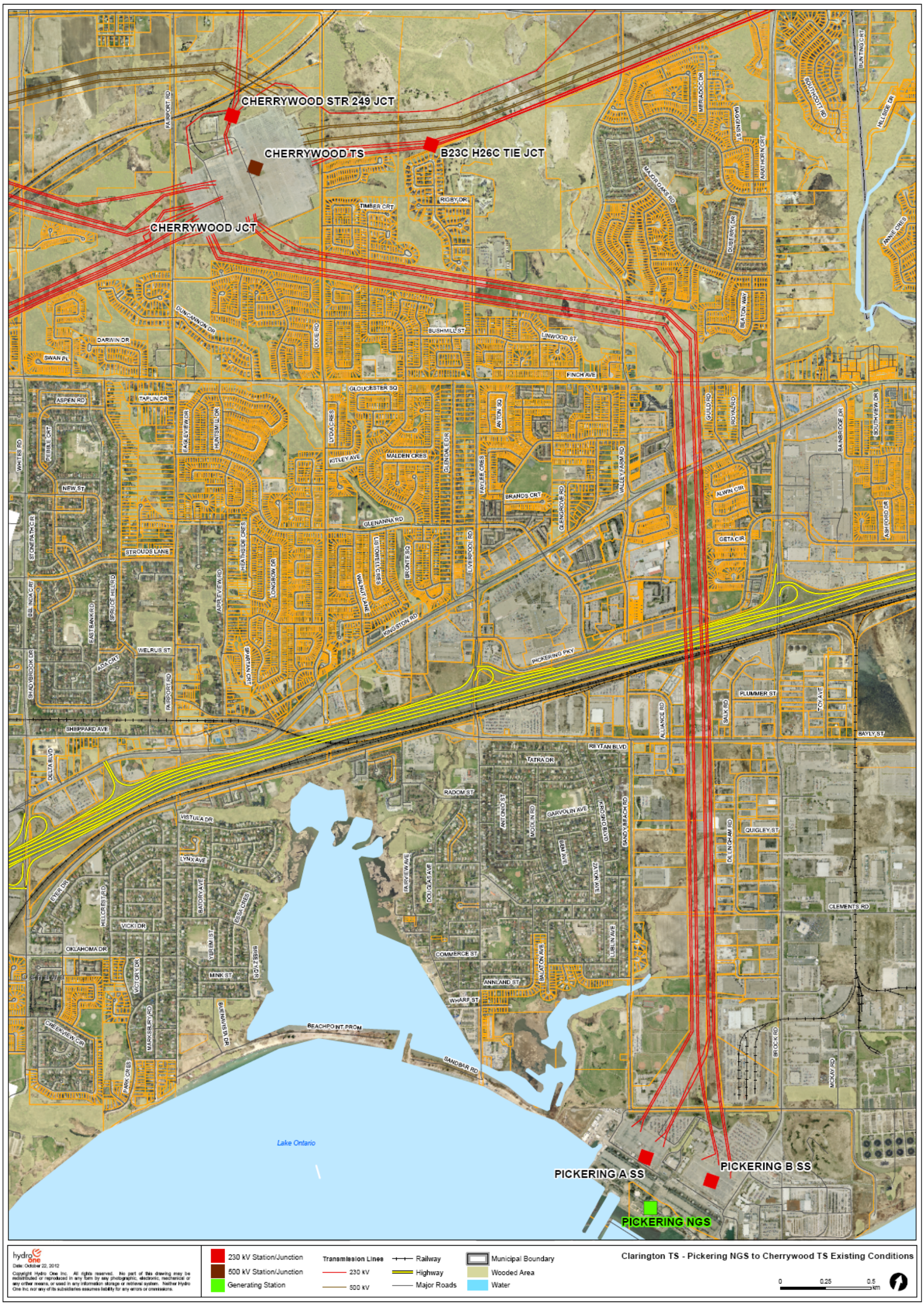


Figure 4-2: Wesleyville GS and Darlington NGS Existing Conditions

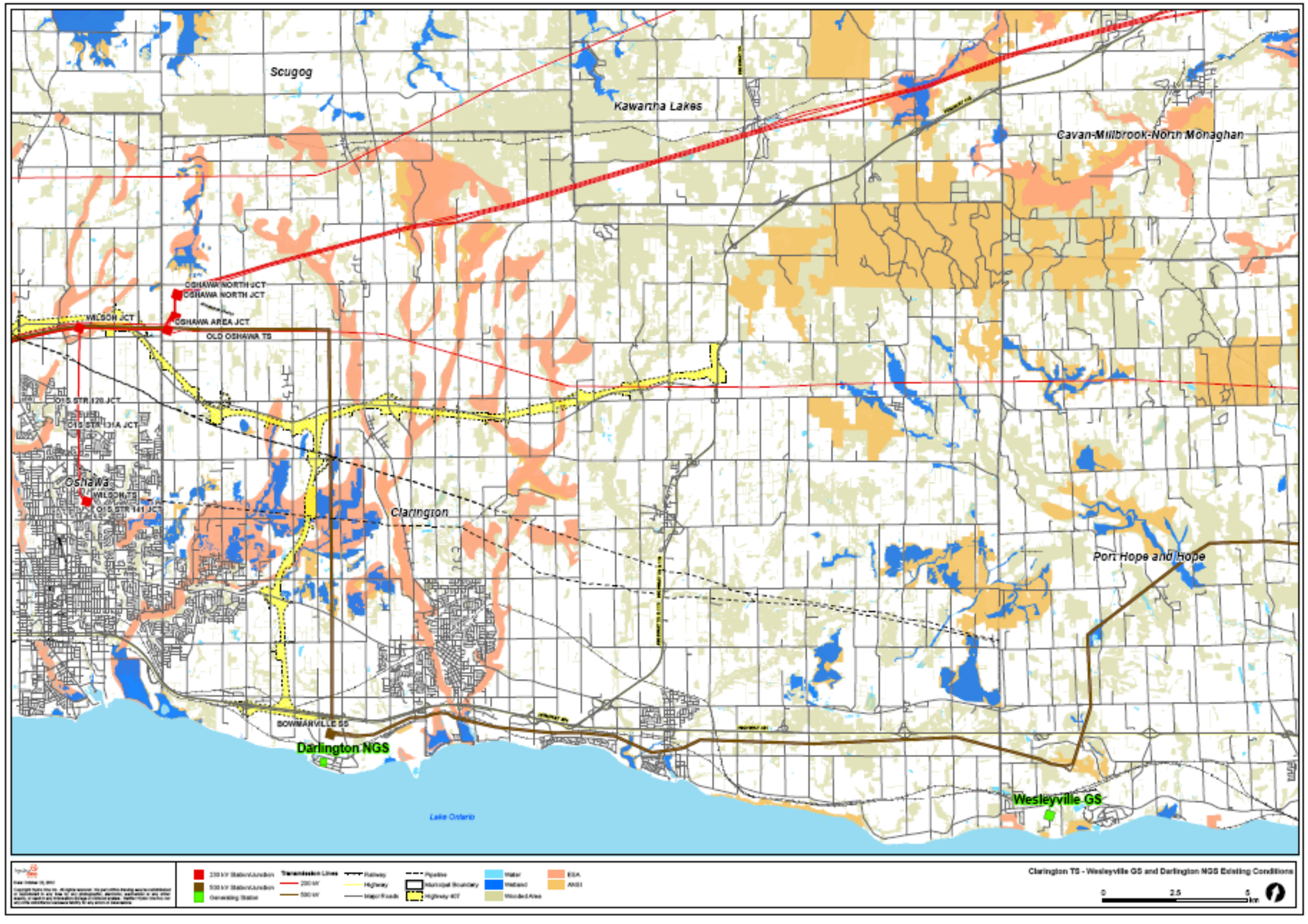


Figure 4-3: Whitby TS and Surrounding Area Existing Conditions

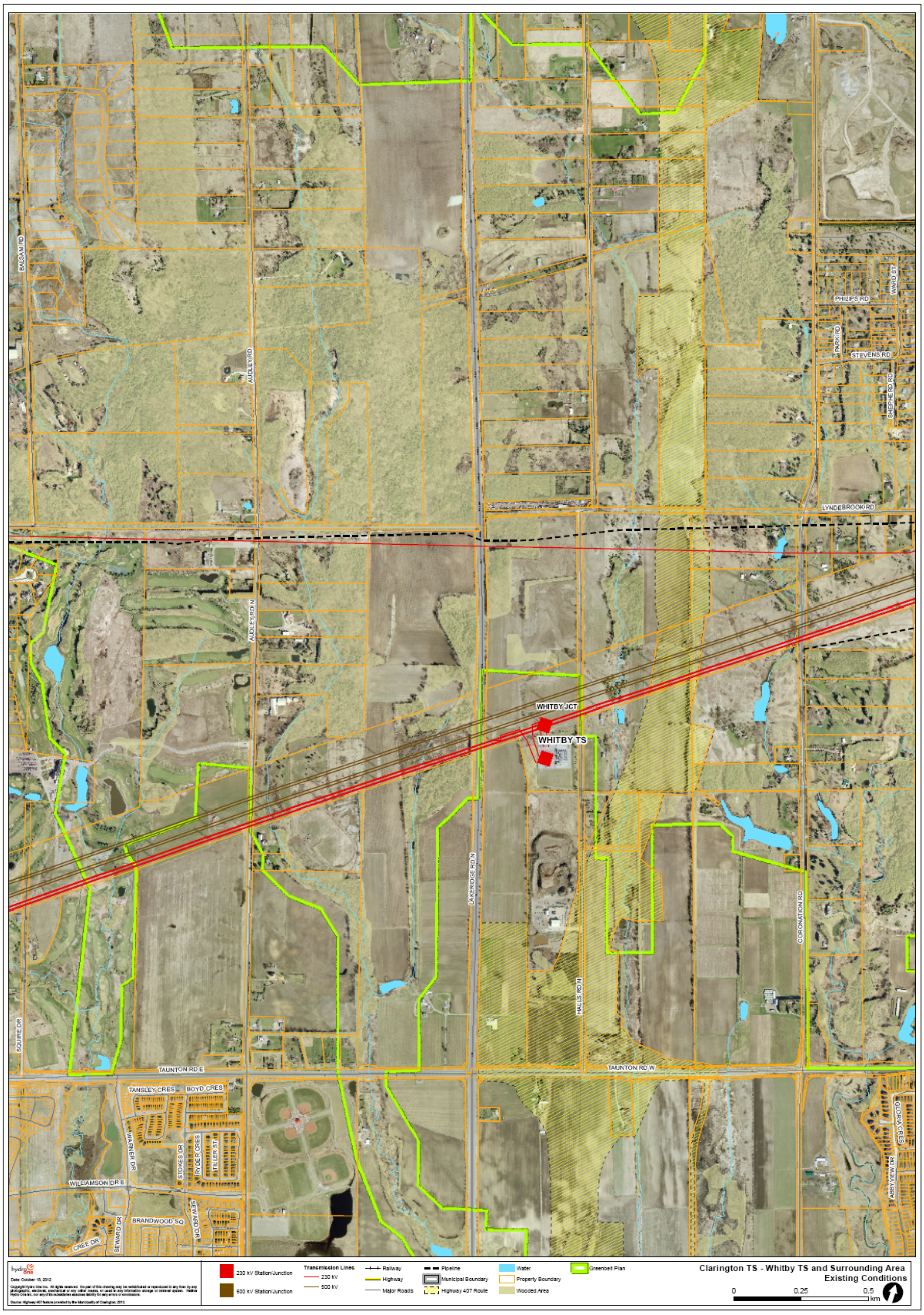


Figure 4-4: Cherrywood TS and Surrounding Area (Seaton Lands) Existing Conditions

4.6.3 Save the Oak Ridges Moraine (STORM)

On November 4, an email was received from STORM information Hydro One that STORM Coalition has been asked to look into the Clarington TS proposal and that on the following day, representatives of STORM will meet with some local residents to visit the project site and discuss the proposed project. STORM indicated that they would like to have a copy of the draft ESR to help them "understand the process that OPA is undertaking and to get a clearer understanding of the local ecology within the larger Oak Ridges Moraine ecosystem".

Hydro One responded on November 5 that it has been

> "Hydro One has been directed by the Ontario Power Authority (OPA) to build a new Transformer Station. This station is required to ensure that once Pickering Nuclear Generating Station is taken offline, there will be a corresponding amount of power available to ensure the reliability and integrity of Ontario's electricity system." (see **Section 1.1** for Need of the Undertaking)

Hydro One also indicated that it has initiated the Class Environmental Assessment process in May 2012 for the proposed project. Hydro One also invited STORM to the PIC #2 that is scheduled on Thursday November 8, and indicated that the draft Environmental Study Report will be available for a 30 day review period, at which time it be happy to send them a copy of the report. Hydro One also provided the project web site.

No further comments were received.

4.6.4 Oshawa Kicks Soccer Club

The Oshawa Kicks Soccer Club expressed interest via email on the disposition and future plans of the hydro corridor that runs through Oshawa close to Winchester Road and the new Highway 407. They are interested in discussing the possibility of locating natural grass athletic fields underneath the transmission lines.

After a conversation via phone with the President of the soccer club, Hydro One sent a follow-up email on May 17, 2012 providing guidance and the actions that are necessary to achieve the group's objectives.

The President of the soccer club attended the PIC #1 on May 23 at the Solina Community Hall to learn more about the proposed project.

No further comments or inquiries were received from the Oshawa Kicks Soccer Club.

A notification email as well as a follow up email on the Community Information Meeting was sent (see **Section 4.7.6** for details of the Community Information Meeting). No further comments were received.

Invitation to PIC #2 was provided, no further comments were received.

4.6.5 Veridian Connections

Veridian Connections indicated in the PPF that they are not interested in providing input regarding the study but would like to be kept on the project's mailing list.

Information panels displayed at the Public Information Centre #1 (see **Appendix B3**) were provided, no further comments were received.

A notification email as well as a follow up email on the Community Information Meeting was sent (see **Section 4.7.6** for details of the Community Information Meeting). No further comments were received.

Invitation to PIC #2 was provided, no further comments were received.

4.6.6 Oshawa PUC Networks Inc.

Information panels displayed at the Public Information Centre #1 (see **Appendix B3**) were provided. No further comments were received.

A notification email as well as a follow up email on the Community Information Meeting was sent (see **Section 4.7.6** for details of the Community Information Meeting). No further comments were received.

Invitation to PIC #2 was provided, no further comments were received.

4.7 Public Involvement

The public were notified about the proposed project through various means including email, letters via hand delivery and courier, as well as and public notices. The following outlines the public consultation activities that took place throughout the Class EA process.

4.7.1 Public Mail Outs

As described in Section 4.1, Initial Notification and an invitation to attend the first PIC was hand delivered or sent via courier to the area residents within approximately 2 km radius of the proposed site on May 3.

A Community Information Meeting was requested by the area residents who attended the PIC #1, which was subsequently held on September 11. The invitation was hand delivered or sent via courier to the area residents within approximately 2 km radius of the proposed site on August 29. The invitation was also provided via email, to the attendees of PIC #1 and other interested individuals who have been identified through the consultation process.

For the second PIC, held on November 8, the invitation to the PIC #2 was hand delivered or sent via courier to the area residents within 2 km radius of the proposed site on November 1, and was provided to the interested individuals via email.

The Final Notification providing the details of the Draft ESR Review Period was hand delivered or sent via courier to the area residents within approximately 2 km radius of the proposed site on November 15, and was provided to interested individuals via email.

Copies of the notification letters are included in **Appendix B**.

4.7.2 Public Notices

A public notice introducing the proposed project (Initial Notification) and providing details for the first PIC held on May 23 was placed in the following local newspapers:

- Oshawa/Clarington This Week on May 10 and 17
- Oshawa Express on May 9 and 16
- Orono Weekly Times on May 16 and 23

A public notice providing details for the Community Information Meeting held on September 11 was placed in the following local newspapers:

- Oshawa/Clarington This Week on September 6
- Oshawa Express on September 5
- Orono Weekly Times on September 5

A public notice providing details for the second PIC held on November 8 was placed in the following local newspapers:

- Oshawa/Clarington This Week on November 1 and 8
- Oshawa Express on October 31 and November 7
- Orono Weekly Times on October 31 and November 7

A public notice notifying of the completion of the Draft ESR (Final Notification) and providing details on how to participate during the Draft ESR Review Period was/ will be placed in the following local newspapers:

- Oshawa/Clarington This Week on November 15 and 29
- Oshawa Express on November 14 and 28
- Orono Weekly Times on November 14 and 28

Copies of the public notices are included in **Appendix B**.

4.7.3 Project Website

A project website was established to keep the public informed of the proposed project. The PIC and the Community Information Meeting notices and information presented at these consultation events have been posted on the project website www.HydroOne.com/Projects/Clarington

4.7.4 Dedicated Project Contact Person

A dedicated project contact person was assigned and a toll-free telephone number and email were made available for those who wished to contact to obtain further information on the proposed project or provide their comments. The name, phone number and email of the contact person were noted in all project mailings, public notices and on the project website.

Denise Jamal, Hydro One Community Relations
Tel: 1-877-345-6799
Email: Community.Relations@HydroOne.com

4.7.5 Public Information Centre #1

The PIC #1 was held from 5:00 pm to 8:00 pm on May 23, 2012, at the Solina Community Hall in Solina, Clarington. The PIC focused on the need for the proposed project, description of the proposed project, the proposed site, general potential effects and mitigation measures, the Class EA process and the project timeline. The PIC provided an opportunity for those interested in the project to find out more information and ask questions to Hydro One and OPA staff.

At the PIC, display panels were available for review. Copies of the display panels are posted on the project website (see **Appendix B3**). Comment forms were available to allow

attendees to record any comments or concerns. A copy of the comment form is included in **Appendix B3**.

Approximately 20 people attended the PIC, including Mayor Foster, Councillor Novak and Councillor Neal as well as representative from MPP O'Toole's office. Representatives from the Municipality of Clarington Planning Department and the City of Oshawa Planning Department were also present. The remainder of attendees were mostly a mix of residents living in close proximity to the project area.

The following outlines the key comments and issues raised at the PIC. No comment forms were received.

- Confusion with regard to the previously approved Enfield TS project
- Need for the project
- Concerns on project timeline
- Concerns on station access road location related to noise and dust during construction, security, vandalism and loitering
- Requested Hydro One to consider an alternate access road, off the unopened Townline Road North
- Concerns on property value
- Concerns on the visual effects of the station
- Potential effects on groundwater (i.e., water table and local wells)
- Concerns on the spill containment system design for the transformers
- Concerns on local wildlife and nearby woodlot
- Site selected is on the Oak Ridges Moraine
- Other sites to locate the station have not been considered

All comments and issues raised at the PIC have been summarized in **Table 4-6**.

Based on the discussions and questions documented throughout the course of the PIC, several comments were raised regarding an additional meeting with the broader community and specifically why the access road was not located off of Townline Road North as agreed

upon during the Enfield TS Class EA process. See the following sections for more information.

Request for Additional Meeting

Area residents at PIC #1 requested for Hydro One to host a meeting to inform the broader community of the project as many area residents did not attend, believing that Clarington TS PIC #1 was a pre-construction PIC for the approved Enfield TS project. A Community Information Meeting was held on September 11, 2012 (see **Section 4.7.6** for more information on the meeting).

Station Access Road

The originally proposed station access road was off of Langmaid Road. The road would be approximately 690 metres in length and would be built entirely on Hydro One property and would run west from Langmaid Road to the station entrance. It would cross one watercourse (i.e., a tributary to Farewell Creek). This access road was selected as it did not require new land rights and meets the technical requirements.

The original proposal was presented at the PIC #1, and concerns were raised by area residents. The concerns were related to disruptions to the community during construction and operation activities, proximity of the permanent access to houses and issues on security. Residents proposed to Hydro One to investigate in the feasibility of building the access road via the unopened Townline Road North as it would present less disruption to the community. Hydro One indicated that it would consider this alternative.

Hydro One concluded that the Townline access road is technically feasible; however property acquisition would be required from a private property owner, southwest of the Hydro One property. Through discussions with the Municipality of Clarington and the City of Oshawa, a license agreement to utilize the unopened Townline Road North would need to be obtained from the municipalities.

The Townline access road would be approximately 650 metres in length and would not cross any watercourses.

Hydro One is still in discussions with the private property owner as well as the municipalities to finalize the plans for a station access road via Townline Road North. Contingent on the successful negotiation with the private property owner as well as being granted the license agreement from the municipalities, the Townline access road would be built for the proposed project. Otherwise, Hydro One will build the access road via Langmaid Road, as originally planned.

4.7.6 Community Information Meeting

A Community Information Meeting was held from 6:30 pm to 9:30 pm on September 11, 2012, at the Solina Community Hall in Solina, Clarington. The Community Information Meeting was intended for residents who were unable to attend the PIC #1 to have the opportunity to review the same maps and displays and hear directly from the project team. The meeting was moderated by an independent facilitator to make best use of the available time and to ensure comments and questions were captured.

Approximately 60 people attended the meeting, including MPP O'Toole, Mayor Foster and Councillor Novak of the Municipality of Clarington. A few realtors as well as representatives of Clarington This Week, Friends of the Farewell and CLOCA were also present.

Two comment forms were received and the following outlines the key comments and issues raised at the meeting.

- Concerns with the EA process
- Concerns of the effectiveness of the MOE to protect Oak Ridges Moraine, the environment and groundwater
- Concerns of the money spent on the EA and the results
- Concerns on the safety of the water wells
- The Oak Ridges Moraine is protected land and Hydro One has no right to be there by law

The summary report of the meeting was provided to all attendees (see **Appendix B4**). All comments and issues raised at the meeting have been summarized in **Table 4-6**.

4.7.7 Public Information Centre #2

The PIC #2 was held from 5:00 pm to 8:00 pm on November 8, 2012, at the Solina Community Hall in Solina, Clarington. The PIC #2 focused on the details of the proposed project, other sites proposed by Enniskillen Environmental Association, updated conceptual layout, new access road, proposed typical structure types, mitigative measures, particularly related to tree protection; construction methods and schedule. Hydro One and OPA staff were present to provide project information and answer questions.

Approximately 30 people attended the PIC, including Mayor Foster and Councillor Novak of the Municipality of Clarington. Representatives of Mississaugas of Scugog Island First Nation, Friends of the Farewell and Clarington Planning Department were also present.

Three comment forms were received and the following outlines the key comments and issues raised at the PIC.

- Concerns on the safety of the water wells
- The Oak Ridges Moraine is protected land

The following outlines the key comments and issues raised at the PIC.

- Need for the project
- Concerns on project timeline
- Concerns on the visual effects of the station
- Potential effects on groundwater (i.e., water table and local wells)
- Installation and testing of monitoring wells
- PCB in transformers
- Concerns on the spill containment system design for the transformers
- Details of spill containment system
- Concerns on sound levels from transformers
- Transformer haul route

- Site selected is on the Oak Ridges Moraine
- Potential effects on creek system and the ORM natural linkage area
- Proposed a site to located the station at Rundle Road and Taunton Road
- EEA proposed sites (i.e., Pickering NGS, Darlington NGS, Wesleyville GS, Whitby TS and surrounding area, Seaton land north of Cherrywood TS)
- Proposed the installation of autotransformers at Clarington TS and Whitby TS
- EMF levels of the proposed project
- Class EA process and public participation
- Vegetation restoration
- Horseback riding access on Townline Road North
- Details of the proposed station and tower locations
- Service area of the proposed station
- Property acquisition

At the PIC, display panels were available for review. Copies of the display panels were posted on the project website and are included in **Appendix B4**. Comment forms were available to allow attendees to record any comments or concerns. A copy of the comment form is included in **Appendix B4**.

4.7.8 Public Comments and Issues

Following PIC #1, Hydro One received a series of letters from the area residents. Some of the residents that sent Hydro One letters have formed an Environmental Interest Group; the EEA on September 4 (refer to **Section 4.6.2**).

On June 14, Hydro One received a letter requesting the following:

- An estimate for the cost of building the station;
- Information outlining how the project will be funded;
- Provide a comparison of the cost for a new station at Clarington in comparison to adding transformation equipment at the existing Cherrywood TS; and
- Provide an explanation of why this project is to be placed on the moraine within Ontario's greenbelt.

Hydro One responded on July 17 to the area residents' letter of June 14 with the following responses:

- The current estimate for the project is $270M, as per Hydro One's most recent Transmission Rate Application to the OEB.
- Once Clarington TS is placed in-service, the costs will be included in Hydro One's transmission revenue requirement, which is recovered by all ratepayers of all utilities in Ontario through the electricity bill.
- Adding two additional 500-230 kV transformers and associated facilities at Cherrywood TS, to offset the retirement of Pickering NGS, is not a technically viable option. The installation of transformers at Cherrywood would result in short-circuit levels beyond the capabilities of the existing or new 230 kV breakers at the site, making the option technically infeasible and presenting a potential for equipment damage, system unreliability and an increased safety risk. As a result, a cost comparison is not meaningful.
- The proposed site was purchased in 1978 for the purpose of building a TS that would support a growing electricity demand. This site is ideal as the proposed project requires a connection to both 500 kV and 230 kV lines, both of which are already located on the site. The site meets the necessary size requirements and is consistent with the PPS of using existing facilities and property were possible to avoid developing Greenfield sites.

Hydro One received a second letter from the same area residents on July 26 in response to Hydro One's letter on July 17. The area residents raised the following questions and comments:

- "How can Hydro One justify this massive cost for "potential" future electrical consumption?"
- "Do Ontario Hydro One rate payers and tax payers know about this proposed expenditure?"
- "How can Hydro One justify using the Clarington site? It is on one of the most recognized and environmentally sensitive land areas in Ontario."
- "Why can't this TS site be located elsewhere on a more suitable land site?"
- "There are lands between Ajax and Oshawa that are more suitable sites than the current proposed site in terms of level site grade, facility access and proximity to residents."

- "We do not believe the moraine can sustain this assault by a transformer site carrying thousands of litres of toxic compounds that could conceivably leak and contaminate our only natural water supply."
- Erosion
- Site is a natural wildlife sanctuary
- Disruption of watercourses
- Hydro One's contractor selection process
- Rushed project timeline
- Concern of public safety
- Risk of public health

Hydro One indicated that a Community Information Meeting would be held to discuss their comments and concerns addressed in the July 26 letter.

In a September 12 letter received from an area resident, the resident indicated that when their family purchased their property they were informed that nothing could be constructed on adjacent lands as it is located in the Greenbelt and adjacent to the Oak Ridges Moraine. The resident indicated that with the proposed project it would result in:

- "Completed loss of view;
- Dramatic reduction in resale value of the property;
- Years of construction noise, filth and activity;
- Arguable adverse health effects."

The residents requested that Hydro One provide information on what they plan to do to rectify the loss of resale value of their home and when did Hydro One enter into discussions with the Municipality of Clarington regarding the proposed project.

Hydro One responded on October 24 and provided answers to their concerns. In particular, Hydro One indicated that the Municipality of Clarington was informed of the proposed project in April 2012 and that the proposed project's land use designation is "utility" and is a permitted use under the Durham Region Official Plan, Municipality of Clarington Official

Plan, the ORMCP, and the Greenbelt Plan. In regards to the residents other concerns, Hydro One answered the following:

- A vegetative restoration and screening plan is under development;
- Historically although property values may decline during the construction phase of a new TS, they typically return to market values consistent with other similar properties in the local area over time;
- Hydro One understands that the construction of a new TS can be temporarily disruptive to people living in close proximity;
- Transformer stations do not generally increase EMF levels, and the proposed project will not increase the measurement of EMF that currently exists as a result of the existing transmission and distribution lines located on and adjacent to Hydro One's property.

Concerns on electric and magnetic fields (EMF), stray voltage, and sulphur hexafluoride (SF_6) were raised throughout the Class EA process, and more information can be also found in the following sections.

Electric and Magnetic Fields (EMF)

Electric fields are found in proximity to transmission lines and other high voltage equipment. No effects associated with electric and magnetic fields are predicted.

It is Health Canada's conclusion that for exposures found in Canadian homes there is no risk of health effects. For example, Health Canada has stated:

- "typical exposures present no health effects"; and
- "At present, there are no Canadian government guidelines for exposures to EMF at extremely low frequencies. Health Canada does not consider guidelines necessary because the scientific evidence is not strong enough to conclude that exposures cause health problems for the public".

Health Canada and the Federal Provincial Territorial Radiation Protection Committee (FPTRPC) have also examined this issue and have produced several documents on the subject. For example, recent documents have indicated the following:

- "the FPTRPC concludes that adverse health effects from exposure to power-frequency EMFs, at levels normally encountered in homes, schools and offices have not been established" (FPTRPC, 2005); and
- "it is the opinion of the FPTRPC that there is insufficient scientific evidence showing exposure to EMFs from power lines can cause adverse health effects such as cancer. Therefore, a warning to the public to avoid living near or spending time in proximity to power lines is not required" (FPTRPC, 2008).

The Health Canada website provides important information on the issue: www.hc-sc.gc.ca/iyh-vsv/environ/magnet_e.html. Health Canada's Fact Sheet that addresses issues related to EMF is available in **Appendix E**.

It is acknowledged that some research findings are controversial and contradictory. However, a mechanism or explanation for possible health effects has not been established. This position is supported by several extensive reviews of over 30 years of research by several respected international organizations. Although a web search can identify individual contradictory studies, independent national and international bodies that have conducted reviews of the entire body of research, are consistent with and are the basis for the Health Canada and FPTRPC positions. Hydro One relies on the recommendations of national and international bodies and not the work or claims of individuals.

Most recently, Health Canada (2010) indicated that the agency "does not consider guidelines for the Canadian public necessary because the scientific evidence is not strong enough to conclude that exposure causes health problems for the public"

Stray Voltage

Concerns have been expressed about stray voltage. This is frequently assumed to be the result of nearby transmission facilities. There is no basis for this assumption and stray voltage problems will not result from the proposed TS. Stray voltage is an issue specific to livestock operations. It depends largely on two factors:

- On-farm electrical problem such as improper grounding of troughs and other equipment, improper wiring, etc; and

- The low voltage electricity service to the farm (e.g., location and distance from distribution facilities, types of customer connected to the distribution feeder, etc.)

The operation of a TS will not normally affect the existing low voltage distribution system. If stray voltage is a suspected, regardless of the cause, Hydro One will work with the affected party to identify and identify measures to resolve the concern.

For additional information, please refer to the Hydro One website http://www.hydroone.com/MyBusiness/MyFarm/Pages/StrayVoltage.aspx

Sulphur Hexafluoride (SF_6)

Concerns have been expressed regarding the use of Sulphur Hexafluoride (SF_6) within proposed station switching equipment. This gas is a commercially available non-toxic gas, used by Hydro One and most utilities world wide as an insulating medium. It is contained in sealed equipment and enables utilities to minimize the footprint of transmission facilities. SF_6 is an inert, colourless, odourless gas in its pure state. It is highly stable both chemically and thermally, and is non-flammable. While SF6 is considered a greenhouse gas, procedures are in place to minimize leaks. Hydro One facilities are operated on full compliance with all applicable federal and provincial legislations.

For additional information regarding the key issues raised throughout the EA process, refer to **Table 4-6** for a summary of public comments and concerns.

4.8 Summary of Key Issues

Tables 4-1 to 4-6 provide a summary of the comments and issues raised from the interested parties throughout the consultation process, including Project Participation Forms, letters, emails and telephone correspondence as well as at meetings. The corresponding response provided by Hydro One to the comments and issues raised is also included in the following tables.

The Enniskillen Environmental Association's comments and issues are included in **Table 4-6** with the public as members were involved with the local community at PIC #1, the Community Information Meeting, and PIC #2.

Table 4-1: Summary of First Nations and Métis Communities Comments and Issues

Community	Comments and Issues	Hydro One's Response
Alderville First Nation	Wish to keep updated regarding any archaeological findings, burial sites, or any environmental impacts	Notified of archaeological findings and project updates. Refer to **Section 4.2.1**.
Mississaugas of Scugog Island First Nation	Proposed project is on First Nation's Treaty land and interested in evaluating potential impacts to First Nation rights and interests	Notified of archaeological findings and project updates. Refer to **Section 4.2.2**.
Chippewas of Rama First Nation	Interested in being kept on project mailing list.	Notified of archaeological findings and project updates. Refer to **Section 4.2.3**.

Table 4-2: Summary of Federal Government Agency Comments and Issues

Stakeholder	Comments and Issues	Hydro One's Response
TC	TC is the administrator of the *Navigable Waters Protection Act* and *Railway Safety Act*. Hydro One is required to complete an Aeronautical Obstruction Clearance Form and recommended Hydro One contact NAV Canada.	The proposed project will not affect navigable waters and railways. The new 230 kV and 500 kV line structures will not be taller than 90 m, therefore will not require lighting and marking. Hydro One has been in contact with NAV Canada and will be submitting the Land Use submission form once final design is complete. Refer to **Section 4.3.2**.
NAV Canada	Requires a Land Use submission form along with GPS locations of structures.	Hydro One will submit the Land Use submission form and provide the GPS locations of the structures once the design is finalized. Refer to **Section 4.3.3**.

Stakeholder	Comments and Issues	Hydro One's Response
GTAA	Interested in the potential effects of project alternatives on the future Pickering airport design and operations. Concerns include effects on potential energy supply; future air navigation, communication and surveillance equipment and signals; compatibility with airport zoning requirements, flight operations, and takeoff and approach surfaces; and EMF.	Hydro One will provide the final design for the lines structures when it is completed. In respect to EMF, Hydro One indicated that "results from preliminary EMF modeling indicated that at 100 metres above ground level, the electric and magnetic fields have already mostly dissipated. At 200 metres above ground level, they would be practically undetectable." Refer to **Section 4.3.4**.

Table 4-3: Summary of Provincial Government Agency Comments and Issues

Stakeholder	Comments and Issues	Hydro One's Response
MOE	MOE indicated the following topics were an area of interest: ecosystem protection and restoration, surface water, groundwater, air quality, dust and noise, servicing and facilities, contaminated soils, mitigation and monitoring, planning and policy, Class EA process, and Aboriginal consultation.	Hydro One has integrated all of their areas of concern into this Draft ESR. Refer to **Section 4.4.2**.
MNR	MNR requires an IGF for activities that may affect species or habitat protected under the *ESA* and any associated restoration. MNR is interested in Butternut Health Assessment and identifying trees on site. The MNR requested to be provided with information on Hydro One's consultation with the	Hydro One submitted an initial IGF to the MNR on June 13, 2012. As Hydro One gathered additional information the IGF was updated with the final version submitted October 18, 2012. MNR and Hydro One met onsite twice during the proposed project to review the Butternut Health Assessment and during DNA sampling. Hydro One will keep MNR informed of the public and regulatory agency feedback regarding the line reconfiguration.

Stakeholder	Comments and Issues	Hydro One's Response
	municipalities, CLOCA and the public result in agreement with the assessment of line reconfiguration alternative 1. An area of approximately 3 hectares is required for a remedial planting area.	Hydro One has agreed to MNR's restorative requirements. Refer to **Section 4.4.3**.
OMAFRA	OMAFRA recommended that Hydro One ensure that agricultural criteria area and it is applied equitably, consider avoiding prime agricultural areas and operations, and if agricultural cannot be avoided to ensure that effects are minimized.	Hydro One has taken into consideration the active agricultural fields and the potential effects on the project area. Refer to **Section 4.4.4**.
MTO	MTO indicated that they are interested in the project as it may trigger a Building and Land Use permit due to the proximity of the future Highway 407.	Hydro One is more than 400 metres from the centerline of the future Highway 407. Refer to **Section 4.4.5**.
MTCS	MTCS indicated at a Heritage Impact Assessment is recommended and should be completed prior to the completion of the EA.	A follow-up meeting has been arranged to discuss the project and next steps for the proposed project. Refer to **Section 4.4.6**.
MAH	Hydro One is required to conform to Section 41 of the ORMCP which contains detailed approval policies and standards for infrastructure and utilities.	The proposed project does not apply with Section 30 of the ORMCP, but is required to conform to Section 41. Refer to **Section 4.4.7**.

Table 4-4: Summary of Municipality and Agency Comments and Issues

Stakeholder	Comments and Issues	Hydro One's Response
Durham Region Planning Department	Indicated that Hydro One should contact the Municipality of Clarington and City of Oshawa to directly discuss the details of the project.	Hydro One has been in contact with the Municipality of Clarington and the City of Oshawa to discuss the proposed project. Refer to **Section 4.5.2**.
Durham Region Health Department	The Durham Region Health Department informed Hydro One of the permit requirements based on the types of washroom facilities Hydro One is considered.	Upon the final decision and design of the washroom facilities, Hydro One will initiate the permitting process. Refer to **Section 4.5.3**.
Municipality of Clarington Emergency and Fire Services	The Municipality of Clarington Emergency and Fire Services Department indicated they are not interested in providing input regarding the study but wish to be kept on the mailing list. During the pre-consultation meeting with the Municipality of Clarington, Hydro One was informed to incorporate a turning circle into the station design.	A turning circle for fire trucks is being incorporated into the final design. Refer to **Section 4.5.4**.
Municipality of Clarington Planning Department	The Municipality of Clarington Planning Department has the following concerns and comments: • Washroom facilities on site • Supply of water to site • Townline Road North License Agreement • Road damage • Transformer transportation route	Following the completion of the Class EA process, Hydro One will begin talks with the Municipality of Clarington and the City of Oshawa regarding the Townline Road North Lease Agreement. Upon the final decision of washroom facilities at the proposed project, Hydro One will work with the Municipality regarding the supply of water at the future station. Hydro One is exempt from the Site Plan Review process under the *Planning Act*. Hydro One has kept the Municipality of Clarington informed and integrated their comments on the transformer haul route. Hydro One will continue to work with CLOCA regarding the proposed project and associated restoration

Stakeholder	Comments and Issues	Hydro One's Response
	• Watercourse crossings, vegetation removal and restoration • Deference to CLOCA regarding environmental components of the project • Building permits • Site Plan application	activities. Refer to **Section 4.5.5**.
City of Oshawa Planning Department	The City of Oshawa Planning Department has the following concerns and comments: • Townline Road North Lease Agreement • Transformer transportation route	Following the completion of the Class EA process, Hydro One will begin talks with the Municipality of Clarington and the City of Oshawa regarding the Townline Road North Lease Agreement. Hydro One has kept the City of Oshawa informed and has integrated their comments regarding the transformer haul route. Refer to **Section 4.5.6**.
CLOCA	CLOCA has the following concerns and comments: • One station drainage system outlet as opposed to two • Grading outside the fence in the north and northwest section of the adjacent wooded area and creek system • Existing drainage tiles in the southern portion of the project area • Access road location off Townline Road North • Permanent and creek crossings for proposed project • Natural Features Inventory • Rationale regarding line reconfiguration alternatives • Plant and forb list for remediation of creek and	Hydro One has indicated that design for one outlet is non impactive and best meets our risk requirements. Grading options and profiles of the north and northwest corner of the proposed project were provided to CLOCA. Hydro One will remove the damaged agricultural tiles that are currently located in the southern portion of the project area. Hydro One will remove the damaged agricultural tile in the southern portion of the project area. The preferred permanent access road is on Townline Road North. Proposed project will have 2 permanent and 3 temporary creek crossings. Natural Features Inventory and rationale regarding line reconfiguration

Stakeholder	Comments and Issues	Hydro One's Response
	planting on station slopes • Restorative vegetation and screening plan • Spill containment design and functionality	alternatives were provided. d forb list and restorative vegetation and screening plan were provided to ıg was held to discuss the restoration. Hydro One sent CLOCA an animation clip of the spill containment system and how it works. Refer to **Section 4.5.7**.

Table 4-5: Summary of Interest Group Comments and Issues

Stakeholder	Comments and Issues	Hydro One's Response
Friends of the Farewell	Interested in integrating habitat for the Loggerhead Shrike into proposed project's mitigation plans. Proposed involvement in the Great Lakes Guardian Fund.	Hydro One will consider the integration of varying types of habitat into the proposed project's mitigation plans. Both parties agreed to continue the discussion of the two proposals at a later date. Refer to **Section 4.6.1**.
Save the Oak Ridges Moraine Coalition	STORM indicated that they will meet with some local residents to visit the project site and discuss the proposed project. They are also interested in reviewing the draft ESR.	Hydro One provided project information and indicated that it will provide a copy of the draft ESR when it is available. Refer to **Section 4.6.3**.
Oshawa Kicks Soccer	Interested in utilizing Hydro One's land for soccer fields.	Recommended contact the appropriate Municipality to secure a license of land for recreational use. After license is received, Hydro One would receive submission to review application. Refer to **Section 4.6.4**.

Table 4-6: Summary of Public Comments and Issues

Comments and Issues	Hydro One's Response
Natural Environment	
Impacts to wildlife habitat	There are no areas on the site that would be considered as Significant Wildlife Habitat based on field studies and an assessment of the features and habitat. Refer to **Section 7.2**.
Species at Risk	A search of the NHIC (2010a) database indicated that no SAR have been recorded recently (post-1989) within the project area. The MNR indicated that butternut, bobolink and eastern meadowlark may be found in the project area given that this is within their natural range. The presence of butternut trees was confirmed during field surveys. Fewer than 10 retainable butternut trees may be removed during construction to accommodate the transmission line configuration required to access and egress the station. To mitigate any loss of butternut trees, Hydro One will consult with the MNR to acquire the necessary approval and fulfill the required replacement planting, as well as fulfill any additional requirements of a permit issued under Section 17C of the ESA for removal of butternut. The intent of replanting is to result in a net increase in seed production when the new trees are mature. Refer to **Section 7.2**.
Impacts to creek systems	Hydro One has currently identified approximately four potential temporary crossings and two potential permanent crossings of intermittent watercourses within CLOCA's jurisdiction. These watercourse crossings are anticipated to result in no significant effects to their flow rates. Refer to **Section 7.2**.
Erosion management	An erosion and sediment control plan will be included with the stormwater management plan submitted as part of the application for an ECA. Refer to **Section 7.2**.

Comments and Issues	Hydro One's Response
Impacts to groundwater and wells	Station drainage will be subject to an Industrial Sewage ECA under the EPA. The drainage design of the station will ensure that the pre and post construction area drainage is not significantly altered. The station will be situated on land with a deep overburden of glacial till which has very low permeability. Monitoring well installed at the site will be maintained and monitored regularly for groundwater depth and quality. Hydro One does not believe that the proposed project will have any effect on the wells in the community or to those in North Oshawa. We have construction transmission facilities throughout the Province and have yet to find a case where our facilities have negatively affected well water quality or quantity. Hydro One has extended an offer to land owners adjacent to the property to have their well water tested and to undertake a draw down test before, during and after construction. Refer to **Section 7.2**.
Concern about the spill containment system and leaks	Hydro One has an oil spill containment system that is automatic, reliable and secure. The system is designed that in the event of a spill, oil will be captured and stored in precast concrete holding tanks. Our spill containment system requires an ECA which will be submitted to the MOE for review. Refer to **Section 7.2**.
Impacts to fish	There are no fish or amphibian SAR species identified in the Harmony Creek and Farewell Creek tributaries associated with the Clarington TS project area; however, these tributaries likely contribute to seasonally direct fish habitat. The potential changes to tributaries in the project area (i.e., installation of watercourse crossings) is not anticipated to affect fish communities downstream as flow through the culverts will be maintained in a similar pattern to the existing channel. Refer to **Section 7.2**.
Community would like to know about any fluids and/or chemicals that will be used for the construction and subsequent operation of the proposed Clarington TS.	Provided with the MSDS for mineral oil used in the transformers. Project is still in design phase and will know more about the fluids and chemicals once design is completed. More information on sulphur hexafluoride can be found in **Section 4.7**.

Comments and Issues	Hydro One's Response
Socio-economic Environment	
Why is Hydro One allowed to construct on the Oak Ridges Moraine	The land use of the site is designated utility and transmission facilities are of permitted use under the Municipality of Clarington Official Plan (2012), the Region of Durham Official Plan (2008), the Oak Ridges Moraine Conservation Plan (2002), and the Greenbelt Plan (2005). Where the proposed project is situated on the ORM, Hydro One is required to conform to the ORMCP under section 41.
Interested in Hydro One buying property out	Comment noted.
Compensation for loss of resale value of property	Hydro One's practice is to pay compensation only where new or additional land rights are required to build its transmission station projects. No additional property rights are required for Clarington TS with the exception of access rights into the site. This is consistent with the practice used by similar industries such as natural gas pipelines and major transportation routes (e.g., highways)
Property value	Historically, Hydro One has found that although property values may decline during the construction phase of a new TS, they typically return to market values consistent with other similar properties in the local area over time. Residential property value is dependent on many factors including the type of residential property, location/ neighborhood factors as well as broader social and economic conditions associated with the overall marketplace.
The station access road via Langmaid Road will cause large amounts of disruption to local property owners. Can you select another station access road for this project?	Hydro One has agreed to consider another access road via the unopened Townline Road North allowance, see **Section 4.7.5** for more details on station access road.

Comments and Issues	Hydro One's Response
EMF	Electric and magnetic fields are found everywhere electricity is used and come from home appliances, computers, office equipment, wiring in our homes and workplaces, and transmission & distribution lines. Transformer stations do not generally increase EMF levels, and Clarington TS will not increase the measurement of EMF that currently exists as a result of the existing transmission and distribution lines located on and adjacent to Hydro One's property. See **Section 4.7.8**.
Stray voltage	Hydro One does not anticipate any problems with stray voltage as a result of the TS. Stray voltage is an issue specific to livestock operations. Stray voltage depends largely on two factors: 1) on-farm electrical problem such as improper grounding of troughs and other equipment, improper wiring, etc; and 2) the low voltage electricity service of the farm (e.g., distance from the DS, types of customer connected to the same feeder, etc. The construction of a TS does not normally affect the existing low voltage distribution system, therefore no stray voltage problems are anticipated as a result of the construction of Clarington TS. See **Section 4.7.8**.
Construction disruption including noise, filth and activities	Hydro One will hold an open house once the Environmental Assessment is complete to provide residents with information about what to expect during construction, and Hydro One's construction mitigation plan. Refer to **Section 7.1.1**.
Construction noise effects	Sound emission standards for construction equipment are set according to the date of manufacture of the equipment as defined by the MOE in the NPC-115 publication, listed in the MOE (1978) Model Municipal Noise Control By-Law. This document stipulates specific sound emission standards for various pieces of construction equipment. Hydro One's contractor will also comply with the applicable Municipal Noise By-law. Refer to **Section 7.1.1**.
Public safety	Perimeter fencing will enclose the station and will be maintained to prevent public access Refer to **Section 7.3.1**.

Comments and Issues	**Hydro One's Response**
Loss of agricultural land	The total area of cultivated land affected by the proposed TS project including the permanent access road will be about 16.4 ha. Agricultural land that is cleared or damaged during construction, including temporary warehousing areas, will be restored after construction is complete. Refer to **Section 7.3.2**.
Loss of views	Hydro One is working to develop a vegetative restoration and screening plan. Although vegetation will not screen the station entirely, our intent is to mitigate as much as possible. Refer to **Section 7.3.3**.
If the well on my property is damaged as a result of the station, will you fix it?	Hydro One has offered testing before, during and after construction to private well owners adjacent to the Hydro One property. Hydro One will address any damage caused. It is not anticipated that the construction of the station will affect private wells.
Technical and Cost	
Why is this station needed?	The proposed project is not intended to supply more energy – it is to maintain status quo. When Pickering NGS retires, current electricity needs cannot be met and the local supply of energy will no longer exist. To provide the community with electricity, Hydro One must transport electricity from other generating sources. See **Section 1.1** for the Need of the Undertaking.
Requested estimate of the proposed project.	The estimate for the project is currently $270M, as per Hydro One's most recent Transmission Rate Application to the OEB.
How will the project be funded?	Once Clarington TS is placed in service, the costs for this station will be included in Hydro One's transmission revenue requirement, which is recovered through the electricity bill by all ratepayers of all utilities in Ontario.
Are the ratepayers of Ontario aware of the proposed station and the costs associated?	All of Hydro One's work is subject to public review and approval by the OEB.

Comments and Issues	**Hydro One's Response**
Request for cost comparison for a new station at the Clarington site versus upgrade the existing Cherrywood TS	The Cherrywood TS upgrade is not a technically viable option. As a result, a cost comparison is not meaningful. Refer to **Section 1.3** for the Alternatives to the Undertaking.
How is this station different from Pickering Nuclear Generating Station?	Pickering NGS produces electricity. A TS does not produce electricity it helps carry electricity through the wires. It helps move electricity by connecting the larger transmission lines with the smaller distribution lines that supply electricity directly to the consumer.
Can Pickering NGS be refurbished?	OPA indicated that two of the nuclear units at Pickering A have already been refurbished. However, current information from OPG indicates that rather than refurbishing units at Pickering B they have decided to pursue the continued operation work, which may result in life extension to 2020.
Will the proposed project increase the amount of power generation within the province?	No.
Class EA-related	
Why did we waste time attending meetings for Enfield TS when the station is not needed?	The need for Enfield TS was to serve forecasted electricity distribution demand (load growth) in the area. Reduction in electricity demand caused by 2008 economic downturn and other local factors deferred the need for Enfield TS to a future date. Refer to **Section 1.1** for the Need of the Undertaking.
Why this site?	See **Section 1.3** for the Alternatives to the Undertaking and **Section 5.1** for the rationale for selection of the station location.

Comments and Issues	Hydro One's Response
Explanation of why the proposed station is to be placed on the moraine within the Greenbelt.	Hydro One's property west of Langmaid Road was acquired via expropriation in 1978 for purpose of building a transformer facility. This site is ideal as Clarington TS requires a connection to both 500 kV and 230 kV lines, both of which are already located on the property. The site meets the necessary size requirements and is consistent with the PPS of using existing facilities and property where possible to avoid developing Greenfield sites. See **Section 1.3** and **Section 5.1**. Hydro One as a utility is a permitted use within the Greenbelt and the ORMCP. Hydro One to be located at the site is required to meet a number of environmental criteria (see **Section 3.2.1**).
Did you consider other sites?	During the course of the Class EA process, no alternative was considered reasonable from a technical and economic viewpoint. The *EA Act* requires consideration of reasonable alternatives and based on knowledge of the project area and the above factors, Hydro One has concluded that there are no other reasonable locations for a TS that will address the retirement of Pickering NGS. Refer to **Section 1.3** for the Alternatives to the Undertaking. Other sites were proposed by the Enniskillen Environmental Association (i.e., Pickering NGS, Darlington NGS, Whitby TS surrounding lands, Wesleyville GS and "Seaton" lands and lands surrounding Cherrywood TS). Refer to **Section 4.6.2** for the reasoning of why Hydro One did not further consider these sites.
When did Hydro One enter into discussions with the Municipality of Clarington?	Hydro One and the Municipality of Clarington entered into discussions regarding Clarington TS in April 2012. Refer to **Section 4.5.5** for consultation with the Municipality of Clarington Planning Department.
Pickering NGS has the potential to operate until 2020, why does construction need to begin in 2013?	The closure of Pickering NGS may occur as early as 2015, therefore Hydro One is required to commence construction in the Spring of 2013. See **Section 1.1** for the Need of the Undertaking.

Comments and Issues	**Hydro One's Response**
Rushed EA process	The proposed project is to be placed in service for the eventual closure of Pickering NGS, sometime between 2015 and 2020. Construction is required to start in march 2013 in order to meet the Spring 2015 in-service date. See **Section 1.1** for the Need of the Undertaking.
Is there a connection with the previous EA that was completed for the Enfield site that suggested the site be located west of Townline?	As part of the Enfield EA, a study area was defined where potential sites would be identified and considered. The study area for the Enfield EA extended west of Townline Road North.
Why were we not informed during the Enfield EA process that plans for a larger station was also being developed	When Hydro One began the Class EA process for Enfield TS project, the need was to increase capacity to homes and businesses in the local area. After the economic downturn, this need was no longer a priority. At the time of the Enfield TS EA process, details surrounding the closure Pickering NGS were not known and Hydro One had not received direction from the OPA to build a TS.
This is a major project. Does this project not require an individual EA?	The proposed project, a 500/230 kV TS, falls within the criteria defined in the Class Environmental Assessment for Minor Transmission Facilities (1992, Ontario Hydro), which was approved by the MOE under the *EA Act*. See **Section 1.5.1**

Comments and Issues	Hydro One's Response
How long this project has been underway?	This property was acquired by Ontario Hydro in 1978 via expropriation. An environmental study was conducted for the 500 kV Oshawa-Lennox transmission corridor where a TS on the Clarington site was identified as "Oshawa Area TS" at the time. This study was released in 1974. The need for a TS at this location was included in OPA's first Integrated Power System Plan (IPSP) in 2007, which was referred to as Oshawa Area TS. The work by Hydro One has been underway since October of 2011 following the recommendation from the OPA. See **Section 1.1** for the Need of the Undertaking.
Why is Hydro One using Stantec on this project?	Stantec is one of the consultants selected under the Hydro One procurement process. Hydro One is using Stantec because they have a great deal of expertise related to the field work that is required for this project. They have been used in this capacity in other projects and found to be well qualified, respected and thorough. Hydro One will oversee and approve all work submitted by Stantec and Hydro One is ultimately accountable for the EA and the quality of the ESR.

4.9 Final Notification and Draft ESR Review Period

Hydro One is providing a 30-day Review Period to allow First Nations and Métis communities, government agencies and officials, affected property owners and interested public to review the draft ESR. This draft ESR is being made available for review and comment from Thursday November 15, 2012 to Monday December 17, 2012.

The Notice of Completion of the draft ESR review period (final project notification) was provided to the following groups (**Appendix B2**).

- Email notification and letters to First Nations and Métis communities on November 13
- Email notification to government agencies and interest groups on November 13
- Email notification to provincial and municipal officials on November 14
- Email notification to interested public on November 14
- Letters to area residents within 2 km radius of proposed site via hand delivery and courier on November 15

A public notice regarding the Notice of Completion of the draft ESR (final notification) was placed in local newspapers (see **Section 4.7.2**).

Copies of the draft ESR will be made available for review on the Hydro One project website and in hardcopy format at the following locations:

Municipality of Clarington
40 Temperance Street
Bowmanville, ON
Phone: 905-623-3379

City of Oshawa
50 Centre Street South
Oshawa, ON
Phone: 905-436-3311

Clarington Public Library
Courtice Branch
2950 Courtice Road
Courtice, ON
Phone: 905-404-0707

Oshawa Public Library
Northview Branch
250 Beatrice Street East
Oshawa, ON
Phone: 905-576-6040

Clarington Public Library
Bowmanville Branch
163 Church Street
Bowmanville, ON
Phone: 905-623-7322

Comments regarding the draft ESR are requested in writing to Hydro One by 4:30 pm on December 17, 2012 and are to be sent to:

Yu San Ong, Environmental Planner
483 Bay Street, South Tower, 6th Floor
Toronto, ON M5G 2P5
Email: Community Relations@HydroOne.com
Tel: 1-877-345-6799
Fax: 416-345-6919

Hydro One will respond to and make best efforts to resolve any issues raised by concerned parties during the review period. If no concerns are expressed, Hydro One will finalize the ESR and file it with the MOE. The project will then be considered acceptable and may proceed as outlined in the ESR.

If an individual is dissatisfied with the Class EA process or with Hydro One's project recommendations, he or she can make a written request within the review period to the Minister of the Environment to ask for a higher level of assessment. This higher level of assessment is referred to as a Part II Order request. Instructions on how to fully participate in the Class EA process were provided in the Final Notification public notice published in the local newspapers (see **Appendix B6**).

5. Alternative Methods

This section describes the reasonable alternative methods for carrying out the project.

The rationale for the station location, station layout and the alternatives related to the connection of the existing lines to the station within the Hydro One property will be discussed.

5.1 Station Location

During the course of the Class EA process, no reasonable alternatives were identified from a technical and economic viewpoint. The *EA Act* requires consideration of reasonable alternatives and based on knowledge of the project area and the above factors, Hydro One has concluded that there are no other reasonable locations for a TS that will address the retirement of Pickering NGS.

As noted, the OPA recommended that the undertaking be located on the Clarington property (refer to **Section 1.1**). This property was identified over 30 years ago as site for a future TS. The land was acquired through expropriation by Ontario Hydro and passed to Hydro One with the break-up of Ontario Hydro. The rationale for this site is based on the following factors:

- Use of the proposed site is consistent with the PPS (2005) which indicates:
    - "infrastructure and public service facilities shall be provided in a coordinated, efficient and cost-effective manner to accommodate projected needs." (Section 1.6.1 of the PPS);
    - "that the use of existing infrastructure and public service facilities should be optimized, wherever feasible, before consideration is given to developing new infrastructure and public service facilities" (Section 1.6.2 of the PPS);
- Station location meets the technical and economic criteria of the OPA;
- The property was acquired in 1978 for this purpose and has been identified in public documentation as early as 1974 as a future TS site (i.e., previously named Oshawa East TS);

- The property houses the necessary transmission infrastructure (i.e., both 500 kV and 230 kV circuits) and provides sufficient land area required to build the proposed station (i.e. locations without 500 and 230 kV infrastructure could require the acquisition of additional lands with associated impacts on the affected communities and the undertaking would have a much greater footprint resulting from the need to construct new transmission lines);
- The property is large enough to construct and connect the proposed station (i.e., with the associated effects on residents and communities). An agreement has been signed to acquire a small amount of property to enable access at the western edge of the property.
- The costs to purchase another property or properties (i.e., if new transmission lines were required) would be significant and an unjustifiable expense to Ontario ratepayers;
- The time to select, approve and acquire new properties would be much longer than the Clarington site and place the local communities at risk of serious power disruptions (i.e. if Pickering is retired before new facilities are in service); and
- The site is designated "utility" and transmission facilities are of permitted use under the Municipality of Clarington Official Plan (2012), the Region of Durham Official Plan (2008), the Oak Ridges Moraine Conservation Plan (2002), and the Greenbelt Plan (2005).

As noted in **Section 4.6.2**, several sites were proposed by the Enniskillen Environmental Association and were not found to be reasonable.

5.2 Station Layout

The location of the station had to be on Hydro One property to avoid property acquisition, which places it north of the existing 500 kV lines and east of the 230 kV lines. The dimensions of the proposed station are approximately 280 metres by 600 metres which require it to be situated within one location, while maintaining appropriate setbacks from the adjacent woodland to the north and creek systems to the north and west. This location also had to accommodate the connection of the existing 230 kV transmission lines to the station.

The station layout calls for the 500 kV switchyard in the south and the 230 kV switchyard in the north. This layout allows for a direct connection of the 500 kV lines to the station and a direct connection to the 230 kV lines north of the station.

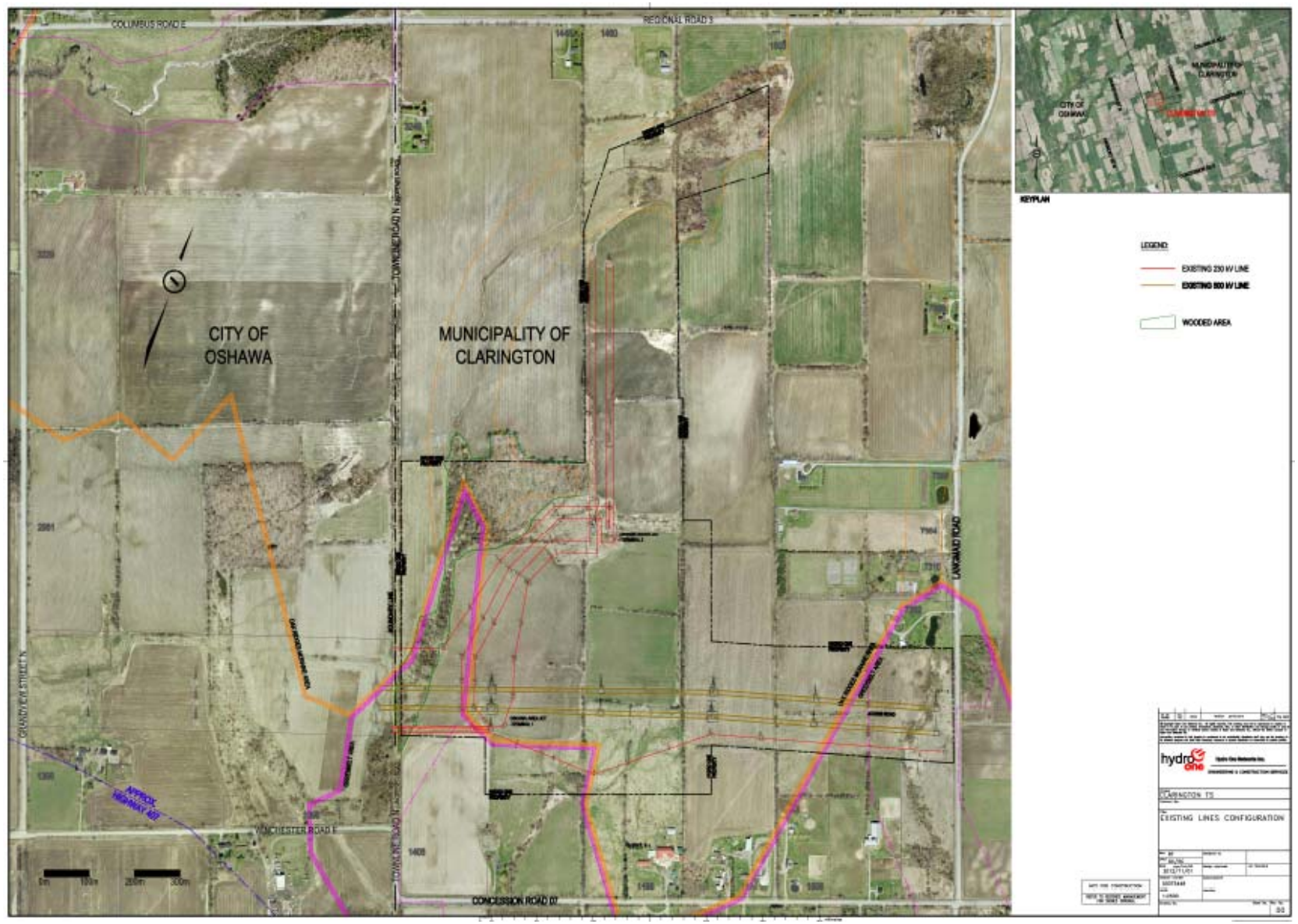
Due to the limited space available of the Hydro One property and the existing configuration of the existing 500 kV and 230 kV lines, no other station layout is reasonable. See **Figure 1-3** for the proposed conceptual layout.

5.3 Connection of Existing 230 kV Transmission Lines to Station

Transmission line structures occupy the land on which the station is to be built. This will require the existing 230 kV lines be relocated to accommodate the space required for the proposed station. Relocation needs to occur between Oshawa Area Junction at the southwest portion of the site (Terminal 1) and Oshawa South Junction in the northeast portion of the site (Terminal 2). See **Figure 5-1** for an illustration of the current configuration of the existing lines and junction locations.

Three alternatives were identified and evaluated in the following sections.

Figure 5-1: Configuration of Existing Lines and Junction Locations



5.3.1 Identification Criteria

Three alternative methods were identified using the following criteria:

- capitalize on the existing infrastructure
- allow for a direct connection to the 230 kV switchyard;
- remain in close proximity to the station in order to minimize the number of structures required and minimize the environmental footprint of the facilities; and
- remain within the limits of the Hydro One property as much as possible to be consistent with the PPS.

5.3.2 Description of Alternatives

Three alternative methods were identified to meet this objective. Each alternative location and its key characteristics is sub sequentially described:

Alternative 1 – West side of station through southern portion of woodland

- remains entirely on Hydro One property
- capitalizes on existing infrastructure (i.e., 230 kV underpass of the 500 kV lines)
- Removes approximately 1.5 ha of woodland
- Removes 4 retainable butternut
- Shortest alternative

Alternative 2 – West side of station north of woodland

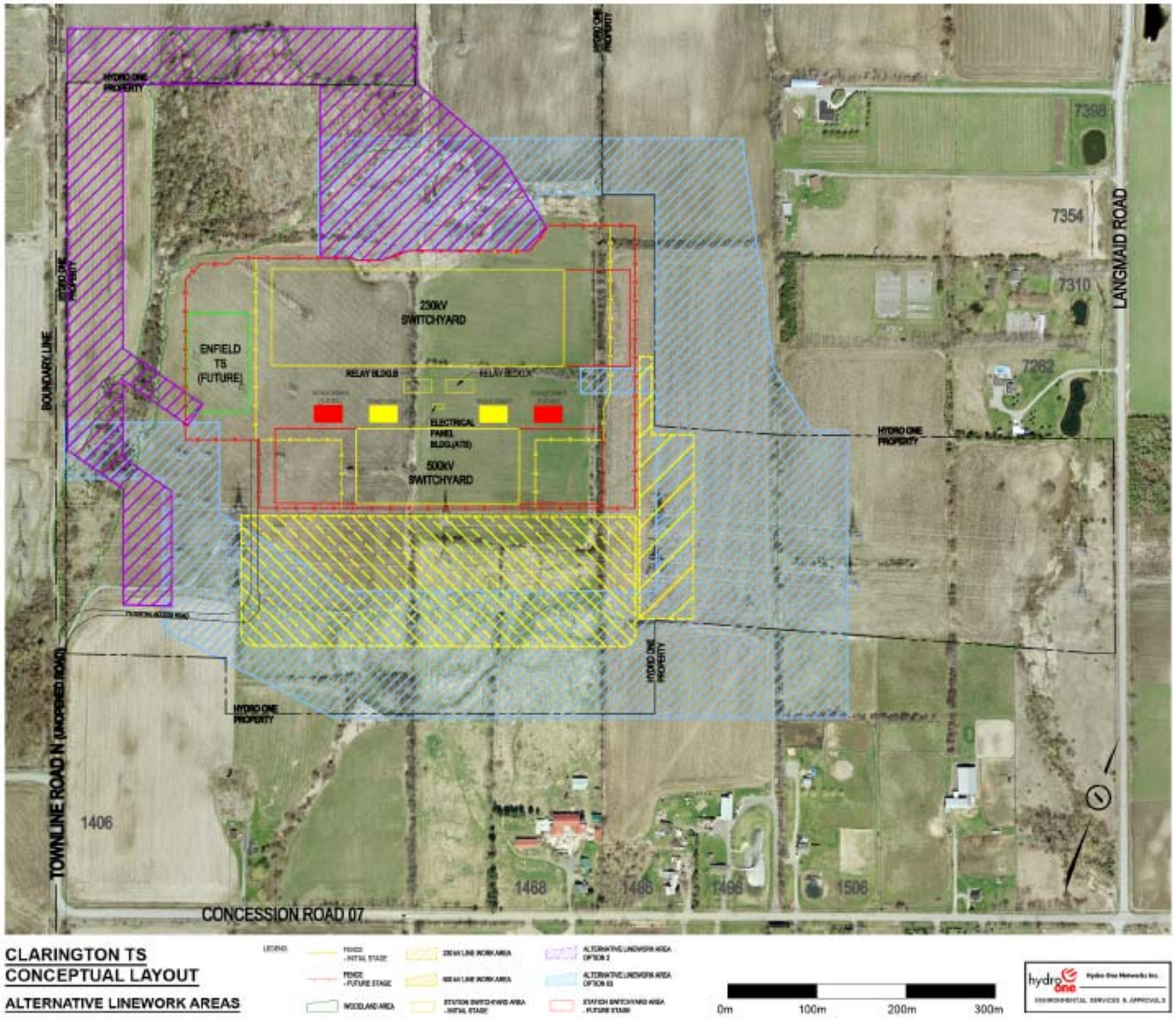
- requires land acquisition (1 property, approximately 25% of alternative is new ownership)
- capitalizes on the existing infrastructure (i.e., 230 kV underpass of 500 kV)
- Removes approximately 2.2 ha of woodland
- Removes no butternut
- Slightly greater visibility than Alternative 1
- second longest alternative
- more costly than Alternative 1

Alternative 3 – South and East side of station

- Requires land acquisition (5 properties, approximately 30% of alternative is new ownership)
- Does not capitalize on the existing infrastructure (i.e., 230 kV underpass of 500 kV)
- No removal of woodland or butternut
- Much greater visibility than Alternatives 1 and 2
- Longest alternative
- more costly than Alternative 1 and 2

Refer to **Figure 1-3** (Conceptual Layout with Alternative 1) and **Figure 5-2** (Alternatives 2 and 3) for a visual interpretation of the alternatives.

Figure 5-2: Alternatives 2 and 3



5.3.3 Evaluation and Comparison of Alternatives

Table 5-1 compares the three alternatives described above from an environmental, social and technical (including cost) perspective.

Table 5-1: Environmental Factors for Alternative Evaluation and Comparison

Factors	Alternative 1	Alternative 2	Alternative 3
Biological Resources	• Removal of approximately 1.53 ha habitat • 3 crossings of intermittent Coldwater Streams • 1 stream crossing spanned no vegetation removed • Loss of approximately 5 retainable butternuts (SAR)	• Removal of approximately 2.23 ha habitat • 3 crossings of intermittent Coldwater Streams • 2 stream crossings spanned no vegetation removed • Loss of approximately 1 retainable butternut (SAR)	• Removal of approximately 0.72 ha habitat • 2 intermittent Coldwater Stream Crossings • 2 stream crossings spanned no vegetation removed • No effect to SAR
Human Settlement & Visual	• 7 residences with moderate visibility • 8 residences with low visibility • Permitted use • Adjacent to approved station (Enfield TS) • Entirely within HONI owned land • No property acquisition	• 1 residence with high visibility • 6 residences with moderate visibility • 10 residences with low visibility • Approximately 25% of route is new property ownership • 2.61 ha of property acquisition (1 properties affected) • Permitted use	• 10 residences with high visibility • 1 residence with moderate visibility • 4 residences with low visibility • Approximately 30% of route is new property ownership • 7.48 ha of property acquisition (5 properties affected) • RoW edge borders 5 residential properties • Permitted use
Agricultural Resources	• Approximately 0.07 ha agriculture removal for tower placement (9x9-metre tower footing) • Municipality of Clarington Prime Agricultural Area	• Approximately 0.11 ha of agricultural land taken out of production for tower placement (9x9-metre tower footing) • Municipality of Clarington Prime Agricultural Area	• Approximately 0.25 ha of agricultural land taken out of production for tower placement (9x9-metre tower footing) • Municipality of Clarington Prime Agricultural Area
Recreation, Tourism, and Forest Resources	• No effect to recreation, tourism, forestry resources	• No effect to recreation, tourism, forestry resources	• No effect to recreation, tourism, forestry resources
Cultural Heritage Resources	• Stage 1, 2 & 3 Archaeological Assessment was completed, no effects to archaeological resources • No effect to heritage resources	• A Stage 1, 2, & 3 Archaeological Assessment was completed, no effects to archaeological resources on HONI land. • If selected would be required to complete Stage 1&2 Archaeology on unsurveyed lands • No effect to heritage resources	• A Stage 1, 2, & 3 Archaeological Assessment was completed, no effects to archaeological resources on HONI land. • If selected would be required to complete Stage 1&2 Archaeology on unsurveyed lands • No effect to heritage resources
Technical & Cost	• Entirely on Hydro One owned property and is on utility land defined by the Municipality of Clarington Official Plan (2007). • 12 new structures • 850 metres of transmission lines • Two RoW 26m in width	• 15 new structures • 1.2 km of transmission lines • Combined RoW is 65 metres in width • Cost approximately $2M more than Alternative 1	• 31 new structures • 2.1 km of transmission lines • Combined RoW is 65 metres in width • Cost approximately $4 M more than Alternative 1

Definitions & Acronyms

Low Visual Impact: less than 1 kilometre, but more than 500 metres from landowner's property line to the centre of the RoW
Moderate Visual Impact: less than 500 metres, but more than 250 metres from landowner's property line to the centre of the RoW
High Visual Impact: less than 250 metres from landowner's property line to the centre of the RoW

5.3.4 Preferred Alternative

Table 5-2 provides an alternative comparison based on evaluation criteria relating to the natural environment, socioeconomic environment, technical considerations and cost. The criteria are based on the significant factors in **Table 5-1**. The alternatives in **Table 5-2** are ranked on the basis of 1 as best rank for the criteria, 3 as lowest rank for the criteria.

Table 5-2: Alternatives Evaluation and Comparison

Evaluation criteria	Alternative 1	Alternative 2	Alternative 3
Natural environment			
Potential terrestrial/ wildlife habitat effects	2	3	1
Potential aquatic habitat effects	2	3	1
Potential effects on SAR	3	2	1
Socioeconomic environment			
Proximity to area residents	1	2	3
Visual aesthetics	1	2	3
Property Acquisition	1	2	3
Technical & Cost			
Length	1	2	3
Alternative Cost	1	2	3

Based on the evaluation shown in **Table 5-2**, Alternative 1 was considered as the best alternative. In comparison to Alternatives 2 and 3, Alternative 1 involves:

- No additional land acquisition
- Less vegetation and habitat removed than Alternative 2
- Lowest visibility to area residents
- Not in proximity to residential properties
- Shortest distance
- Lowest cost

Overall, Alternative 1 has been selected as the preferred alternative for the connection of the 230 kV lines to the station based on environmental, social, and technical and cost criteria.

6. Project Description

As previously noted, the proposed project will supply electricity from the 500 kV system to the 230 kV system in order to replace the loss of the Pickering NGS (see **Section 1.1** for the need for the project). The proposed project will occupy approximately an area of 280m x 600m and will be built on Hydro One property, northeast of Concession Road 7 and the unopened Townline Road North, in the Municipality of Clarington (see **Figure 1-3** for the Conceptual Layout).

The proposed project will be undertaken in two stages.

Initial Stage will include:

- An all-weather permanent access road with controlled access
- Erection of bypass circuits
- Two permanent watercourse crossings
- Erection of new 230 kV and 500 kV structures plus associated lines to connect the station
- Installation of the fence, station drainage system, grounding system, and containment for the transformers including an oil/water separator
- Installation of two 750 mega volt-ampere (MVA) 500/230 kV autotransformers
- Installation of associated outdoor 500 kV and 230 kV switchyards with SF6 circuit breakers, disconnect switches, interconnecting buswork as well as equipment such as current and voltage transformers and lightening arrestors
- Installation of two relay buildings and one electrical panel building (i.e., automatic transfer scheme)
- Appropriate vegetative screening, environmental controls, station service and communication equipment

Future Stage will include:

- Two additional 750 MVA 500/230 kV autotransformers and associated 500 kV and 230 kV equipment and facilities
- Additional 500 kV and 230 kV tapping structures to connect the existing circuits to the station

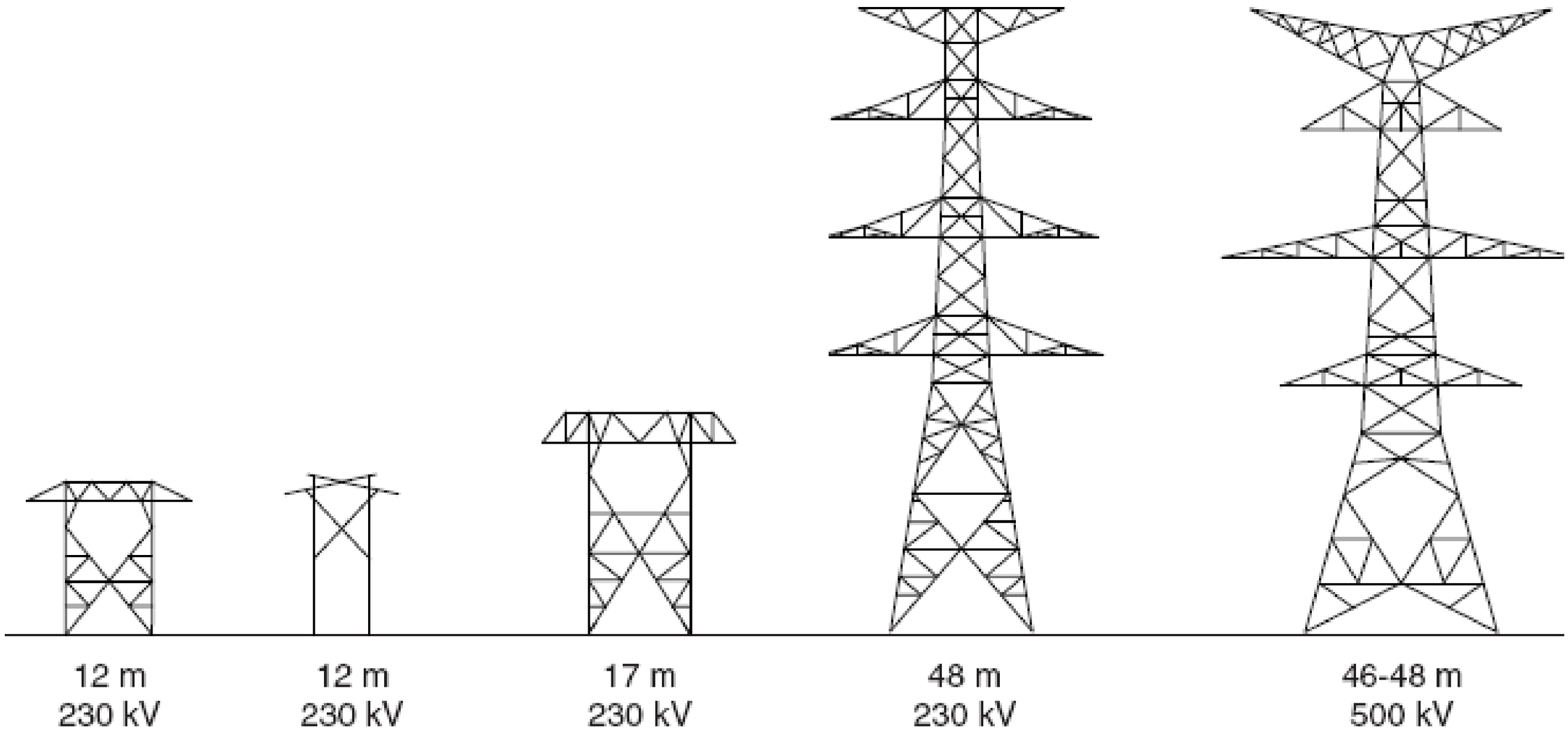
- Extension of the fenced gravel yard with underground drainage and grounding system, and drainage around perimeter of the fenced area

The timing of the second stage will be determined by the electricity demand in the area. Enfield TS will be constructed when required. Enfield TS was previously approved in 2008 as noted in **Section 1.1**.

The conceptual layout includes both initial stage and future stage of the project, it also includes the access road via the unopened Townline Road North (**Figure 1-3**).

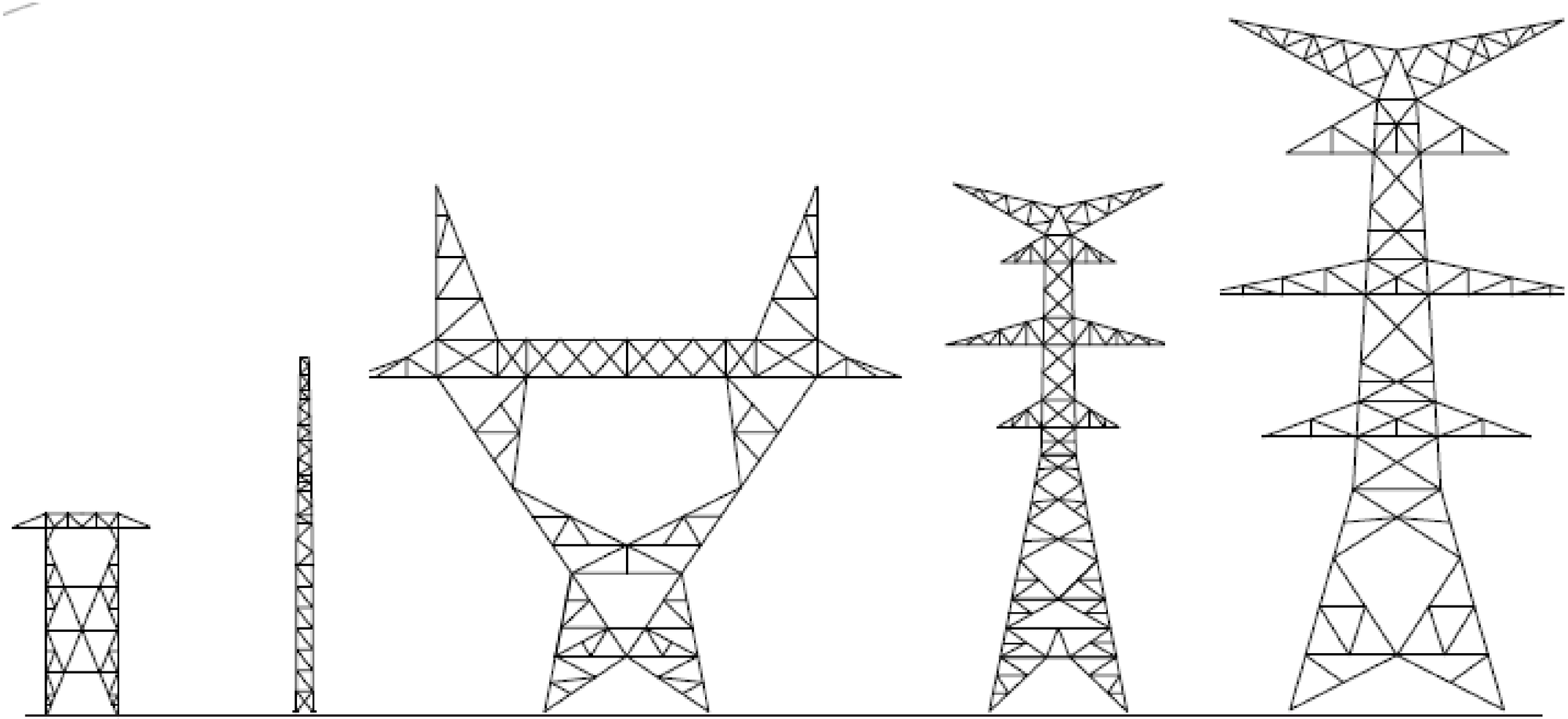
Figure 6-1 illustrates the existing 500 kV and 230 kV typical structure types and **Figure 6-2** illustrates the proposed typical structure types to be installed as part of the initial stage.

Figure 6-1: Existing Typical Structure Types



*Note: pictures are not drawn to scale and heights are approximate

Figure 6-2: Proposed Typical Structure Types for Initial Stage



*Note: pictures are not drawn to scale and heights are approximate

6.1 Design Phase

Given the scheduled in-service date, detailed engineering design for the proposed project has been initiated. These plans will identify the final design plans for the station, locations of structures, access road, construction staging areas and any screening work that will be performed at the site. The plans will be based on necessary surveys and consultation, including a geotechnical survey, and consultation with government agencies and the municipality.

Concurrent with finalization of the station design, further permits or approvals may be required under federal and other provincial legislation (see **Section 1.5.2**).

A project-specific Environmental Specification will be prepared following the filing of the final ESR with the MOE. The Environmental Specification will provide specific directions to construction personnel, summarizing legislated requirements, terms and conditions of approval, environmental construction practices appropriate to this project, and environmental commitments set out in the ESR. The Environmental Specification is developed based on the "Environmental Guidelines for Construction and Maintenance of Transmission Facilities" (Hydro One, 2009).

6.2 Construction Phase

Construction and maintenance activities will be guided by generic and project-specific documents. The Hydro One (2009) "Environmental Guidelines for Construction and Maintenance of Transmission Facilities" is a companion document to the "Class EA for Minor Transmission Facilities" (Ontario Hydro, 1992). The guidelines were prepared for the use of Hydro One design, construction and maintenance personnel. The guidelines provide general information about the type of construction and maintenance activities needed for the proposed project. The guidelines also include a summary of potential environmental effects, mitigation, restoration and compensation measures.

Throughout the construction phase, an Environmental Specialist will provide crew briefings to inform staff about potential effects and mitigation requirements. The Environmental Specialist will monitor activities to ensure that they are in conformance with the requirements set out in the Environmental Specification. This may include environmental sampling, testing and reporting requirements. At the completion of construction, operation and maintenance staff will be provided with a briefing and "as constructed" documentation covering any ongoing commitments, including monitoring and notification requirements.

Should any archaeological finds be uncovered during construction, work will stop immediately pending assessment by the project archaeologist and further consultation with the MTCS, as well as First Nations and Métis communities.

Transmission Lines

Construction of transmission lines typically involves the following activities:

- Mobilization and setting up of construction yard
- Removal of vegetation within woodland
- Removal of approximately 4 retainable butternut trees
- Construction of temporary access roads and working pads for foundations, installation and stringing.
- Installation of two permanent and three temporary creek crossings
- Delivering pre-fabricated rebar cages for foundation to each tower site
- Augering foundations, drop rebar cages and pour concrete
- Delivering bundled tower steel to each tower site
- Assembling lattice towers in sections
- Erecting towers
- Mobilizing stringing equipment
- Pulling in conductor, sagging and clamping in conductor
- Connecting circuits using implosive method
- Providing connections at line terminations
- Energizing new circuit
- Removing of temporary access roads
- Clean up and ROW restorations

Transformer Station

Construction of transformer stations typically involves the following activities:

- Site preparation including clearing and grading
- Installation of station fencing and security systems
- Delivery and installation of transformer and switching equipment
- Delivery and installation of equipment for protection, control and telecommunications
- Installation of station underground services and drainage facilities
- Installation of station foundations and steel support structure
- Installation of ground grid and lightning protection masts
- Construction of a brick building for static protection control
- Construction of station roads
- Clean-up and site restoration
- Implementation of vegetative restoration and screening plan

6.3 Maintenance and Operation Phase

The station will be operated remotely from Hydro One's grid control centre. An operator will make periodic inspections and will be dispatched to the station in case of emergency. Whenever preventative or emergency maintenance is required, a crew will be dispatched to the site. The station will be fully equipped with spill containment and oil/water separation facilities. In the event of equipment failure, oily water will not escape from the site. An Emergency Preparedness and Response Plan will govern spill response. Spill cleanup and response equipment will be located on site.

Throughout the operating life of the station, preventative and emergency maintenance will be carried out to ensure that equipment operates according to design parameters and to ensure compliance with Hydro One standards of safety, reliability, citizenship and cost. Landscaped areas will be maintained compatible with the surrounding community. Snow will be cleared to allow site access.

Within the ROWs, scheduled vegetation maintenance will be conducted on 7-8 year cycles to remove vegetation that may interfere with the safe operation of the transmission line.

6.4 Decommissioning Phase

When transmission facilities become obsolete or unserviceable, the equipment is retired from service. The facility may be removed and the site made suitable for other Hydro One purposes. When transmission structures are removed, the foundations are generally cut back 0.5 metres BGS.

Any land which is surplused to the needs of Hydro One may be disposed of by sale. Hydro One offers such land to former owners, adjacent owners, public utilities, government and government agencies prior to offering it to the general public.

6.5 Project Schedule

The anticipated project schedule for the initial stage of the proposed project 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 and commissioning of the proposed facilities. Construction of the proposed project is expected to begin in March 2013 and construction activities are expected to continue until 2015. The station is scheduled to be placed in service in the spring of 2015.

Table 6-1: Anticipated Project Schedule

Activity	Period
Release of draft ESR and start of 30-day review period	November 15, 2012
Filing of final ESR with the MOE	January 2013
Construction start	March 2013
Planned in-service date	Spring 2015

7. Potential Environmental Effects and Mitigation

This section describes the potential environmental and socio-economic effects associated with the development of the proposed project, and provides measures that will be incorporated to reduce and/ or eliminate potential adverse effects. A description of the facility is presented in **Section 6** and forms the basis for the identification of the potential environmental effects.

The potential effects resulting from the construction and operation of the proposed project are similar to many other projects undertaken by Hydro One and are well understood. There are approximately 300 transmission stations in Ontario. Hydro One has a strong track record of environmental compliance and stewardship and is committed to the completion of a comprehensive environmental analysis and mitigation of potential environmental effects. The Hydro One (2009) "Environmental Guidelines for Construction and Maintenance of Transmission Facilities" documents potential environmental effects and shows Hydro One's commitment to mitigation of these effects.

The following sections describe potential environmental effects and corresponding mitigation measures. **Table 7-1** provides a summary of potential effects, their mitigation and residual (net) effects for the proposed project. Both short-term construction and long-term operations residual effects are discussed.

7.1 Releases to the Environment

The following section describes the potential atmospheric emissions, liquid discharges and solid wastes from station construction and operations activities.

7.1.1 Atmospheric Emissions

Construction

Construction activities can be the source of noise and dust emissions. There will also be emissions from construction vehicles and equipment. These emissions will be of relatively short in duration, intermittent and unlikely to have any effect on the surrounding air shed.

Mitigation measures used to minimize potential air quality effects include maintenance of construction equipment in good working condition to minimize combustion emissions to the extent practicable and use of dust suppression techniques, such as on-site watering and road cleaning or dirt and mud. Dirt and mud will also be reduced to the surrounding road system through the implementation of vehicle cleaning prior to leaving the site.

Construction may also be a source of short-term, intermittent noise. The noises will be common to those found at other construction sites and associated with activities, such as site grading, foundation work, building and tower erection, and construction traffic. The use of implosive connectors is also planned to connect the new conductors. Construction will take place over a period of approximately 27 months. It will require the use of heavy equipment, (e.g., dozers, front-end loaders, small trucks, backhoes, bobcats, dump trucks, compactors, cement trucks and/or cranes).

Sound emission standards for construction equipment will be used. Sound levels will be monitored. Efforts will be made to conform to the MOE (1978) Model Municipal Noise Control By-Law and noise by-law for the Corporation of the Municipality of Clarington.

Sound levels will attenuate with distance and more information on acoustic can be found in **Appendix D**.

Operation

Transformers will produce a humming sound when energized and are usually equipped with cooling fans which contribute sound when operated occasionally. Noise can be readily mitigated with conventional technology (e.g., transformer selection, noise enclosures, noise barriers, etc.). As indicated in **Section 1.5.2**, as sound sources, power transformers are subject to approval by the Ministry of the Environment, under Section 9 of the *Environmental Protection Act* (i.e., Environmental Compliance Approval).

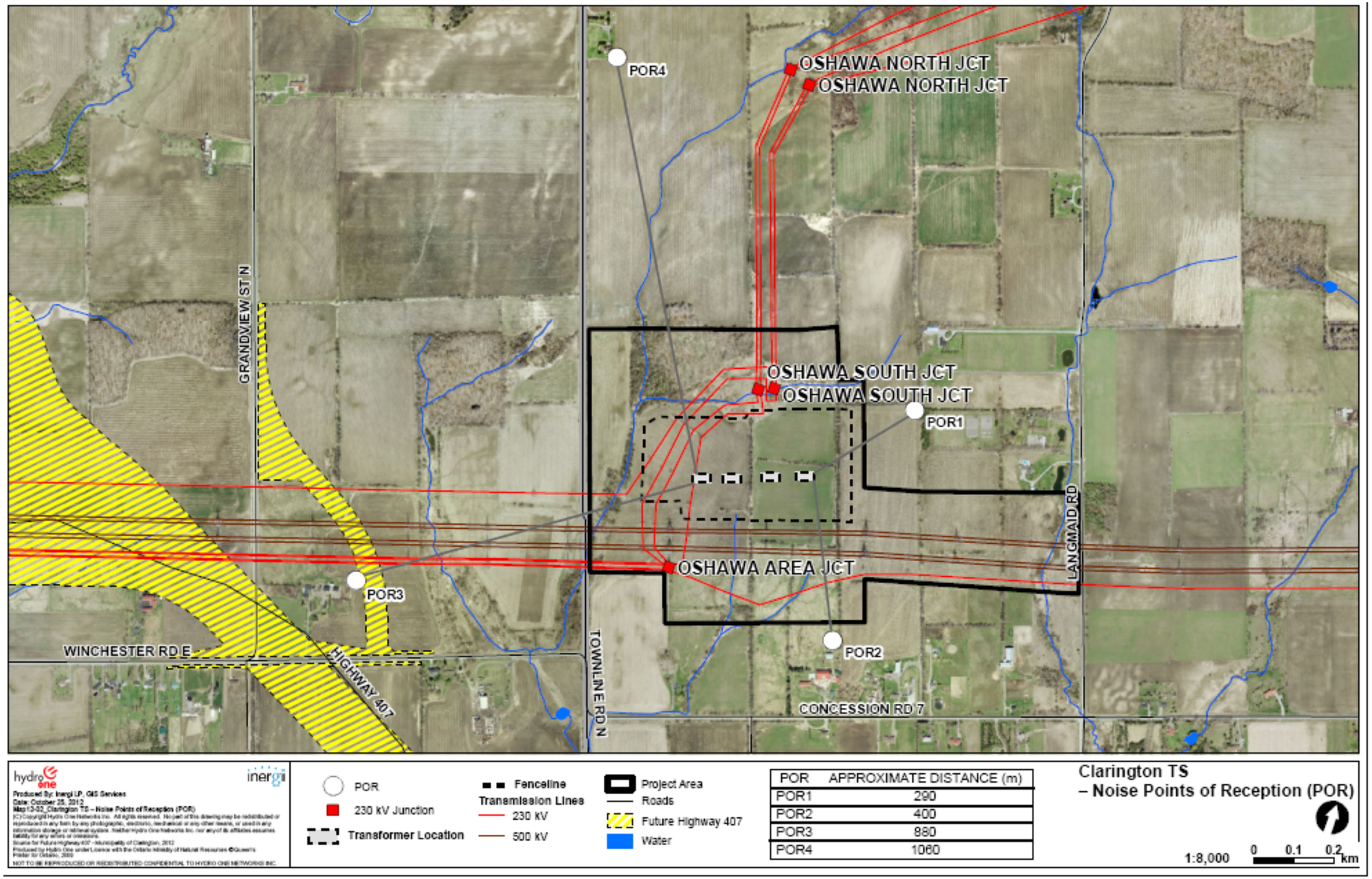
In order to minimize the sound from the transformers, a maximum sound level of 74 dBA is specified in Hydro One procurement specifications (including operating cooling fans) for transformers of the size/ rating needed. This number represents the maximum sound pressure level measured in accordance with standard IEEE C57.12.90-2006 (or equivalent CSA or ANSI standard). It is a theoretical limit and includes the sound from the transformer itself and associated cooling fans. The actual operating conditions of the installed transformer(s) are generally quieter than the specified value(s).

The four nearest representative sensitive noise receptors to the proposed transformers are shown in **Figure 7-1**. These points of reception (POR) are residences and are approximately 290 to 1060 metres away from the proposed station.

Since one or more of the receptors are less than 500 metres away from the proposed site, a detailed acoustic assessment will be performed to predict potential sound levels at the receptors and included in the ECA application. If the assessment should identify levels above the MOE limits at the receptor, noise control measures will be necessary. Hydro One has successfully used noise barriers and specialized transformers and cooling fans to control sound at several stations, and will apply similar sound control measures if necessary at the proposed station. Consequently, Hydro One is confident that there will be no long term residual effects.

See **Appendix D** for the preliminary noise evaluation has been carried out for the proposed station location.

Figure 7-1: Noise Points of Reception



POR	APPROXIMATE DISTANCE (m)
POR1	290
POR2	400
POR3	880
POR4	1060

7.1.2 Liquid Discharges

Construction

During construction, there is limited need to take or use water. As previously noted, dust suppression techniques will be applied. The primary challenges will be to manage precipitation and run-off and to minimize the likelihood of spills.

Groundwater and stormwater collected from excavated areas will not be directly discharged to the ground surface. The liquids will be transferred to onsite containment (i.e., a plastic storage tank or open evaporation pit lined with an impermeable membrane) and tested to determine the appropriate type and location of disposal.

If laboratory testing confirms that the water is not contaminated (i.e., above legislated levels), they may then be discharged onto the adjacent ground surface according to the following requirements:

- Pump-out/vacuumed waters/slurries will be discharged in such a manner that the force of discharge does not cause erosion (e.g., using dewatering filter bags, fibre mats, sediment settling ponds, rock pads, etc.);
- Pump-out/vacuumed waters/slurries shall not be discharged directly into or near any form of natural or man-made water body or drainage (e.g., storm sewers, creeks, ponds, etc.);
- Release will be compliant with relevant sections of OPSS 518 - Control of Water from Dewatering Operations or specific municipal requirements to protect the environment;
- Temporary perimeter ditches will installed around the construction site until the installation of permanent ditches to control stormwater and limited erosion and sedimentation; and
- If required, a Permit-To-Take-Water (PTTW) will be obtained prior to dewatering excavations if the volume exceeds 50,000 L/day if required.

A project environmental specification will set out erosion, sediment control and storm water management requirements. These specifications will conform to the Greater Golden

Horseshoe Area Conservation Authorities Erosion and Sedimentation Control Guideline for Urban Construction (2006).

It is unlikely that there will be significant spills of oils and fuels from construction vehicles. However, refuelling of construction vehicles will be carried out in a designated area and spill kits will be on hand. All refuelling or lubrication of equipment will be carried out at least 120 metres away from waterbodies.

Operation

The station will be fully equipped with spill containment for each transformer and an oil/water separation facility. These facilities, in conjunction with the site drainage are subject to ECA under the *Environmental Protection Act* along with the station drainage facilities. Spill controls are proven to be highly effective means of managing discharge quality. An Emergency Response Plan (ERP) and spill clean up equipment will be located on site. Hydro One is confident that, in the event of equipment failure, mineral oil will not escape from the site. In addition, the transformers are designed to withstand the internal forces without tank rapture, under the specified Hydro One internal fault conditions.

In the event of a spill within containment, the event will be reported, managed and cleaned up in accordance with all relevant legislation.

7.1.3 Solid Wastes

Construction

Solid waste generated at the site during construction will be collected, tested as required and disposed in accordance with environmental legislation.

Operation

The site will not be manned and will not generate significant quantities of waste materials. Wastes will be collected and directed to a regulated management site. The wastes will be recorded, tested and disposed in accordance with a Corporate Waste Management Certificate of Approval.

7.2 Natural Environment

7.2.1 Key Natural Heritage Features

Based on field investigations, it has been determined that there is no specialized habitat, amphibian breeding habitat, rare breeding birds or significant mammal habitat located within the project area.

Significant Woodlands

A woodland of approximately 4.7 ha within the project area (as discussed in **Section 3**) is designated in the Municipality of Clarington Official Plan (2012) as "significant". Within the ORMCP (OMMAH 2002) and the Greenbelt Plan (OMMAH 2005), this woodland is deemed a Key Natural Heritage Feature. In all cases, development associated with infrastructure is allowed under the condition that the need for the project has been demonstrated and there is no reasonable alternative.

Approximately 1.5 ha in the southwest corner of the woodland will be subject to vegetation removal, as a result of the 230 kV line work, which will be located within the minimum vegetation protection zone for the woodland. This is also the location associated with two branches of the Harmony Creek. Through the use of taller towers and shorter spans (distance between towers) the loss of tree cover vegetation (1.5 ha) has been reduced by approximately 35% over standard transmission designs. Other measures that will be undertaken to reduce adverse effects resulting from the proposed reconfiguration of transmission lines include:

- Temporary crossings of the creek;
- Restricting access along the ROW and minimizing the travel/work areas to maximize retention of compatible vegetation;
- Undertaking sediment and erosion controls as per CLOCA guidelines;
- Selective cutting and retaining all compatible vegetation to promote quicker regeneration;
- Using geotextile and gravel for all access to reduce compaction which will be removed after construction;

- Restore any compacted areas and plant compatible shrub species;
- Erection of barriers to ensure protection of creek(s);
- Install taller towers which allow for greater variety of shrub heights; and
- Undertake replacement planting at a 2:1 ratio for a minimum replacement area of 3.0 ha.

The northern portion of the proposed station is also located within the vegetation protection zone for the significant woodland and valleyland. However, the station is located within agricultural land and will not require the removal of any vegetation. Furthermore, the agricultural land between the proposed station and the vegetation protection zone will be re-vegetated to increase the buffer to the woodland, valleyland, and associated creeks.

Restoration planting to offset the woodland area loss will be primarily located adjacent to the significant woodland to the west. The planting area will provide an east-west linkage from the significant woodland to the forested areas west of Townline Road North. The restorative planting will occur at a 2:1 ratio, area of trees removed to area planted. Implementing a vegetative restoration and screening plan is consistent with MNR's (2000) Natural Heritage Reference Manual. Through consultation with the MNR and CLOCA, a variety of native species will be selected and planted to enhance the biodiversity of the area (see **Figure 7.2**).

Removal of vegetation has the potential to disturb nesting migratory birds. The *Migratory Birds Convention Act* (*MBCA*) prohibits the disturbance, destruction or removal of a nest, egg or nest shelter of a migratory bird. In order to mitigate possible contravention of the *MBCA*, vegetation clearing should be avoided during the bird breeding season (February 1 to August 31), if possible. Otherwise, a breeding bird survey will be undertaken by a qualified avian biologist and any nests found must not be disturbed by the clearing activity until the young have fledged. A buffer zone restricting active construction activities is generally applied around the nest.

Significant Valleylands

Valleylands were identified by the Municipality of Clarington Official Plan (2012) and pertain to the Farewell and Harmony Creek tributaries. The proposed project does not affect the Farewell Creek and will potentially affect the Harmony Creek where the 230 kV

configuration spans the creek and the installation of two permanent creek crossings (**Section 3.1.4**). In order to ensure that the integrity of these systems is maintained, erosion and sediment control plans will be developed in conformance with CLOCA and their guidelines. Further, protective measures to reduce adverse effects and restoration will be undertaken in a manner similar to that outline in significant woodlands.

Significant Wildlife Habitat

There are no areas on the site that would be considered as Significant Wildlife Habitat based on field studies and an assessment of the features and habitat. As presented in **Section 3**, there were no a) seasonal concentration areas, b) rare or specialized habitat c) habitat of Species of Conservation Concern or d) animal movement corridors.

However as discussed under Significant Woodlands, approximately 1.5 ha of forest could be removed (discussed in **Section 3**). Hydro One is committed to a 2:1 replacement of the vegetation loss and has designated areas within the project area for this purpose. This area will not only satisfy this replacement, but was also chosen to develop natural linkages within the project area and adjacent natural systems. The development of natural linkages will be in discussion with CLOCA and MNR.

Species at Risk Habitat

A search of the NHIC (2010a) database indicated that no SAR have been recorded recently (post-1989) within the project area. The MNR indicated that butternut, bobolink and eastern meadowlark may be found in the project area given that this is within their natural range.

The presence of butternut trees was confirmed during field surveys. Fewer than 10 retainable butternut trees may be removed during construction to accommodate the transmission line configuration required to access and egress the station. To mitigate any loss of butternut trees, Hydro One will consult with the MNR to acquire the necessary approval and fulfill the required replacement planting, as well as fulfill any additional requirements of a permit issued under Section 17C of the *ESA* for removal of butternut. The intent of replanting is to result in a net increase in seed production when the new trees are mature. This will benefit butternut in Ontario by resulting in increased diversity in the local gene pool and an

increased reproductive potential for the species. Tending and monitoring of the butternut seedlings will take place over a five year period to ensure that target survival rates are met. Butternut planting is intended to be undertaken in the restoration planting area (see **Figure 7-2**).

As noted earlier in **Section 3**, two federally (COSEWIC, 2012) threatened species, bobolink and eastern meadowlark, have natural ranges that coincide with the project area. Field surveys determined that the habitat within the project area was unsuitable for both species because of the presence of agricultural row crops throughout the site. In the past (pre-1989), loggerhead shrike, another provincially and federally threatened species, was observed in this area. Field surveys did not observe this species and determined that the habitat of row crops provided unsuitable habitat.

Although not listed as SAR, a number of avian species noted in the area were considered as Species of Conservation Concern. However, an assessment of the habitat requirements for these avian species for nesting was not supported by the habitat on or adjacent to the project area. Consequently these species were not considered further for any form of protection.

Hydrology

Construction and maintenance of the proposed project may require the traversing of tributaries to Harmony Creek and Farewell Creek. Hydro One has currently identified approximately four potential temporary crossings and two potential permanent crossings of intermittent watercourses within CLOCA's jurisdiction. The final determination of the number and location of the crossings required will occur in the final design stage, following EA approval. These watercourse crossings are anticipated to result in no significant effects to their flow rates.

Station drainage will be subject to an Industrial Sewage ECA under the *EPA*. The drainage design of the station will ensure that the pre and post construction area drainage is not significantly altered. An erosion and sediment control plan will be included with the stormwater management plan submitted as part of the application for an ECA. The ultimate

location of discharge will be determined at the design stage and will be subject to MOE approval.

The station has no emissions and the transformers are within containment with an oil/ water separator designed to capture any oil that may be released. The transformers themselves have design rupture points which allows the system to prevent releases to the environment should there be a transformer failure event. In addition, the station will be situated on land with a deep overburden of glacial till which has very low permeability. In the rare event that oil did escape the containment system, the response time by Hydro One would allow for cleanup of the oil in advance of any movement. Consequently, no effects to the groundwater hydrology of the study area are anticipated. Further, the monitoring well installed at the site will be maintained and monitored regularly for groundwater depth and quality.

Fish and Aquatic Wildlife Habitat

There are no fish or amphibian SAR species identified in the Harmony Creek and Farewell Creek tributaries associated with the Clarington TS project area; however, these tributaries likely contribute to seasonally direct fish habitat (Stantec, 2012). As water levels appear to be limited during summer months, fish may be limited to utilizing reaches downstream of the property. The potential changes to tributaries in the project area (i.e., installation of watercourse crossings) is not anticipated to affect fish communities downstream as flow through the culverts will be maintained in a similar pattern to the existing channel. Hydro One will consult with CLOCA when determining the size, type and location of any watercourse crossings required for the proposed project. Any watercourse crossing permit requirements and construction timing windows for coldwater streams will be determined in consultation with CLOCA.

Sediment introductions into the watercourses from work being completed in and adjacent to the watercourse can also cause potential impacts to fish habitat. Erosion and sedimentation will be prevented by installing appropriate erosion and sediment control measures prior to the start of construction as per the Hydro One (2009) "Environmental Guidelines for Construction and Maintenance of Transmission Facilities" and the Erosion and

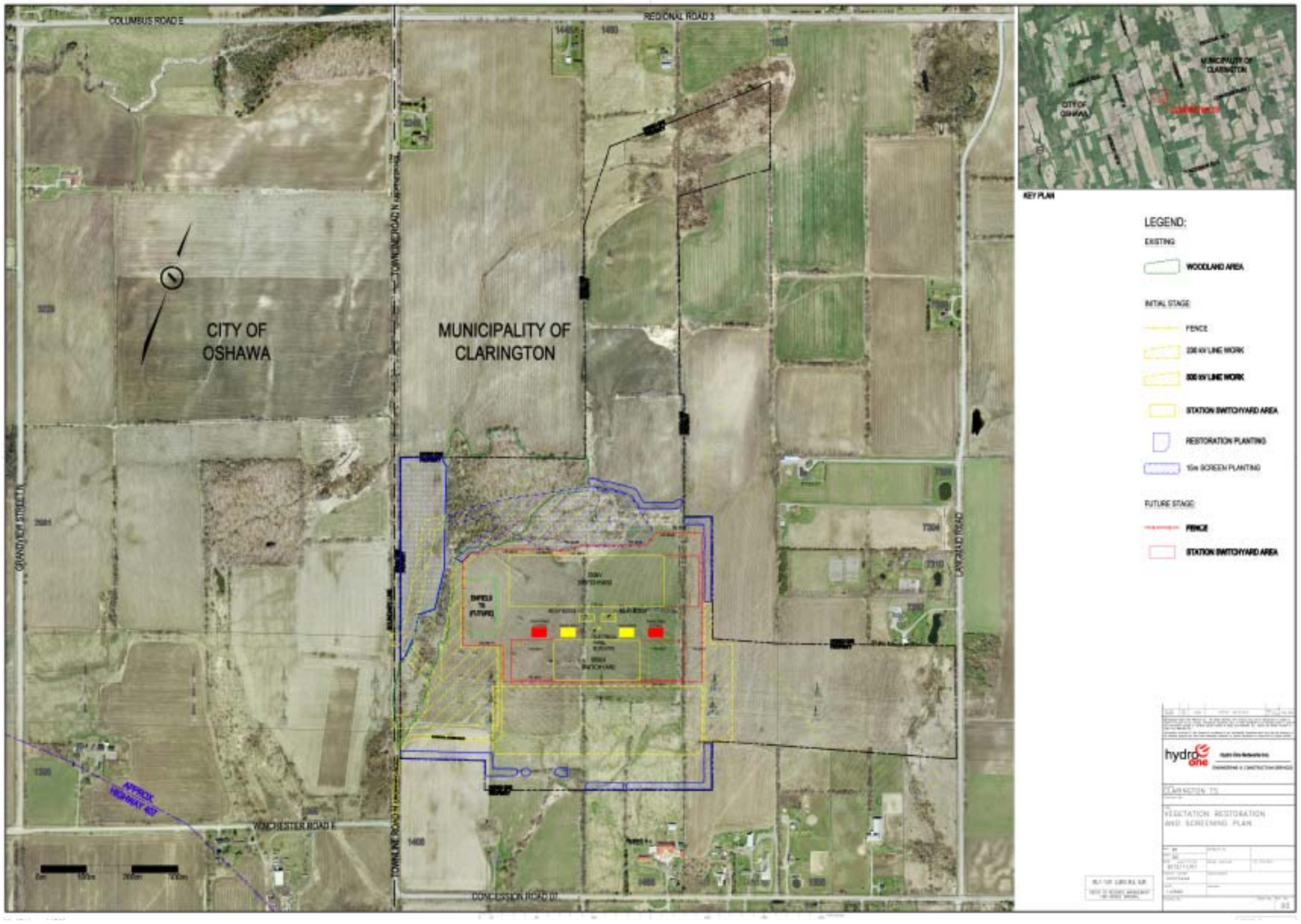
Sedimentation Control Guideline for Urban Construction (Greater Golden Horseshoe Area Conservation Authorities, 2006). Additional measures that will be implemented include:

- In-water work will comply with MNR timing windows;
- No laydown area, storage areas or refuelling will occur within 100 metres of any watercourse;
- Spill response plans will be in place during the construction and operation phases of the station;
- Construction ditching will be in place prior to site preparation;
- Stockpiles will be located away from watercourses and will contain their own erosion and sediment controls.
- Work areas will be restricted in size to retain compatible vegetation; and
- Access mats will be used to eliminate soil exposure and potential erosion.
- Restoration plantings will occur on affected areas (see **Figure 7-2**)

Wetlands

No Provincially Significant Wetlands occur either on or adjacent to the site. No non-designated wetlands were identified on site that would warrant a significant wetland designation. Regulations of the PPS do not apply to these wetlands; however, the wetlands are protected by the policies of the ORMCP (2002), Greenbelt Plan (2005) and Municipality of Clarington Official Plan (2012).

Figure 7-2: Vegetation Restoration and Screening Plan



7.3 Socio-Economic Environment

7.3.1 Public Safety and Traffic Control

Any construction poses a potential safety hazard if not properly controlled. The operation of heavy construction equipment represents a potential hazard to the public. Hydro One's Corporate policy states that "everyone will make safety a primary consideration in every decision that is made and every action taken." Hydro One mitigates safety issues by implementing safety measures during construction.

Hydro One is committed to ensuring the public's safety. Corporate policy states that "we will promote public awareness and education of safety issues related to our electrical facilities and we will comply with all legal requirements and follow good utility work practices to protect the public." To minimize the effect of construction on public safety, the location of the construction lay-down and access will be carefully selected. Construction areas will be signed and fenced, where appropriate. The construction schedule and site locations will be provided to Emergency Medical Services, Durham Regional Police, and the Municipality of Clarington Fire Services.

All work will be governed by the Hydro One Health, Safety and Environmental System policies and procedures. An ERP will govern work during station construction and operation.

Perimeter fencing will enclose the station and will be maintained to prevent public access.

Hydro One will continue to make available information about the project through notification and a pre-construction PIC. This will include, but not be restricted to:

- a description of construction activities and schedule;
- construction routes;
- road closures, as required; and
- Hydro One contact numbers.

Traffic disruptions at the construction entry/exit location may occur during construction. Hydro One will develop a traffic management plan with the Municipality of Clarington and the City of Oshawa, as well as monitor and respond to any resident and motorist complaints. To minimize disruption and/or delays to local traffic and emergency public safety services, advance notice will be provided to municipal emergency response units. Where appropriate, traffic control officers will be assigned to assist construction vehicle entry and exit. Hydro One will make best efforts to schedule construction activities in order to minimize adverse effects on local traffic.

7.3.2 Agricultural Resources

The station site is located on land that has been cleared for agricultural purposes. The site has been actively cultivated for many years. As indicated in **Section 3.1.1**, the soils in the project area are 80% Class 1 with no significant limitations for agricultural production and 20% Class 4 with severe limitations due to adverse topography.

To the extent possible, construction areas will be selected to minimize long-term loss of crop producing areas. The total area of cultivated land affected by the proposed TS project including the permanent access road will be about 16.4 ha. Agricultural land that is cleared or damaged during construction, including temporary warehousing areas, will be restored after construction is complete. Restoration techniques will be based on the Hydro One (2008) Environmental Guidelines for the Construction and Maintenance of Transmission Facilities. Hydro One will continue to contract the land outside the station fence to local farmers or agricultural interests for continued production.

7.3.3 Appearance of the Landscape

The proposed vegetation planting of the TS site will provide some screening of the station from the surrounding neighbouring properties and the public. The vegetation will consist of coniferous and deciduous plantings of trees and shrubs along the station south, east and partially north property edges. Where existing hedgerows are remaining, they will be augmented to provide a better visual buffer of the station.

In consultation with CLOCA and MNR, replacement plantings and natural linkages will be provide planting native species found at the site. By extending existing natural linkages such as existing hedgerows on the west side of the site to the wooded area and along the Harmony Creek tributary these create linkages for the area's wildlife. Butternut trees will also be planted on the west side of the site and may be used in the future for the Butternut Recovery Program.

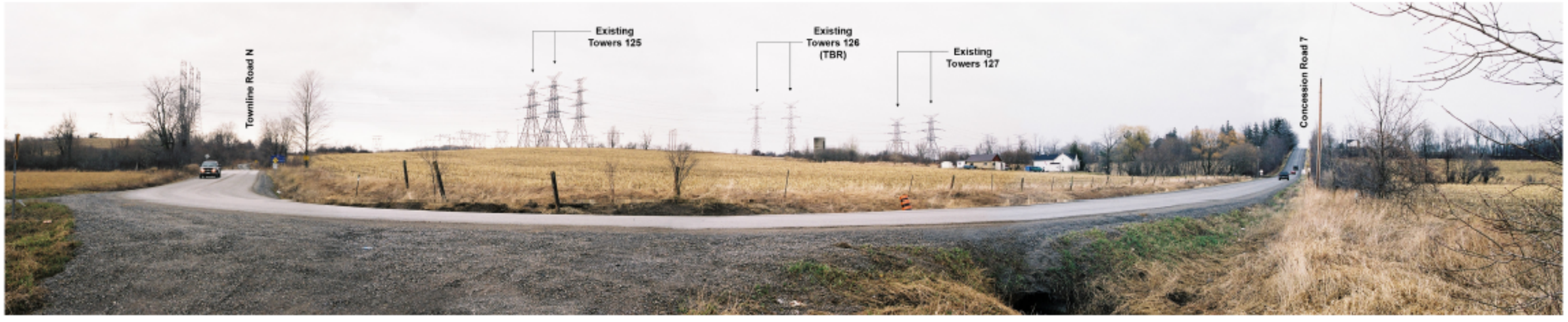
The installation of the proposed station will change the current landscape character in some measure. However, given the presence of 230 kV and 500 kV transmission lines overtime the station will blend into the existing transmission infrastructure.

The proposed plantings will mostly surround the new transformer station with a ribbon of natural greenery. Public views of the proposed project will mostly been screened by this green ribbon and roadside vegetation. Views from neighbouring properties will also be screened however, the station is large and the equipment in the station yard may not be fully screened from certain vantage points. Where views will be affected are from those neighbouring properties that are located on a higher elevation and therefore may look 'down' onto the station if viewed from a second storey. Given the presence of the existing 230 kV and 500 kV transmission lines the proposed project will blend into the existing infrastructure.

Please refer to **Figures 7-3 to 7-6** for comparisons of the existing condition and post-development simulation.

Figure 7-3: Photo Simulation – View looking Northeast from Townline Rd N and Concession Rd 7

EXISTING CONDITIONS



PROPOSED CONDITIONS

CLARINGTON TS CAMERA 01 PHOTO SIMULATION - VIEW LOOKING NORTHEAST FROM TOWNLINE ROAD N and CONCESSION ROAD 7

NOVEMBER 2012

hydro one Hydro One Networks Inc.
ENVIRONMENTAL SERVICES & APPROVALS

Figure 7-4: Photo Simulation – View looking West from Langmaid Rd

Figure 7-5: Photo Simulation – View looking South from Regional Rd 3

EXISTING CONDITIONS

PROPOSED CONDITIONS

CLARINGTON TS CAMERA 03 PHOTO SIMULATION - VIEW LOOKING SOUTH FROM REGIONAL ROAD 3

NOVEMBER 2012

Figure 7-6: Photo Simulation – View looking East from Grandview St N

EXISTING CONDITIONS

PROPOSED CONDITIONS

CLARINGTON TS CAMERA 04 PHOTO SIMULATION - VIEW LOOKING EAST FROM GRANDVIEW STREET NORTH

NOVEMBER 2012

7.3.4 Recreational, Mineral and Forestry Resources

There are no recreational, mineral and forestry resource impacts as a result of the proposed project.

7.3.5 Cultural Heritage Resources

The overall views of the project site from adjacent properties that are located at the edge of and outside the study area will be changed to some degree. By providing plantings that enhances the natural settings and reinforcing the edges of agricultural fields, the project site will have elements characteristic of the cultural heritage landscape that is found in the study area.

Using native species existing in the study area, the new plantings will have similar characteristics as the existing vegetation. Linkages will be created to connect the existing natural areas to the woodlands located within the project and study area. By providing this type of planting, the project area maintains and continues these natural settings. Planting vegetation along the edges to augment and enhance the existing hedgerows, the views will resemble the typical agricultural landscape as described in **Section 3.2.3** Appearance of the Landscape (Visual Appearance).

The above proposed vegetation and restoration works within the project area will mitigate views of the study area with minimal affect to the cultural heritage landscape. Views from surrounding properties will be similar to current views of agricultural fields with hedgerow edges. As discussed earlier, the station is large and views from certain vantage points of the station are unavoidable (i.e., from a higher elevation than the project site). However, the overall landscape views of the project and study area will be similar or closely resembling the current views of this landscape.

Details of the proposed vegetation and location of planting will be developed with consultation with the CLOCA, Municipality of Clarington and the City of Oshawa. Further field investigation and view assessments will be completed during construction and once the

station is constructed to identify any unwanted views and mitigation, where possible, is needed. A final vegetation mitigation plan will be completed.

Should any artifacts be uncovered during construction, a licensed archaeologist will be contracted to assess significance and if necessary develop an appropriate plan of action including notification of the MTCS, First Nations and Métis Communities.

Table 7-1: Summary of Potential Effects, Mitigation Measures and Residual Effects

Environmental Component	Potential Effects	Proposed Mitigation	Residual (Net) Effect
SHORT TERM EFFECTS			
Releases to the Environment			
Environmental noise	There is potential for noise emissions from site preparation and construction activities. Effects on noise will be temporary and limited to the site preparation and construction periods.	• Maintain equipment to ensure that operation conforms to normal air and noise parameters. • Noise and vibration are taken into account when deciding on equipment and work methods. • All work will conform with the municipal noise by-law (i.e., Municipality of Clarington by-law 2007-071). • Equipment will conform with NPC-115 publication from MOE • Inform local residents and businesses if activities need to be extended to facilitate their completion.	No residual effects are predicted.
Air Quality	Exhaust emissions from vehicles	• Equipment is maintained to minimize exhaust • Hydro One Fleet Services has an Environmental Program which includes anti-idling and GPS installation in vehicles	No residual effects are predicted
	Particulate Emissions (dust)	• Use effective dust suppression techniques, such as on-site watering and street cleaning.	No residual effects are predicted.
Solid Waste	Solid waste will be generated during construction.	• Test all solid waste for proper waste classification. • Solid waste will either be recycled or disposed at a licensed landfill.	No residual effects are predicted.

Environmental Component	Potential Effects	Proposed Mitigation	Residual (Net) Effect
Mud	There is potential for mud from the site preparation and construction activities. Mud will be temporary and limited to the site preparation and construction periods.	• Mud will be removed from roads, as required. • Mud mats may be installed	No residual effects are predicted.
Groundwater and Stormwater	There is a potential to encounter groundwater during site preparation and stormwater will be encountered during construction.	• Develop dewatering protection measures during the detailed engineering phase of the project. • Temporary perimeter ditches will encompass the construction site until the installation of permanent ditches to control stormwater and limited erosion and sedimentation. • Contain all collected water (i.e. pump-out water) until tested for disposal. • Conduct water testing during construction, as required prior to disposal. • Obtain Permit-To-Take-Water (PTTW) for dewatering greater than 50,000 L/day if required.	No residual effects are predicted.
Spills	Incidental spills of oil, gasoline and other liquids during construction.	• Implement appropriate clean-up measures as per the ERP. • All refuelling or lubrication of equipment at least 120 metres away from waterbodies. • Refuelling to be undertaken in a designated location. • Locate spill kits in potential spill locations (i.e. refuelling locations).	No residual effects are predicted.

Environmental Component	Potential Effects	Proposed Mitigation	Residual (Net) Effect
Erosion	Soil may be lost during site preparation owing to rainfall. This loss may result in the sedimentation of adjacent natural features	• Temporary perimeter ditches will encompass the construction site until the installation of permanent ditches. • A Sediment Control Plan will be implemented in conformance with Greater Golden Horseshoe Area Conservation Authorities Erosion and Sedimentation Control Guideline for Urban Construction (2006)	No residual effects are predicted.

Environmental Component	Potential Effects	Proposed Mitigation	Residual (Net) Effect
Socio-Economic			
Traffic	Short-term disruption of traffic in project vicinity due to equipment and materials delivery and worker vehicular traffic.	• Provide advance notice to the Municipality of Clarington emergency response units. • Develop traffic control plan with approval from the Municipality of Clarington. • Erect road signage and provide notification/pre-construction PIC to area residents on timelines and construction route. • Where appropriate, assign traffic control officers to assist construction truck entry and exit. • Provide proper training, safety attire and equipment to the traffic control officers.	No residual effects are predicted.
Public safety	Public could be potentially exposed to typical construction hazards in the vicinity of the construction areas.	• Construction areas to be signed, fenced and locked where necessary. • The location of the construction lay-down and access areas to be carefully selected to minimize any potential effect on public safety. • The construction schedule to be discussed with the municipal planning staff and provided to the local emergency services. • Nearby residents to be informed prior to construction.	No residual effects are predicted.
Archaeological and cultural heritage resources	Based on Stage 2 & 3 archaeological assessments (ASI, 2012) no effects are predicted.	• Should any artifacts be found during construction, all work will be halted and Hydro One will contact MTCS and the First Nation and Métis Communities.	No residual effects are predicted.

Environmental Component	Potential Effects	Proposed Mitigation	Residual (Net) Effect
	No built heritage and cultural heritage landscapes are present and no effects are predicted. .	• Continued cooperation MTCS and the Municipality of Clarington • Visual effects on neighbouring properties cannot be mitigated during construction.	No residual effects are predicted. No significant effects are predicted.
Visual Aesthetics	Visual aesthetics during construction	• Visual effects on neighbouring properties cannot be mitigated during construction.	No residual effects are predicted. No significant effects are predicted.
LONG TERM EFFECTS			
Releases to the Environment			
Environmental Noise	Noise emitted by the transformers during operation	• The station will be designed to comply with provincial regulations. • The station will be approved under the Environmental Protection. Acoustic barriers will be installed as required to meet MOE requirements under the *EPA*.	No residual effects are predicted.
Natural Environment Features			
SAR	Removal of retainable butternut trees.	• Obtain approval for a Butternut Planting Plan under SAR legislation.	No residual effects are predicted. The Plan will provide a net benefit.
Terrestrial features	Vegetation removal and displacement of nesting birds	• Clearly demarcate limits of vegetation removal. • Fell all trees parallel with existing corridor.	No residual effects are predicted.

Environmental Component	Potential Effects	Proposed Mitigation	Residual (Net) Effect
		• Dispose of all woody material. • Vegetation clearing outside of migratory bird nesting season (February 1 to August 31), if practicable. Otherwise, conduct a pre-construction survey to identify breeding bird nests and determine buffer requirements. • No disturbances of nests found until young have fledged. • Confine construction access to maximize retention of compatible vegetation. • Restorative planting under transmission lines with compatible native species. • Restorative planting adjacent to the project area at a 2:1 ratio of area of trees removed to area planted. Efforts will be made to create/enhance natural linkages between forested areas, as determined though consultation with CLOCA and MNR.	Restorative planting would provide long-term net benefit regarding increased linkage and woodland size.
Aquatic features	Watercourse crossings (temporary and permanent) will be required for construction and maintenance purposes.	• Installation of proper creek crossing devices (i.e., culverts) as determined through consultation with CLOCA. • Equalization culverts may be used in low-lying wet areas. • All equipment and material is stored or stockpiled away from water.	No residual effects are predicted.
	Creek bank erosion and/or sedimentation of creek due to work near watercourses.	• Sediment control devices are to be installed to control sedimentation of watercourses in conformance with Greater Golden Horseshoe Area Conservation Authorities Erosion and	No residual effects are predicted.

Environmental Component	Potential Effects	Proposed Mitigation	Residual (Net) Effect
		Sedimentation Control Guideline for Urban Construction (2006). • Where possible, retain vegetative buffers and selective cutting of trees near watercourses.	
	Vegetative removal adjacent to creek banks.	• Restorative planting along creek banks with compatible native species, as determined through consultation with CLOCA and MNR. • Restrict construction activity to creek banks and erect protective barriers.	No residual effects are predicted.
	Creek bank erosion and/or sedimentation of creek due to station drainage outfall.	• Vegetation replacement with native species along watercourses. • Seed all areas between the station fence and watercourse to increase the vegetative buffer. • Station drainage outfall designed to dissipate energy of discharge and eliminate erosion of drainage channel. • Discharge flow designed to meet preconstruction flows to watercourse.	No effects are predicted.
Socio-Economic			
Visual Aesthetics	Public views of the station from adjacent properties and roadways.	• Existing hedgerows will be augmented to increase the screening of the station	Low residual effects are predicted.
	Views of the proposed station from area residents.	• Additional planting of trees and shrubs will be located along the project area limits where possible to provide screening from adjacent landowners and the public.	Diminishing effect as vegetation matures
Agriculture	Loss of agricultural land	• Designate lands still suitable for agricultural use after construction • Restore all designated lands as required for	No residual effects are predicted.

Environmental Component	Potential Effects	Proposed Mitigation	Residual (Net) Effect
		agricultural use • Enter into contracts for agricultural use of lands with tenant farmers	
Hydrology	Contamination of well/groundwater from spills	• See **Spills** • Installation of transformer containment and oil/water separator • Drainage application to MOE, including containment subject to an ECA for Sewage Works • Glacial till retards water penetration (low aquifer vulnerability area) • Sample monitoring wells on a regular basis.	No residual effects are predicted.

8. Monitoring Program

Monitoring helps to confirm that predictions of effects are accurate and mitigation measures are effective. Monitoring also confirms that the commitments, conditions of approval, where applicable, and compliance with other environmental legislation, e.g., the *EPA*, 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 6**, a project-specific Environmental Specification will be prepared to guide construction activities for both lines and station work. The specification will be based upon the commitments, requirements of all relevant environmental legislation, terms and conditions of approval (if any) and good environmental construction practices, e.g., as set out in Hydro One (2009) "Environmental Guidelines for Construction and Maintenance of Transmission Facilities".

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 any ongoing monitoring requirements. The plan will be put in place to ensure that the project is constructed in compliance with the:

- commitments made in the Class EA;
- terms and conditions of other permits, licenses and approvals; and
- other legislated requirements.

Some issues monitored during construction will include:

- dust levels;
- erosion and sedimentation;
- construction spills;
- waste materials management;
- groundwater, slurry and pump-out water management;
- traffic management;
- protection of vegetation and other natural features (i.e., creeks);

- stormwater management measures at the construction site; and
- vegetative restoration and screening.

A post-construction monitoring program will include inspection of areas that have been restored, including any newly planted trees and any other vegetation, ditch crossings and potential erosion areas identified during construction, as required. The effects of the proposed project, the effectiveness of the mitigation approaches and the need for remedial action will be assessed in the program.

9. Conclusion

The OPA has advised Hydro One that OPG's Pickering Nuclear Generating Station is approaching its final years of operation and will be retired between 2015 and 2020. When the generating station is removed from service, its 3,000 MW of capacity must be replaced by a corresponding amount of power through Hydro One's transmission system.

Existing transmission facilities serving the Pickering, Ajax, Whitby, Oshawa and Clarington areas are not capable of meeting the load restoration requirements specified within the Ontario Resources and Transmission Assessment Criteria (ORTAC) document issued by the Independent Electricity System Operator. The subject 500/230 kV transformer station would enable meeting the requirements specified in ORTAC.

Based on their planning studies, the OPA has recommended Hydro One to build a new transformer station by spring of 2015 on a property acquired via expropriation in 1978 for this purpose. It is Hydro One's understanding that this property is the only reasonable alternative from a technical and economic perspective.

Proposed Project

Hydro One's proposed undertaking involves a new 500/230 kV transformer station (TS) and the associated line work. The proposed Clarington TS is to be located on Hydro One property, in the Municipality of Clarington, just east of the City of Oshawa, in Durham Region, northeast of Concession Road 7 and Townline Road North.

Contingent on the successful completion of the Class EA process, construction will start in March 2013 to achieve the planned in-service date of spring 2015.

Class EA Process

The proposed Clarington TS project is subject to the Class EA process, in accordance with the Ontario *EA Act*.

The Class EA process for the proposed project included an assessment of the existing natural and social environment and their sensitivity to the proposed project, prediction of potential effects, identification of mitigation measures and a summary of the project consultation undertaken.

Since May 3, 2012, Hydro One has conducted extensive public and government agency consultations to inform stakeholders about the proposed project, as well as to identify and resolve potential concerns. Government agencies and officials were consulted. First Nations and Métis communities, affected property owners and other interest groups were also consulted by way of meetings and/or written or telephone communications, public information centres and notification of the Draft ESR Review Period.

Potential short term and long term environmental effects were identified and corresponding mitigation measures were developed to address these effects. No adverse residual effects due to TS operation and maintenance were identified.

Draft Environmental Study Report Review Period

This draft ESR has been prepared in compliance with the requirements of the *EA Act* and describes the Class EA process that has been undertaken for the proposed project.

Hydro One is providing a 30-day Review Period to allow First Nations and Métis communities, government agencies and officials, affected property owners and interested public to review the draft ESR. This draft ESR is being made available for review and comment from Thursday November 15, 2012 to Monday December 17, 2012.

Hydro One will respond to and make best efforts to resolve any issues raised by concerned parties during the review period. If no concerns are expressed, Hydro One will finalize the ESR and file it with the MOE. The project will then be considered acceptable and may proceed as outlined in the ESR.

This proposed project will be implemented in full compliance with the requirements of the Class EA process as outlined in ESR, incorporating input from the public, municipalities,

agencies and other potentially affected parties. Hydro One will seek all environmental approvals and permits required for the proposed project.

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11. Glossary

Archaeological sites	Archaeological site means any property that contains an artifact or any other physical evidence of past human use or activity that is of cultural heritage value or interest (MTCS, 2010).
Built heritage resources	Built heritage resources means one or more significant buildings, structures, monuments, installations or remains associated with architectural, cultural, social, political, economic or military history and identified as being important to a community (MTCS, 2010).
Cultural heritage landscapes	Cultural heritage landscape means a defined geographical area of heritage significance that human activity has modified and that a community values. Such an area involves a grouping(s) of individual heritage features, such as structures, spaces, archaeological sites and natural elements, which together form a significant type of heritage form distinctive from that of its constituent elements or parts. Heritage conservation districts designated under the Ontario Heritage Act, villages, parks, gardens, battlefields, mainstreets and neighbourhoods, cemeteries, trails, and industrial complexes of cultural heritage value are some examples (MTCS, 2010).
Development	Means the creation of a new lot, a change in land use, or the construction of buildings and structures, any of which require approval under the *Planning Act*, the *Environmental Assessment Act*, or the *Drainage Act*, but does not include: a) The construction of facilities for transportation, infrastructure and utilities uses, by a public body, or b) For greater certainty: i) The reconstruction, repair or maintenance of a drain approved under the *Drainage Act* and in existence on November 15, 2001: or The carrying out of agricultural practices on land that was being used for agricultural uses on November 15, 2001 (MAH, 2002).

Greenbelt Plan	The Greenbelt Plan is an overarching plan where and how future growth should and should not occur in order to protection to the agricultural land base and ecological features and functions on the landscape. The plan includes and builds upon the protections of the ORMCP (MAH, 2005).
Infrastructure	Physical structures (facilities and corridors) that form the foundation for development. Includes: sewage and water systems, septage treatment systems, waste management systems, electric power generation and transmission, communication/telecommunications, transit and transportation corridors and facilities, oil and gas pipelines and associated facilities (PPS, 2005).
Oak Ridges Moraine Conservation Plan (ORMCP)	The ORMCP is an ecologically based plan that takes precedence over municipal official plans and was established for land use and resources management direction for the protection of 190,000 hectares of land and water within the Moraine (MAH, 2002).
Prime Agricultural area:	Areas where *prime agricultural lands* predominate. This includes: area of *prime agricultural lands* and associated Canada Land Inventory Class 4-7 soils; and additional areas where there is a local concentration of farms which exhibit characteristics of ongoing agriculture. *Prime agricultural areas* may be identified by the Ontario Ministry of Agriculture and Food using evaluation procedures established by the Province as amended from time to time, or may also be identified through an alternative agricultural land evaluation system approved by the Province (PPS, 2005).