Guelph Area Transmission Refurbishment

Class Environmental Assessment
Draft Environmental Study Report

hydro one

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August 2012

Report No. 12-3
Hydro One Networks Inc.
Environmental Services and Approvals
483 Bay Street, North Tower, 12th Floor
Toronto, ON M5G 2P5

Executive Summary

Introduction and Proposed Undertaking

Hydro One Networks Inc. (Hydro One) is planning to refurbish parts of the aging high-voltage electricity infrastructure serving the City of Guelph, Waterloo Region and the surrounding area of Kitchener-Waterloo-Cambridge-Guelph.

The undertaking consists of three components:

- Upgrading the existing Cedar Transformer Station in the City of Guelph;
- Upgrading approximately five kilometres of existing transmission line from CGE Junction to Campbell Transformer Station, on an existing transmission line corridor in the City of Guelph; and
- Upgrading the existing Guelph North Junction (northwest of Guelph in the Township of Centre Wellington), to a switching station.

The proposed Guelph Area Transmission Refurbishment 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 Project.

Project Need

The Kitchener-Waterloo-Cambridge-Guelph (KWCG) area is one of the larger load centres in Ontario. Its electricity demand peaked at over 1,400 megawatts (MW) in the summer of 2011, and is expected to continue to grow over the next 20 years.

Despite its large electricity demand, there are no major sources of generation supply within the KWCG area. As a result, the area relies heavily on the transmission system to deliver electricity from the Ontario grid to its customers. There are four major sources of electricity supply from the transmission grid to the KWCG area— Detweiler TS in Kitchener from the west; the transmission line connecting Middleport TS in Hamilton and Detweiler TS from the south; Burlington TS from the east; and the transmission line connecting Orangeville TS and Detweiler TS from the north. All of these sources of supply, with the exception of the supply from the north, have reached or are approaching their maximum capacity for planning purposes.

To maintain a reliable supply of electricity to the KWCG area, the Ontario Power Authority (OPA), Hydro One Networks (Hydro One), local distribution companies (LDCs) and the Independent Electricity System Operator (IESO) are developing near and longer-term plans for the area. These plans will consider an integrated mix of solutions including conservation, local generation, distribution and transmission.

The Guelph Area Transmission Refurbishment Project is one of the solutions needed to provide increased capacity for growth in the South-Central Guelph and Kitchener areas, and to improve the reliability of electricity supply to customers in the KWCG area for the next decade.

Class EA Process

The Class EA process for the Guelph Area Transmission Refurbishment 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 public and agency consultation.

Public and Agency Consultation

Since June of 2009, Hydro One has conducted comprehensive public, First Nations and government agency consultation to inform stakeholders about the Project, as well as identify and resolve

potential concerns. Provincial ministries, elected officials, and municipal planners were consulted throughout. First Nations, affected area residents and businesses and other interest groups were also consulted by way of meetings, written or telephone communications.

Public Information Centres (PICs) were held for the Project in June 2009, November 2009 and June 2012. Local residents, businesses, interest groups, First Nations communities and government agencies were notified about the Project and the PICs through newspaper advertisements and Canada Post Unaddressed Ad mail or direct mailings. A project webpage was also created on Hydro One's website to keep the public and stakeholders informed about the status of the Guelph Area Transmission Refurbishment Project, at: http://www.hydroone.com/Projects/Guelph

Concerns expressed by the public primarily related to property values, electric and magnetic fields (EMF) and the visual effects of the transmission line to residents in the Deerpath Drive area.

Following the June 2012 PICs, and at the request of a community group from the west end of Guelph, options for refurbishment of the transmission line adjacent to Deerpath Drive were investigated.

60-Day Public Review and Comment Period

This draft ESR is being made available for public review and comment for 60 calendar days, from August 9, 2012 to October 9, 2012. Comments received during this review period, along with Hydro One's responses will be summarized in the final ESR. Any request asking for a higher level of assessment (Part II Order Request), for an Individual Environmental Assessment, will also be included in the final ESR. The final ESR will be filed with the Ontario Ministry of the Environment (MOE).

This project will be implemented in full compliance with the requirements of the Class EA process as outlined in the draft 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.

Findings and Conclusions

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 construction, operation or maintenance of the refurbished facilities were identified.

Hydro One will respond to and make best efforts to resolve any issues raised by concerned parties during the review period. The comments and issues raised will be documented in the final ESR. If no concerns are expressed, the ESR will be finalized and filed with the MOE and Hydro One will obtain any required approvals, licenses and permits and proceed with the Guelph Area Transmission Refurbishment Project.

Contingent upon the successful completion of the Class EA process, as well as approval from the Ontario Energy Board (OEB) for "Leave to Construct" approval under Section 92 of the *OEB Act,* detailed engineering and construction is expected to commence in the spring of 2013, with a planned in-service date of December 2015.

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF TABLES

LIST OF FIGURES

ACRONYMS

Acronyms

am	Ante meridiem (before noon)
ASI	Archaeological Services Inc.
CGE	Canadian General Electric
Class EA	Class Environmental Assessment for Minor Transmission Facilities
CN	CN North America
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
EA Act	*Environmental Assessment Act*
EA	Environmental assessment
EA Guide	Guide to Environmental Assessment Requirements for Electricity Projects
ECA	Environmental Compliance Approval
e.g.	For example (exempli gratia)
EMF	Electric and magnetic fields
EMS	Emergency Medical Services
EPA	*Environmental Protection Act*
ESR	Environmental Study Report

et al.	And others (et alii)
FPTRPC	Federal Provincial Territorial Radiation Protection Committee
FWCA	Fish and Wildlife Conservation Act
Hydro One	Hydro One Networks Inc.
i.e.	That is (id est)
IESO	Independent Electricity System Operator
Inc.	Incorporated
Jct	Junction
KWCG	Kitchener-Waterloo-Cambridge-Guelph
LDC	Local distribution company
MBCA	Migratory Birds Convention Act
MNR	Ontario Ministry of Natural Resources
MOE	Ontario Ministry of the Environment
MTCS	Ontario Ministry of Tourism, Culture and Sport
MW	Megawatts
NHIC	Natural Heritage Information Centre
NHS	Natural Heritage System
OEB	Ontario Energy Board
OESO	Ontario Electricity System Operator
OGS	Ontario Geological Survey

OMMAH	Ontario Ministry of Municipal Affairs and Housing
OPA	Ontario Power Authority
OPGW	Optical Ground Wire
PIC	Public Information Centre
pm	Post meridiem (after noon)
PPS	Provincial Policy Statement
Project	Guelph Area Transmission Refurbishment
SAR	Species at risk
SARO	Species at Risk in Ontario
SS	Switching Station
TS	Transformer Station

MEASUREMENT UNITS

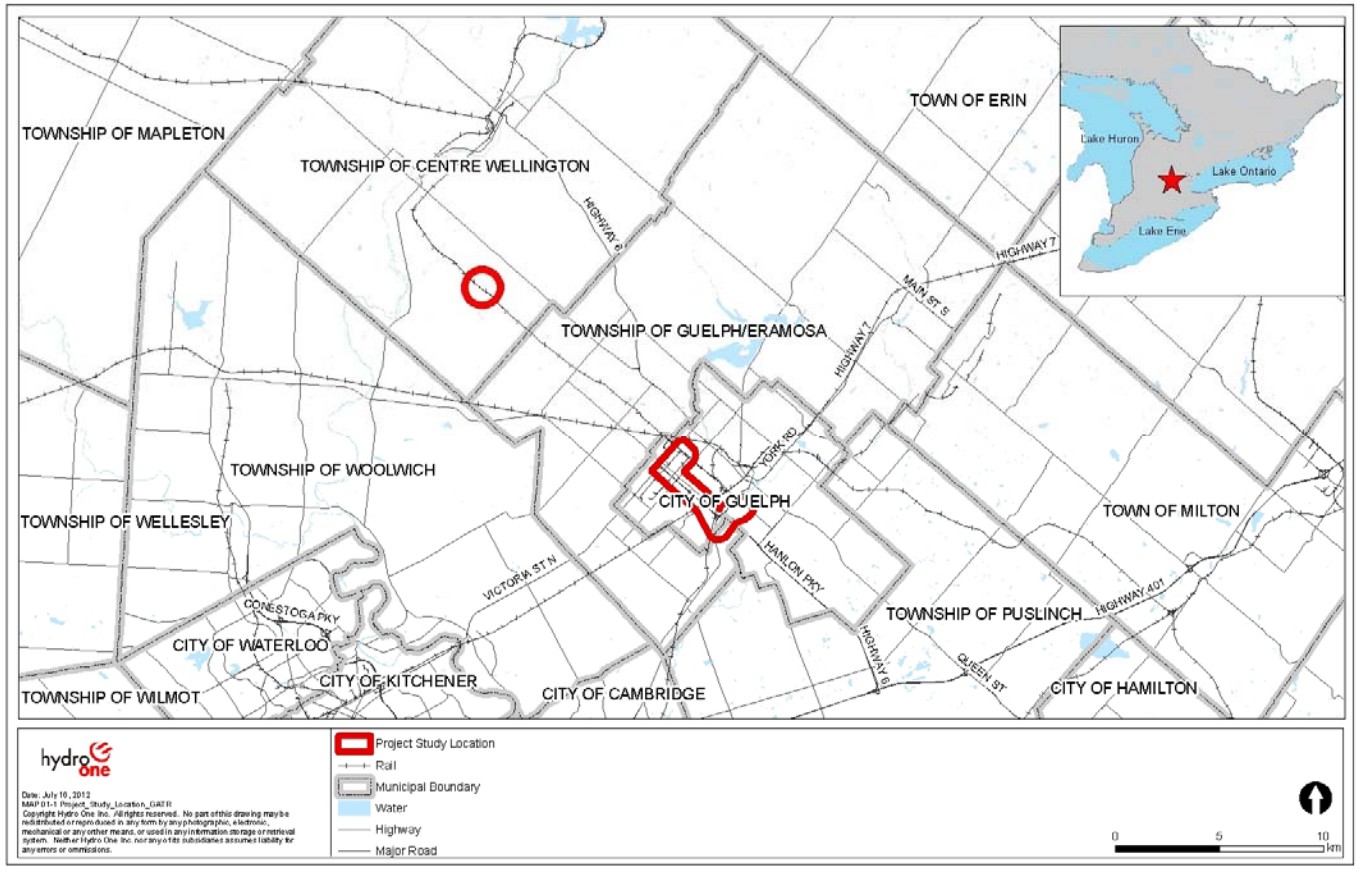
%	per cent
ha	hectare
km	kilometre
kV	kilovolt
m	metre
V	volt

1. Introduction

Hydro One Networks Inc. (Hydro One) is planning to refurbish parts of the aging high-voltage electricity infrastructure serving the City of Guelph, Waterloo Region and the surrounding area of Kitchener-Waterloo-Guelph-Cambridge. The location of the proposed Guelph Area Transmission Refurbishment Project is in the City of Guelph and the Township of Centre Wellington as shown 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 Guelph Area Transmission Refurbishment 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.

Figure 1-1: Project Location

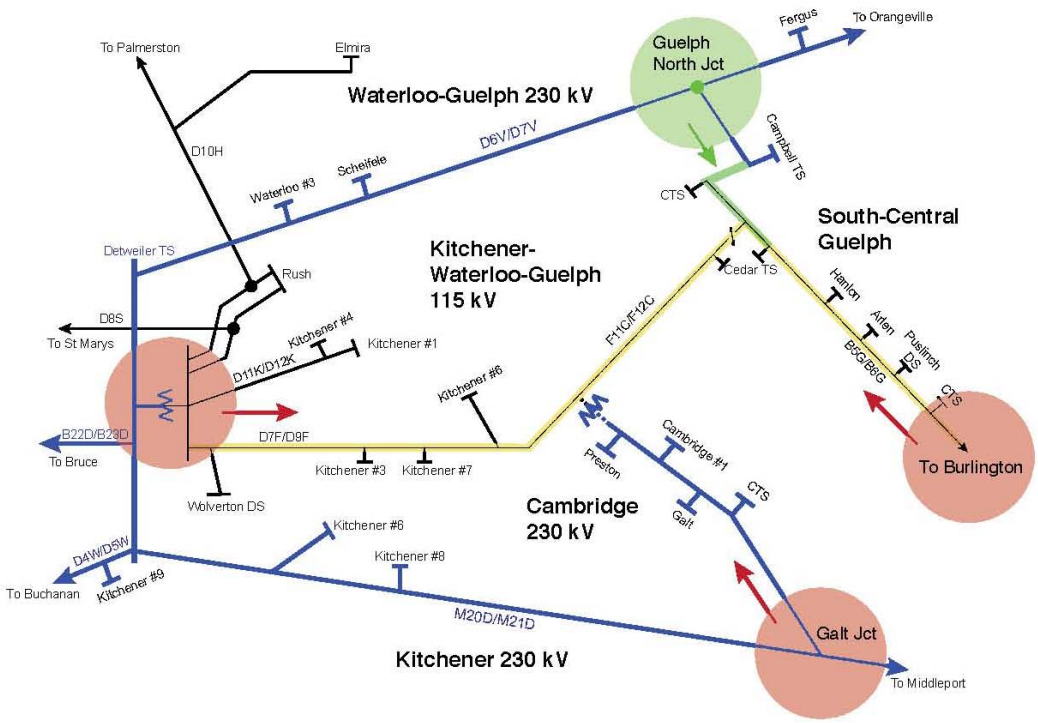


1.1. Need for the Undertaking

The Kitchener-Waterloo-Cambridge-Guelph (KWCG) area is one of the larger load centres in Ontario. Its electricity demand peaked at over 1,400 megawatts (MW) in the summer of 2011, and is expected to continue to grow over the next 20 years.

Despite its large electricity demand, there are no major sources of generation supply within the KWCG area. As a result, the area relies heavily on the transmission system to deliver electricity from the Ontario grid to its customers. There are four major sources of electricity supply from the transmission grid to the KWCG area, as shown in the red and green circles in **Figure 1-2**. All of these sources of supply, with the exception of the supply from the north, have reached or are approaching their maximum capacity for planning purposes.

Figure 1-2: Area Electricity Supply Diagram



To maintain a reliable supply of electricity to the KWCG area, the Ontario Power Authority (OPA), Hydro One, local distribution companies (LDCs) and the Independent Electricity System Operator (IESO) are developing near and longer-term plans for the area. These plans will consider an integrated mix of solutions including conservation, local generation, distribution and transmission.

The Guelph Area Transmission Refurbishment Project is one of the solutions needed to provide increased capacity for growth in the South-Central Guelph and Kitchener areas, and to improve the reliability of electricity supply to customers in the KWCG area for the next decade.

1.2. Purpose of the Undertaking

The purpose of the undertaking is to:

- allow access to electricity supply from the north (through Guelph North SS);
- provide backup capability to the area;
- improve the reliability of service to customers in the area by reducing the impact of transmission outages (such as the February 29, 2012 outage); and
- provide increased capacity for growth in the south-central Guelph and Kitchener areas to the end of the decade and beyond

This would be achieved by the following upgrades to existing Hydro One facilities:

- Upgrade Cedar Transformer Station in the City of Guelph;
- Upgrade approximately five kilometres (km) of transmission line from 115 kilovolts (kV) to 230 kilovolts, from CGE Junction (Jct) to Campbell TS in the City of Guelph:
- Upgrade Guelph North Jct, northwest of Guelph in the Township of Centre Wellington, to a switching station.

The in-service date for all of the proposed facilities is December, 2015.

1.3. Description of the Undertaking

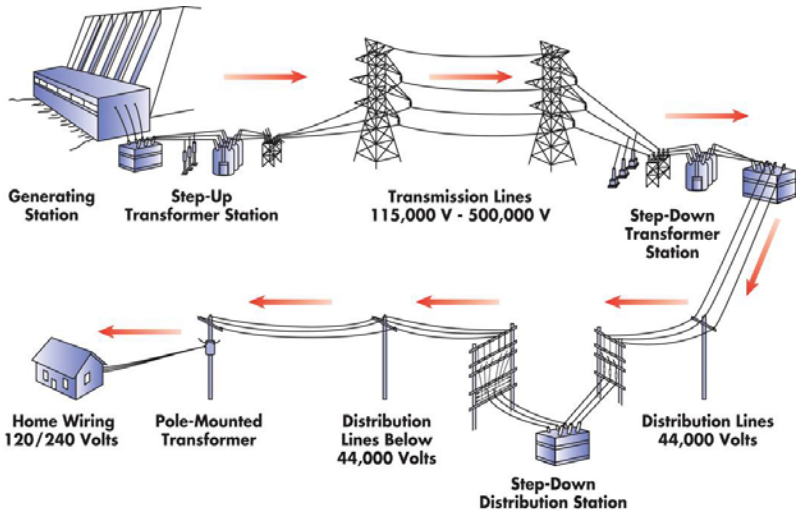
1.3.1. Introduction to Power Generation and Transmission

The role of a transformer station and transmission lines within the electric power system is illustrated in **Figure 1-3.** The purpose of a transformer station (TS) is to step up or step down the voltage of electricity being transmitted through transmission lines. A switching station (SS) enables switching of electrical transmission from one transmission line to another. A Junction (Jct) is where two transmission lines intersect.

Electricity is produced at nuclear, fossil fuel and hydroelectric generating stations and at wind generation facilities or other industrial facilities throughout the Province of 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.

Hydro One's transmission network supplies large customers and local distribution companies (LDCs). The LDCs directly supply customers (i.e. residential, farm and commercial) through their distribution infrastructure which consists of distribution stations and distribution lines with pole-mounted and pad-mounted transformers.

Figure 1-3: Role of Transformer Station and Transmission lines in Power System



1.3.2. The Proposed Undertaking

The undertaking consists of three components:

- Upgrading Cedar TS in the City of Guelph;
- Upgrading approximately five km of transmission line from CGE Junction (Jct) to Campbell TS in the City of Guelph; and
- Upgrading the Guelph North Jct, northwest of Guelph in the Township of Centre Wellington to a switching station.

Upgrade Cedar TS

The existing Cedar TS is located on Hydro One property in the south end of the City of Guelph, at 225 Edinburgh Road South. The TS property is adjacent to additional Hydro One property at 27 Municipal Street. The combined site currently hosts the Cedar TS, as well as offices for approximately forty lines and forestry field staff. Access to both the TS and the field offices is from Municipal Street.

The combined Hydro One property is bounded: on the east by Edinburgh Road South; on the north by homes and low-rise apartments on Cedar Street; on the south by a plaza and City of Guelph works yard and on the west by the Hydro One-owned right-of-way which currently has a recreational field adjacent to a school **(see Figure 1-6).**

Cedar TS is currently supplied from Burlington TS via the double circuit 115 kV line B5G/B6G and from Detweiler TS via the double circuit 115 kV line F11C/F12C. Cedar TS currently has four transformers and it is proposed that two new 230/115 auto-transformers be added along with the associated electrical equipment allowing for supply at 230 kV from circuits D6v/D7V from Campbell TS. Also at Cedar TS, the existing double circuit 115 kV line F11C/F12C will be connected to the B5G/B6G line.

All work at Cedar TS will be within the existing property boundaries.

Similar to the four existing transformers, the two new auto-transformers will be equipped with spill containment systems designed to prevent the unlikely incident of the loss of transformer insulating oil from entering the surrounding environment. The only source of liquid discharge will be the station drainage system which is designed to prevent rainwater or snowmelt from accumulating within the station property. The containment and drainage systems are subject to an Environmental Compliance Approval (ECA) under the *Environmental Protection Act (EPA)*. The application for containment and drainage systems approval will not only describe the proposed facilities, but also the Emergency Response and Preparedness Plan. Hydro One has obtained several hundred such approvals demonstrating that any potential effects can be readily mitigated through conventional controls.

There are no air emissions associated with the operation of a TS. In addition, Hydro one will ensure that noise levels at the TS meet environmental protection requirements. The station design is subject to an ECA for noise under the Ontario *Environmental Protection Act* (*EPA*) which will be sought following completion of the class EA process and prior to the start of construction.

No significant adverse effects to environmental features are expected as a result of the new auto-transformers or switchyard. The existing vegetation within the station will be selectively removed, as needed, with as much left as possible to continue to provide a natural visual buffer for the residents on Cedar Street and from the recreational field adjacent to a school on Hydro One right-of-way to the west.

Upgrade Transmission Line Section

The line section from Campbell TS to Cedar TS (B5G/B6G) will be required to be operated at 230 kV. Since the line section from CGE Jct to Cedar TS is already built for 230 kV operation (with existing 230 kV towers and conductors), it will not be required to be rebuilt and only the grounding conductor (skywire) is to be replaced with Optic Ground Wire (OPGW) conductor.

However, the line section from CGE Jct to Campbell TS was built in the 1950's to operate at 115 kV and has not been upgraded since. The existing double circuit 115 kV line on double wood pole structures from CGE Jct to Campbell TS will therefore be required to be removed and replaced with double circuit 230 kV steel structures, conductors and accessories. The line section

from CGE Jct to Campbell TS also requires replacement of the grounding conductor (skywire) with OPGW conductor. See **Figures 1-4, 1-5 and 1-6.**

As per Hydro One's policy on the use of steel pole structures in residential areas, it is recommended that steel poles be used, where technically feasible, in the Deerpath Drive residential area.

No significant adverse effects to environmental features are expected as a result of the proposed upgrade to the existing transmission line section.

Figure 1-4: Guelph Transmission Line, Tile 1

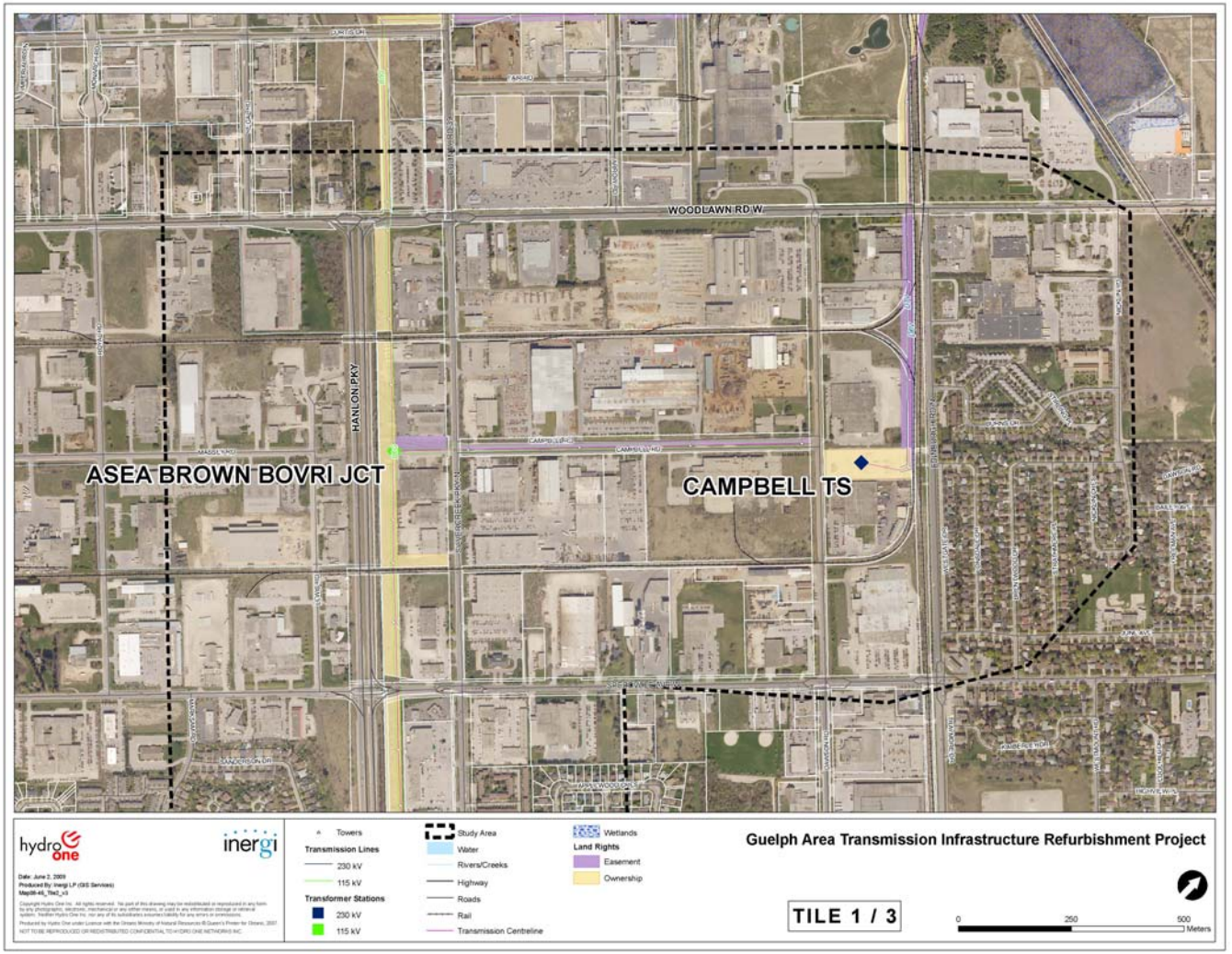


Figure 1-5: Guelph Transmission Line, Tile 2

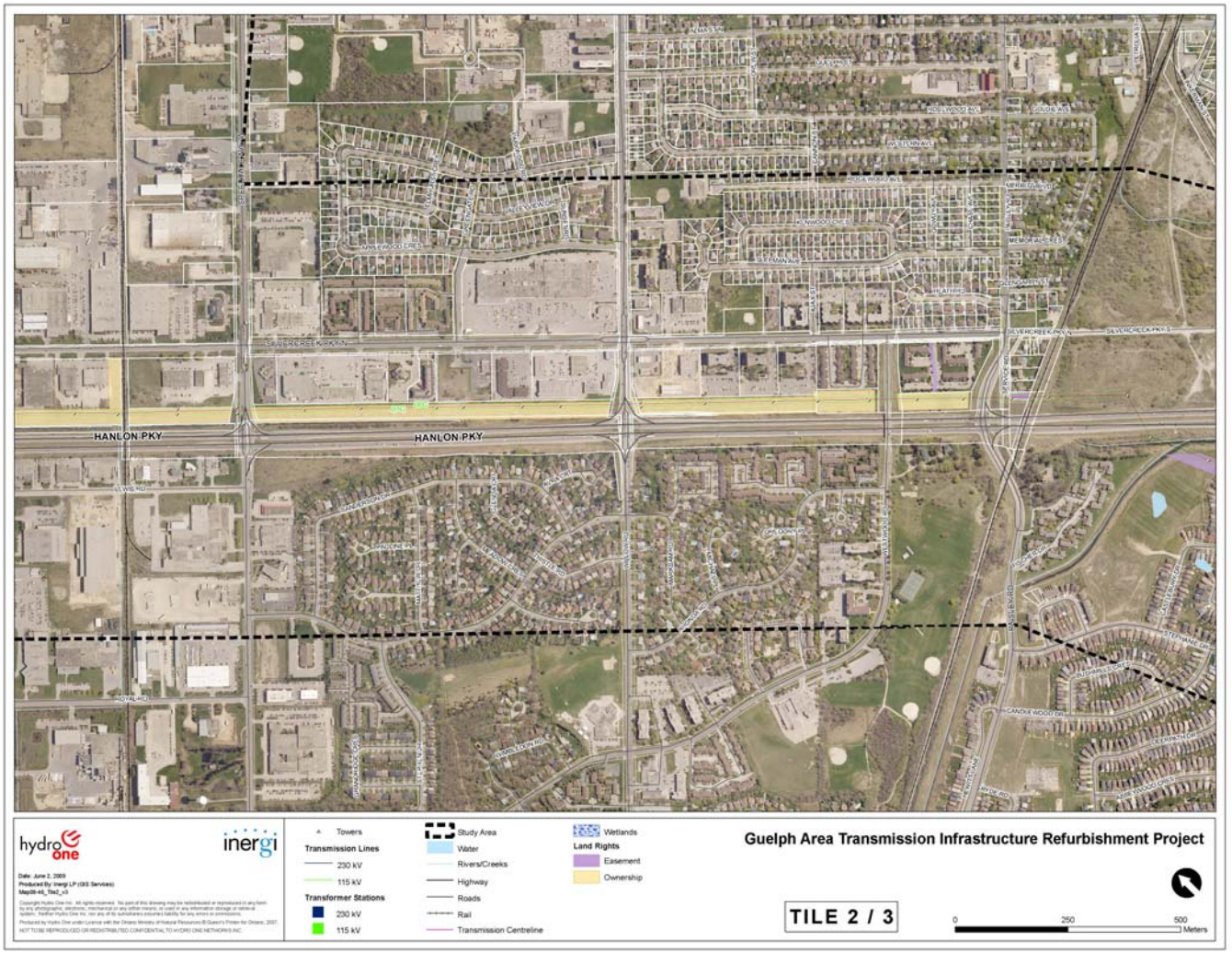
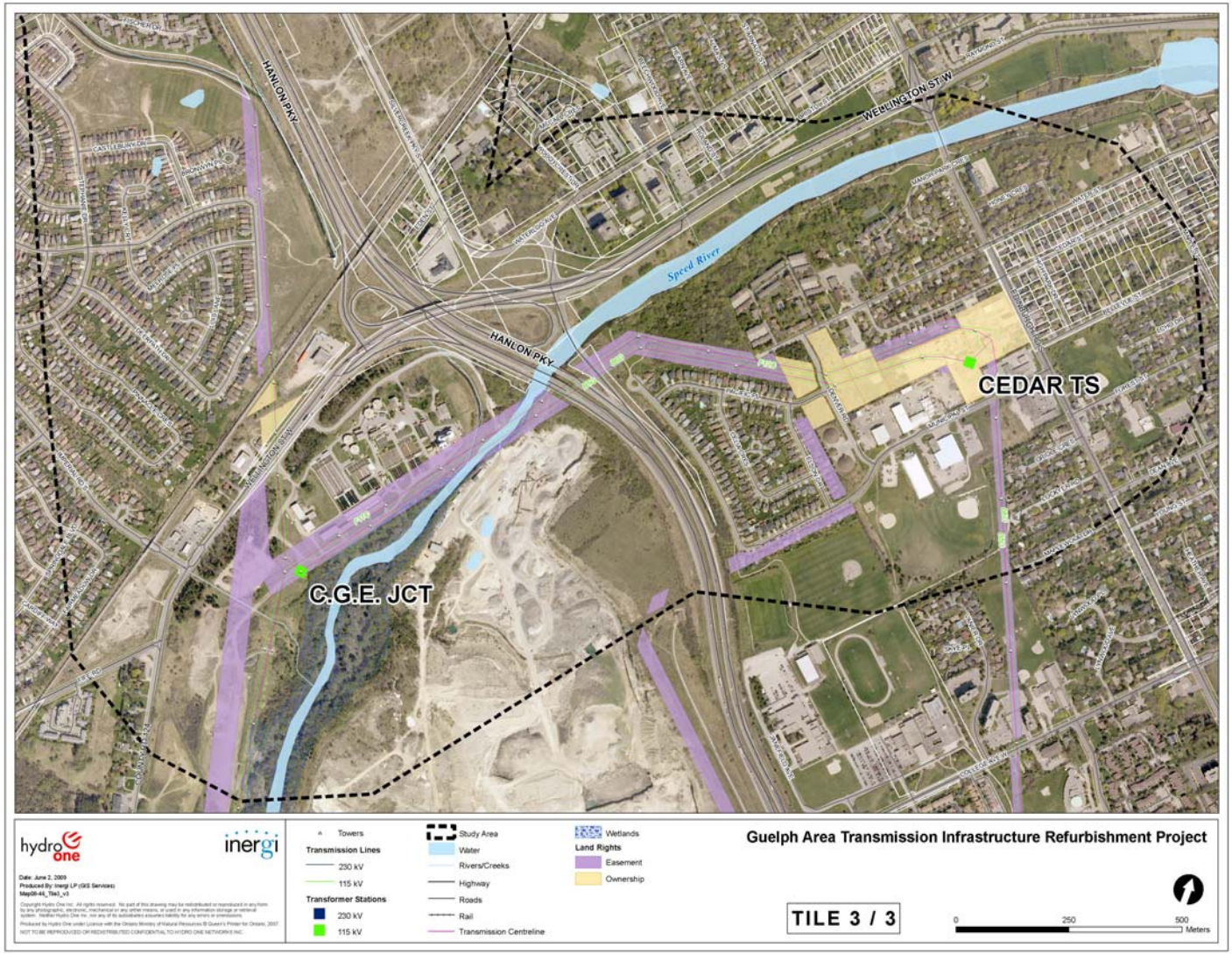


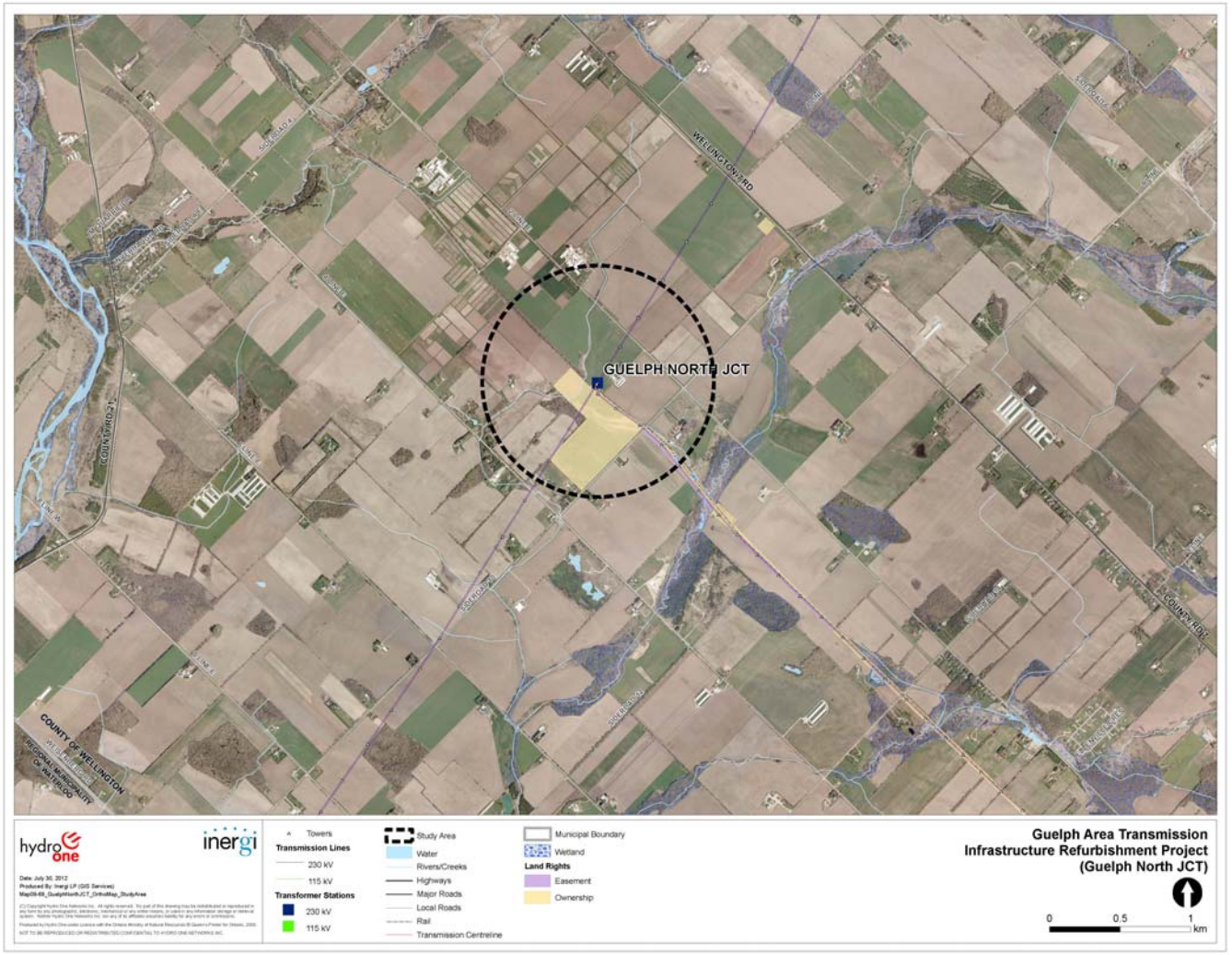
Figure 1-6: Guelph Transmission Line and Cedar TS, Tile 3



Upgrade Guelph North Jct

The existing Guelph North Jct is located in the County of Wellington, in the Township of Centre Wellington, just north of Sideroad 10 and west of 2 Line East. Here, on approximately 26 hectares (65 acres), owned by Hydro One, the double circuit 230 kV transmission line (D6V/D7V) between Detweiler TS in Kitchener and Orangeville TS is tapped south, to supply Campbell TS **(see Figure 1-7).**

Figure 1-7: Guelph North Junction



In order to improve the reliability of electrical supply to the City of Guelph, Guelph North Jct is proposed to be upgraded to Guelph North Switching Station (SS). The existing tap circuits to Campbell TS will connect to the upgraded transmission line section from Campbell TS to Cedar TS to provide supply to Cedar TS from D6V/D7V. Adding the future Cedar TS load on this D6V/D7V circuit tap requires upgrading the junction to a switching station to meet customer supply reliability requirements.

Access to the new SS would be from Sideroad 10.

No significant adverse effects to environmental features are expected as a result of the proposed SS.

Contingent on the successful completion of the Class EA and Ontario Energy Board (OEB) approval, construction will start in the spring of 2013 and all of the facilities will be in-service by the end of 2015.

1.4. Alternatives to the Undertaking

The "Do Nothing" alternative was considered for this project. However, the "Do Nothing" alternative does not solve the necessary supply need and reliability issue and was therefore deemed unacceptable.

Providing additional supply options through brand new transmission lines or stations (i.e. where there is currently no Hydro One easement or ownership rights) would also be unacceptable since the *Provincial Policy Statement (PPS) (OMMAH, 2005)* states that "the use of existing infrastructure and public service facilities should be optimized, whenever feasible, before consideration is given to developing new infrastructure and public service facilities".

1.5. Approval Process and Regulatory Requirements

1.5.1. Environmental Assessment Act Approval

This draft ESR has been prepared in accordance with the Ontario Hydro (1992) "Class Environmental Assessment for Minor Transmission Facilities" (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, First Nations and Métis and government agency consultation process, a review period for the draft ESR, and the filing of a final ESR with the Ontario Ministry of the Environment (MOE). The Class EA process is illustrated in **Figure 1-8**. 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 projects.

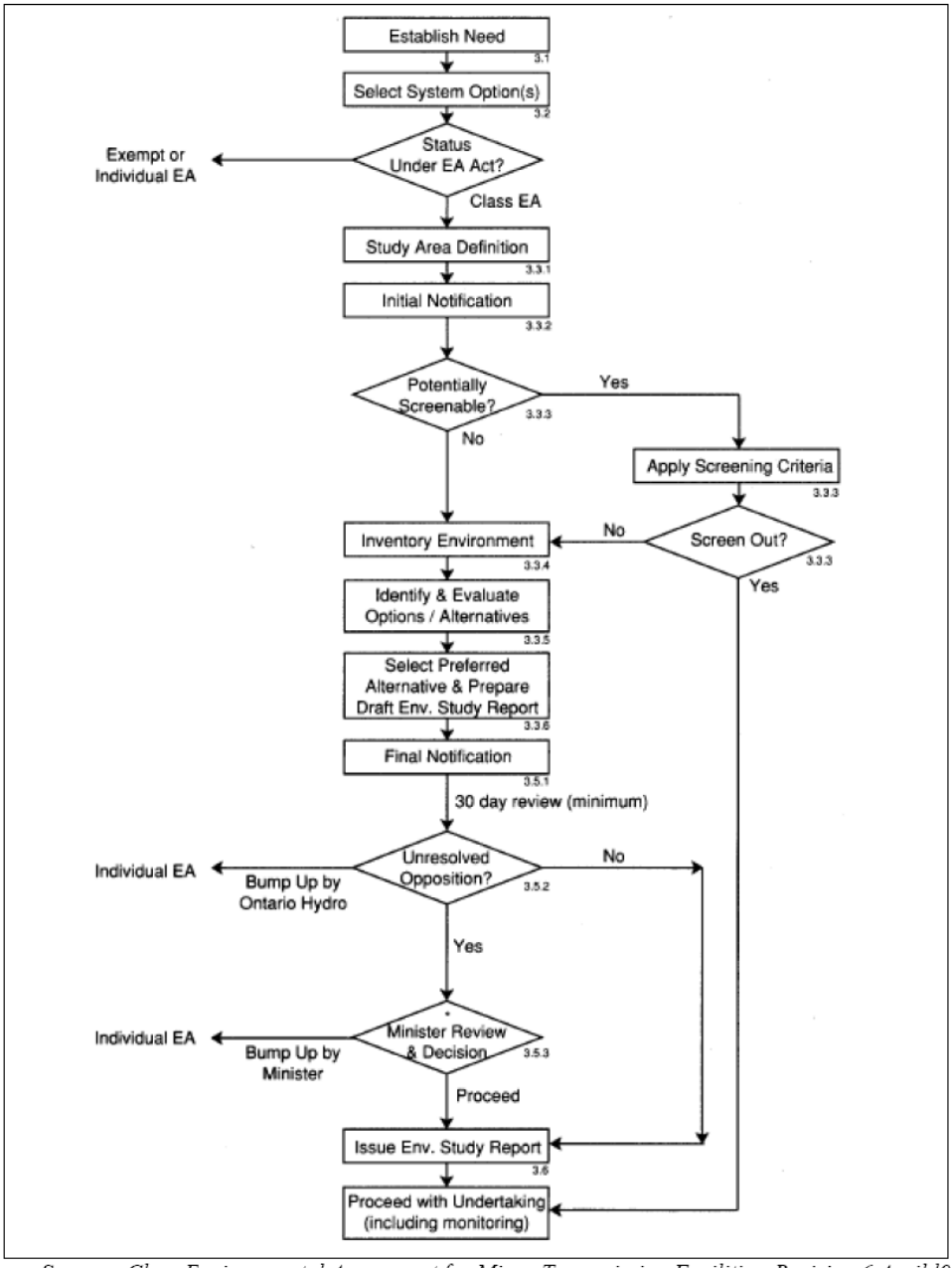
Transmission facilities covered under the Class EA process include:

- 115 kV transmission facilities 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, 230 or 500 kV TS sites; 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 must follow the Individual Environmental Assessment (EA) process (i.e., Category C projects in the EA Guide).

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

Figure 1-8: Class EA Study 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 undergo a higher level of assessment (referred to as a Part II Order request or "bump-up" 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 Class EA process, Hydro One will issue a final notification to the provincial ministries and agencies that have indicated an interest in the Project along with the directly affected and interested public and First Nations and Métis communities. This draft ESR is being made available for public review and comment for a period of 60 days. Hydro One will respond to and make best efforts to resolve any issues raised by concerned parties during the review period. These issues will be documented and the resolutions summarized in the final ESR.

After the final notification and public review and comment period, the ESR is filed with the MOE for information purposes.

If Hydro One cannot resolve the environmental concerns raised during the study, the objector(s) may request a Part II Order to elevate the Project status to an Individual EA. If Hydro One considers a request to be inappropriate 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 as to whether or not the Project requires an Individual EA. If the request for Part II Order is denied, there is an opportunity to appeal to the Minister.

1.5.2. Ontario Energy Board Act, 1998

The proposed project is also subject to OEB approval. The OEB is responsible for regulating natural gas and electricity utilities. In order to obtain approval to construct a transmission line longer than 2 km in length, proponents must submit an application to the OEB for "Leave to Construct" approval under Section 92 of the *OEB Act, 1998*. The OEB will grant approval if it finds that the Project is in the public interest.

Hydro One will file an application to the OEB seeking "Leave to Construct" for the line construction component of the Guelph Area Transmission Refurbishment Project in accordance with Section 92 of the *OEB Act, 1998* in the fall of 2012. The OEB review process for Hydro One's "Leave to Construct" application also includes opportunities for the public, First Nations communities and stakeholders to input and be involved.

1.5.3. 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 transmission projects. Hydro One will apply for all necessary permits and approvals in due course to ensure the Project conforms to all requirements, and that approvals are obtained in a timely manner following *EA Act* approval.

Permits and approvals likely applicable to the Guelph Area Transmission Refurbishment Project include:

- Environmental Compliance Approval (ECA) under the Ontario *Environmental Protection Act (EPA)* for noise;
- Environmental Compliance Approval (ECA) under the Ontario *Environmental Protection Act (EPA)* for drainage; and
- Encroachment permits for access and occupation.

As part of the requirements of an Archaeologist, a Clearance Letter would be required from the Ontario Ministry of Tourism, Culture and Sport (MTCS).

As this project meets the definition of a utility, it is 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 City of Guelph, the Township of Centre Wellington and the County of Wellington, regarding construction planning, schedules and local traffic management. Transmission facilities are also a permitted use in public streets and highways in accordance with the Ontario *Electricity Act, 1998,* s. 41 (1).

2. Class EA Process

2.1. Study Area Definition

In this Environmental Study Report, reference will be made to the regional or project study area, as well as two local study areas; the Guelph study area and the Centre Wellington study area. These study areas are defined as follows:

Project Study Area

The project study area or regional study area is generally defined by the municipal boundaries of the City of Guelph and the Township of Centre Wellington, to provide for the description of environmental and socio-economic features (see **Figure 2-2**).

Guelph Study Area

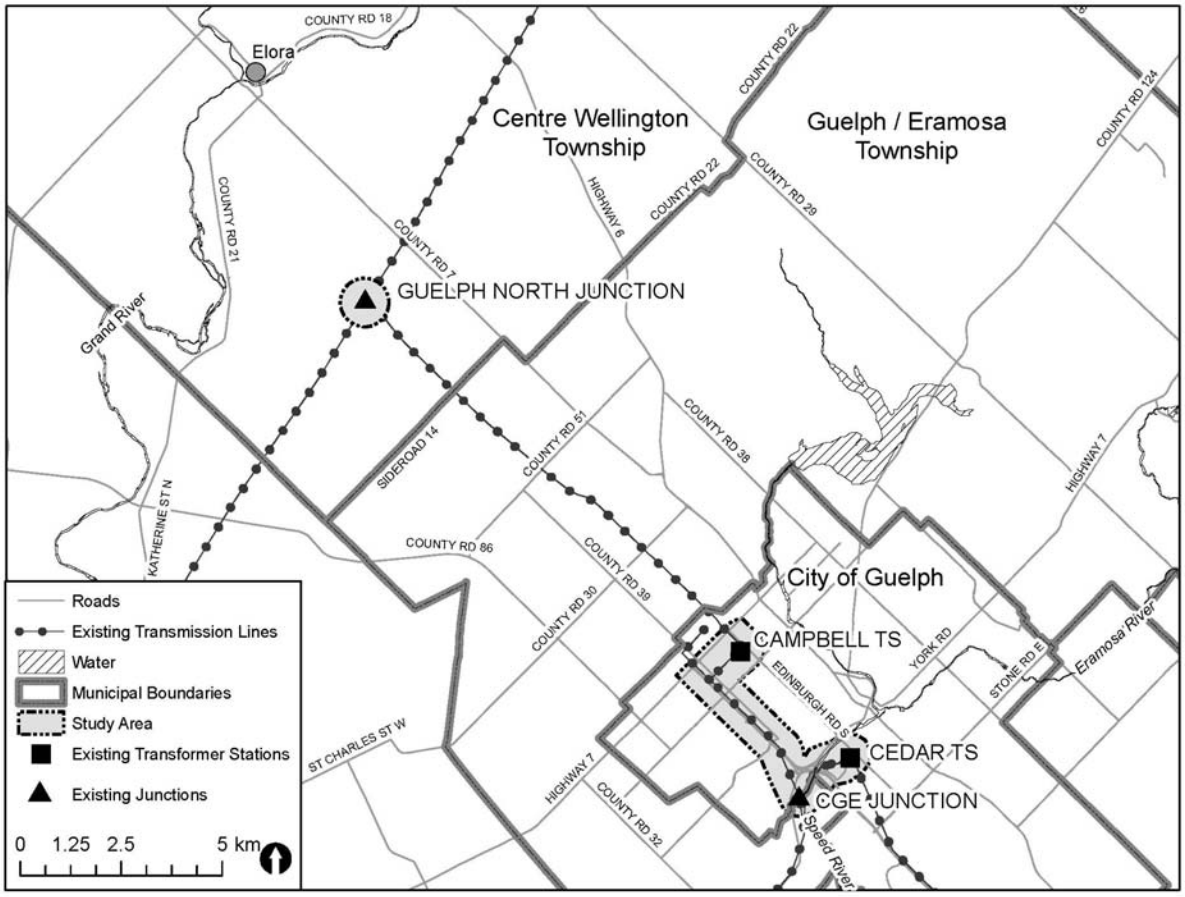
The Guelph study area is one of two local study areas in the project study area and includes a portion of the City of Guelph, encompassing the northwest side of the City of Guelph, roughly bound by College Avenue to the south, Woodlawn Rd to the north, Edinburgh Road to the east and the Hanlon Parkway to the west. The study area in Guelph extends approximately 5.2 km along a east-west axis (Hanlon Parkway) and is approximately 1 km wide (see **Figure 2-3**).

Centre Wellington Study Area

The Centre Wellington study area is one of two local study areas in the project study area and includes a small portion of the Township of Centre Wellington in Wellington County. The site is located west of Sideroad 10, between 2nd Line East and 4th Line East, extending approximately 100 m around the Hydro One Guelph North Jct (see **Figure 2-4**).

The study areas were determined by technical siting constraints associated with existing transmission infrastructure and proximity to electricity need. The study areas provide for the environmental baseline description of soils, vegetation, environmentally significant areas, wildlife, fisheries and land use.

Figure 2-2: Project Study Area



2.2. Initial Stakeholder Notification

Initial project notification was made in early June 2009, with letters mailed to all residences and businesses within the study area as well as key stakeholders and agencies and First Nations communities. The project mailing list is provided in **Appendix A-5.** A Notice of Commencement and Invitation to Public Information Centre #1 was also published in the *Guelph Mercury* on May 29 and June 5, and in the *Guelph Tribune* on May 29 and June 2, 2009. Update letters were provided in August 2010.

Following direction from the OPA in March 2012 to recommence the Class EA, letters of recommencement were sent in June 2012 and an Invitation to Public Information Centres was published in the *Guelph Mercury* on June 7, the *Guelph Tribune* on June 12 and 14 and the *Wellington Advertiser* on June 15, 2012. Further information on the consultation undertaken for this project is included in **Section 4** and **Appendix A.**

2.3. Environmental Inventory

Information was collected and analysed for relevant biophysical and social factors. This information was consistent with the requirements of Appendix G of the Class EA document (Ontario Hydro, 1992) and included the following eight environmental factors:

- biological resources;
- forestry resources;
- agricultural resources;
- mineral resources;
- recreational resources;
- appearance of the landscape;
- human settlement; and
- heritage resources.

Information for the factors was collected from a review of available literature, personal contacts and field surveys which were conducted in fall 2008 and early winter 2009.

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, Ontario Ministry of Natural Resources (MNR) and the Grand River Conservation Authority (GRCA). The environmental baseline conditions are summarized in **Section 3** of this draft ESR. A Stage 1 Archaeology study was conducted for the complete study area. This information was considered in assessing the effects of the proposed transmission line and station facilities.

2.4. Identification and Evaluation of Alternatives

To ensure that customers continue to receive a safe and reliable supply of power, initially, two alternative methods of carrying out the undertaking were considered in the early stages of project planning:

Alternative 1

- upgrading the transmission line from Campbell TS to Cedar TS; and
- building a new TS on a site within the study area between Campbell TS and Cedar TS.

OR

Alternative 2

- upgrading the transmission line from Campbell TS to Cedar TS; and
- installing two new auto-transformers at Cedar TS.

Following the first Public Information Centre (PIC) in June 2009 and based on public and stakeholder feedback and technical considerations, a third alternative was identified and presented at the second PIC in June 2009:

Alternative 3

- upgrading the transmission line from Campbell TS to Cedar TS; and
- upgrading Guelph North Jct to a switching station

Environmental information was collected and mitigation measures to avoid or reduce potential effects were identified for both short term (construction) and long term operation effects of the proposed facilities for all alternatives.

As a result of the economic recession, the Guelph Area Transmission Refurbishment Project was put on hold in the fall of 2009, while the Ontario Power Authority initiated a regional load study for the Kitchener-Waterloo-Cambridge-Guelph (KWCG) area.

In early 2012, the OPA's[1] regional load study was completed sufficiently to confirm the need and urgency for the Project and resulted in the March 2012 recommendation to Hydro One to recommence the Class EA and to include the following components of the Project as the preferred alternative (see **Appendix B**):

The Preferred Alternative:

- install two new auto-transformers at Cedar TS;
- upgrade the transmission line from Campbell TS to Cedar TS; and
- upgrade Guelph North Jct to a switching station.

2.5. Draft Environmental Study Report and Final Notification

This draft ESR describes the Class EA process leading to the selection of the preferred alternative for the proposed Guelph Area Transmission Refurbishment Project and includes the potential short-term and long-term residual environmental effects that were identified, and the corresponding mitigation measures developed. Notification of the completion of this draft ESR was sent to local residents and businesses, interest groups, First Nations communities and government agencies. A public notice was advertised in the *Guelph Mercury, Guelph Tribune* and *Wellington Advertiser* newspapers, announcing the start of the 60-day public review and comment period. The draft ESR is available on the project website, and in hardcopy at; Guelph City Hall, Guelph Public Library West End Branch (at West End Community Centre) and Wellington County Public Library (at Marden Community Centre).

The comments received and the responses provided by Hydro One will be documented in the final ESR. The final ESR will be prepared for the Project in accordance with the Class

EA process. Copies of the report will also be forwarded to any organization or individual upon request.

3. Environmental Features in the Study Area

The following summarizes the natural and socio-economic environment baseline conditions in the project study area. The data was compiled from published literature and maps, discussions with various agencies, Statistics Canada and information gathered during field surveys. This baseline information was considered in the assessment of potential effects (see **Chapter 7**).

3.1. Natural Environment Features

This section presents the natural (terrestrial and aquatic) features within the project study area and the larger surrounding area. **Figure 3-1** presents the natural environment features within the Guelph study area and **Figure 3-2** for the Centre Wellington study area.

3.1.1. Terrestrial Features

Geology and Physiography

The project study area lies within the Western St. Lawrence Lowland Physiographic sub-region of the Phanerozoic Borderlands physiographic region. This region is characterized by flatter lowlands with subdued hilly topography. The Western St. Lawrence Lowlands border the Canadian Shield (to the north) and corresponds to the Michigan and Appalachian basin margins.

Soils

The project study area is located within the Grey Brown Podzolic Soil Region. The region has thirty-nine recognized soil series. Although they differ, they do have some features in common and are therefore grouped into four Great Groups: Brown Forest, Grey-Brown Podzolic, Dark-Grey Gleysolic and Regesol.

[1] OPA and IESO amalgamated to OESO during the EA process

Vegetation and Environmentally Significant Areas

The project study area occurs in the Mixedwood Plains Ecozone of Canada, being located in the transition zone between the Lake Erie Lowlands and Manitoulin Lake Simcoe Ecoregions. The Mixedwood Plains Ecozone is a transitional type between more southerly hardwood (deciduous) forests and northern coniferous forests. This ecozone is characterized by the occurrence of eastern white pine, red pine, eastern hemlock and yellow birch, in association with a number of dominant broadleaved species such as sugar maple, basswood and American elm. Other wide-ranging species are eastern white cedar and American beech. Favourable climate and fertile soil conditions have led to the expansion of several Carolinian tree species into this ecozone including tulip tree, Kentucky coffee tree and cucumber tree (Natural Resources Canada 2007).

In total, 96 flora species were identified within the project study area during the fall of 2008 and early winter of 2009. Of these 96 species, 48 (49%) are listed as exotic or non-native species. The proportion of exotic species (~49%) is almost double the general population (~28%) of non-native plants in the Province (e.g. Kaiser, 1983). This high proportion of non-invasive species is generally not uncommon in urban environments.

The Ontario Government (1992) issued a Wetlands Policy Statement intended to ensure that there will be no net loss of wetland functions of Provincially Significant Wetlands (PSWs). Recently, the Wetlands Policy Statement was incorporated into the Provincial Policy Statement (OMMAH, 2005). A PSW is a wetland that the MNR has classified as Provincially Significant through an evaluation of biological, social, hydrological and special features of the area.

According to the NHIC database, one Provincially Significant Wetland Complex is found within the immediate vicinity of the Guelph study area. The Speed River Wetland Complex, a 546.1ha Provincially Significant Wetland complex is 71% swamp and 29% marsh. Swamp vegetation present includes eastern white cedar, black ash, willows, wild grape, mixed herbs, duckweed and ferns. Marsh vegetation present includes willows, cattails, narrow-leaved

emergents (grasses and sedges), various herbs, pondweeds, duckweed and ferns. This site is 50% palustrine and 50% riverine. The boundaries for this feature are located approximately 30 metres from CGE Jct.

Three other provincially significant wetlands occur in the Guelph study area including the Ellis Creek PSW complex, the Guelph Southwest PSW complex and the Marden South PSW complex.

ANSIs and Nature and Conservation Reserves have been identified by the MNR where it has been determined than the natural landscape and/or its features are in need of protection for heritage appreciation, scientific study or conservation education purposes. Life Science ANSIs and Nature and Conservation Reserves are natural areas selected to protect outstanding landscapes, environments and biotic communities. Earth Science ANSIs are geological sites selected to protect outstanding examples of rock types, fossil localities, landform associations and areas containing significant groundwater resources.

A search of the NHIC database indicated that the Guelph Interstadial Earth Science ANSI occurs to the west of the Guelph study area.

No Nature or Conservation Reserves within the project study area were identified.

According to Figure 7 in the City of Guelph's Draft Natural Heritage Strategy, Phase 3 (July 2010) regulatory floodplains surrounding the Speed River are designated as significant valleylands. Small areas adjacent to the Guelph study area and along the Speed River are designated as significant wetlands.

Figure 3-1: Environmental Features in the Guelph Study Area

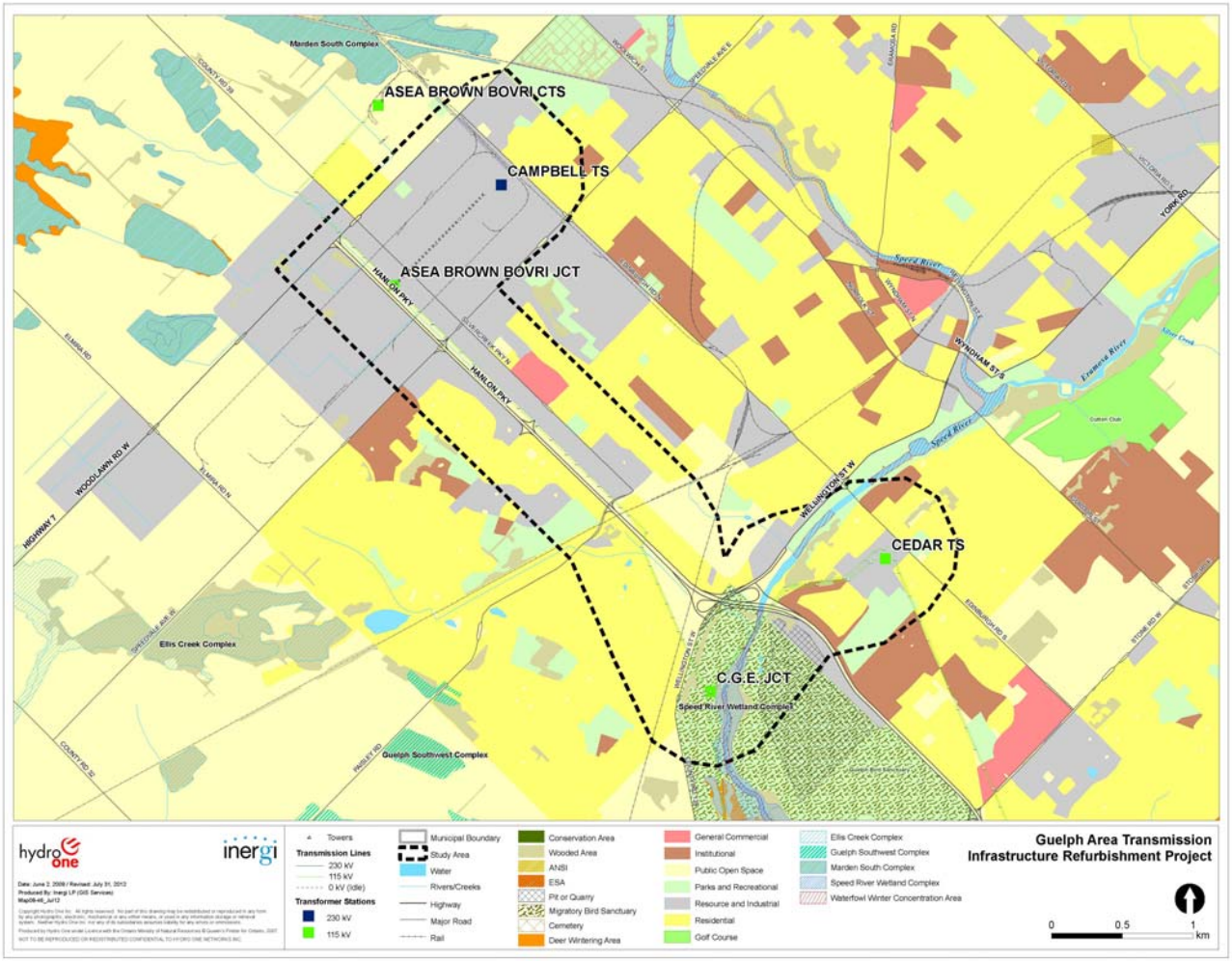
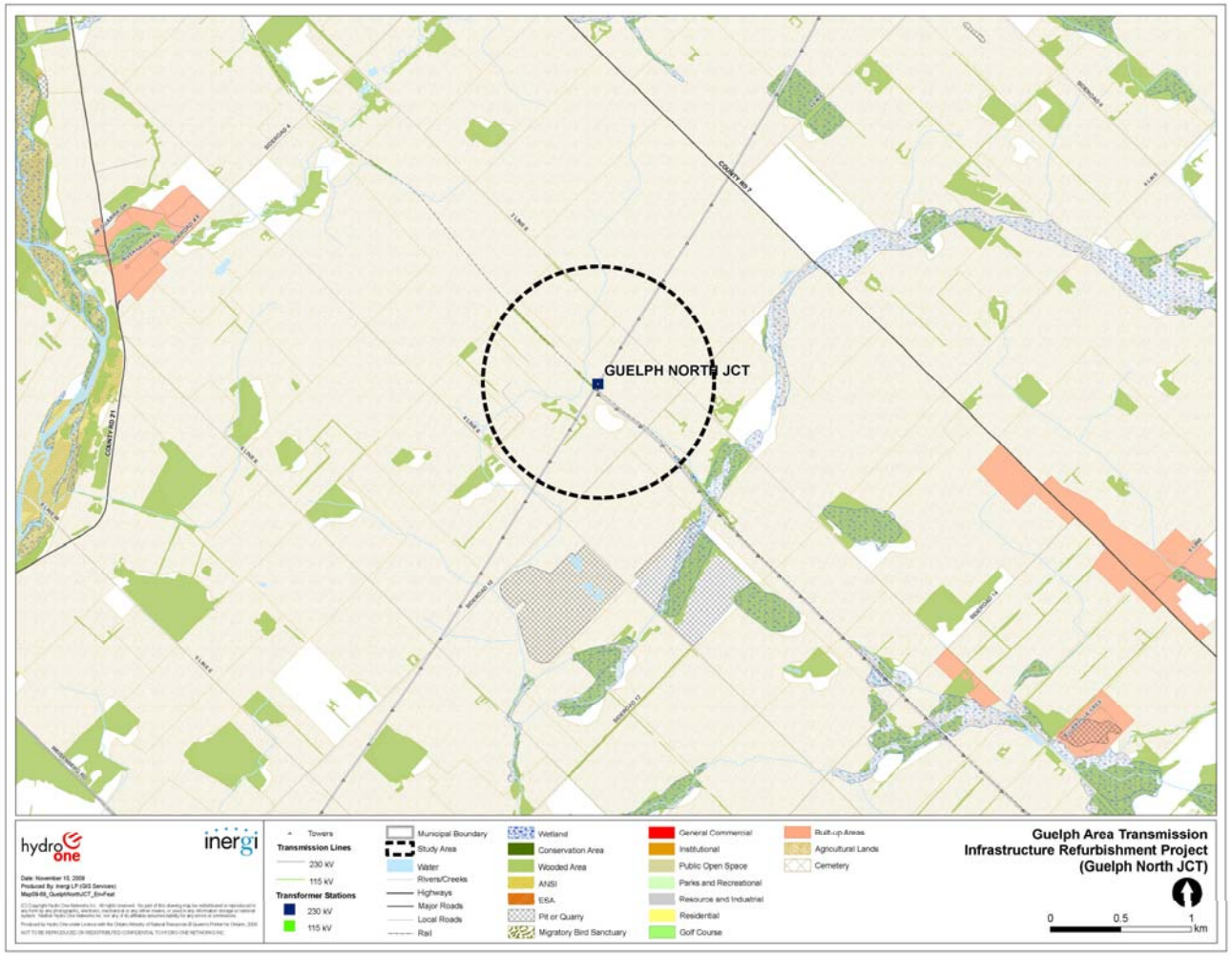


Figure 3-2: Environmental Features in the Centre Wellington Study Area



A search of the Natural Heritage Information Centre (NHIC, 2010) database for species at risk indicated the following within the project study area:

- no records of rare bird species occurrences
- three rare mammal species
    - Gray fox (NHIC database date of observation: 1963), federally and provincially Threatened.
    - Woodland vole, Ontario Mammal Atlas data, federally and provincially Special Concern.
    - Southern flying squirrel, Ontario Mammal Atlas data, federally Special Concern.
- three rare herptile species
    - Eastern Milksnake (NHIC database date of observation: 1986), federally and provincially Special Concern.
    - Northern map turtle (NHIC database date of observation: 1924), federally and provincially Special Concern.
    - Blanding's turtle, Ontario Herpetofaunal Atlas data, federally and provincially Threatened.
- no rare plant species or vegetation communities within or adjacent to the proposed project study area.

Wildlife

Deer wintering areas occur north of the Guelph study area in the areas of the Marden South PSW complex. Winter waterfowl Concentration Areas occur along the Speed River. Most of the Guelph study area has been altered by human activity. Habitat is generally fragmented with few large blocks of contiguous native vegetation. Thus the wildlife occurring in the Guelph study area is generally species that can live in close association with humans or that do not require large areas of a particular habitat (e.g. forest interior).

Based on a review of available background information from the NHIC, the Ontario Breeding Bird Atlas, the Atlas of Mammals in Ontario and the Ontario Herpetofaunal Summary Atlas, 204 species of wildlife have been documented with the project study area.

This includes 134 species of birds, 39 species of mammals, 19 species of amphibians and 12 species of reptiles.

3.1.2. Aquatic Features

Surface Hydrology

The project study area is located primarily within the Speed/Eramosa River sub-watershed of the Grand River Drainage Basin. The Grand River enters the area several miles northeast of Fergus, and flows southwest of the Centre Wellington study area. It has the largest basin in southwestern Ontario and drains most of the highest portions of the Niagara cuesta.

The Speed River is a major tributary of the Grand, which flows just east of the Campbell TS/Cedar TS corridor, parallel to Wellington Street in the Guelph study area. The Speed River drains the central part of the project study area, entering four miles east of Lake Belwood (north of Guelph North Jct) and exiting south of Guelph. The main tributary of the Speed River is the Eramosa River, which flows from the northeast corner of the area to where it joins the Speed River at the confluence in Guelph.

Also in the Guelph study area, a water course in close proximity to the Transmission corridor is the Northwest Drain which occurs approximately halfway between Paisley Road to the north and Wellington Street West to the south. Flow is generally in a southerly direction along the eastern ditch line of the Hanlon Parkway from Campbell Road to its inlet under the parkway (approximately 1km to the south, halfway between Speedvale Avenue and Willow Road) where it then flows underground for approximately 1km before re-emerging just south of the railway tracks on the west side of the Hanlon Parkway en-route to the Speed River. Please refer to **Figure 3-3:** Fisheries and Aquatic Features in the Project Study Area.

In the Centre Wellington study area, a water course in close proximity to the Guelph North Jct is a Tributary to Cox Creek, which is located approximately 11km directly north of Guelph, between Second Line East and Fourth Line East; just north of the 10th Sideroad. The creek generally flows from northeast to southwest emptying into Cox Creek at 6th Line

East, approximately 3km downstream. From there, Cox Creek meanders south-westerly and eventually emptying into the Grand River at Winterbourne, Ontario.

Available hydrological data for watercourses in the Speed River and Grand River area indicate that the greatest stream flow occurs during the spring (March to May); whereas the lowest flows occur generally during the summer (July through September).

Groundwater Hydrology

Within the project study area, groundwater is present both in the overburden and bedrock formations. Groundwater movement is generally through intergranular pore spaces; downward from the overburden to the bedrock. Flow in the bedrock is through joints and bedding plane fractures. Lateral flow is from topographic highs to adjacent lows. Groundwater recharges in areas of exposed bedrock outcrops or thin clay cover. Groundwater discharge is to the stream drainage systems and to local wetland areas. In areas of organic deposits, the water table may be within 1 m of the surface.

Overburden granular deposits are not continuous and form only local aquifers. A review of the MOE water well records indicate wells developed in the overburden are generally screened in granular deposits beneath the surficial medium-grained sands, clay and silt, with some extending to the bedrock surface. Groundwater yields in the overburden are suitable for domestic purposes.

The principal source of the region's water comes from a permeable zone, the 'Production Zone' within the Amabel-Lockport-Guelph Aquifer Complex (fractured dolostone aquifer). This aquifer complex is situated in limestone/dolomite bedrock formations and extends in a wide band across Southern Ontario from the Bruce Peninsula to Niagara Falls. The permeability and porosity of the Amabel, Lockport and Guelph aquifer is highly variable, and is due primarily to a fracturing and chemical dissolution of the upper few meters of dolomite. Wells tapping the aquifer provide water supply for the cities of Cambridge, Guelph and adjacent towns/townships for municipal, domestic, industrial, commercial and irrigation water use.

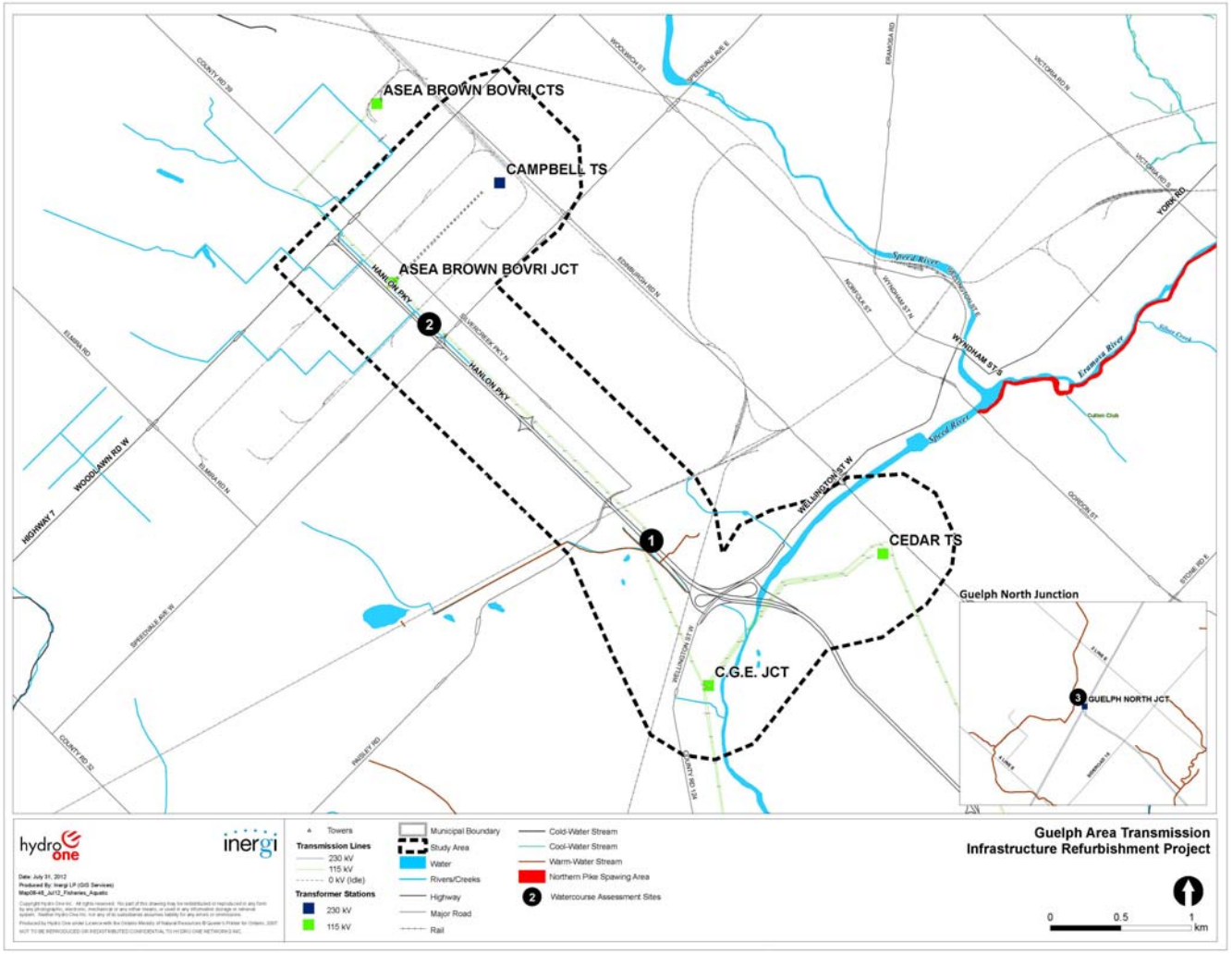
The MOE water well records (February, 2010) report 210 wells in the Guelph study area, and 30 wells in the Centre Wellington study area, not including those reported as abandoned, or not in use. The City of Guelph owns twelve wells screened in bedrock within the Guelph study area, located along Highway 6 between Woodlawn and Stone Roads. These municipal wells draw from three major bedrock fracture zones: a shallow zone at 30 to 36 m depth; an intermediate zone at 67 to 85 m depth; and a deep zone at 100 to 249 m depth. Static water levels are about 5 to 7 m below ground surface, consistent with confined aquifer conditions.

Municipal wells were not reported in the Centre Wellington study area; however 29 domestic wells are reported along 6th line southwest of the study area, between Sideroads 4 and 14. These wells draw from the overburden (7-12 m depth) and from two major bedrock fracture zones; a shallow zone at 35-45 m depth and an intermediate zone at 62-80 m depth. Static water levels range from 3.5 to 12 m below ground surface.

Fish and Aquatic Wildlife Habitat

Based on fish habitat conditions observed for the main watercourses within the project study area (i.e. Northwest Drain and Tributary to Cox Creek), both sustain a direct warmwater fishery within moderately sensitive habitat. The habitat is considered moderately sensitive due to its permanent flow status, presence of watercress (evidence of important baseflow contribution), and the presence of resident warmwater fish populations that rely on these particular reaches due to obvious movement barriers in both systems. See **Figure 3-3:** Fisheries and Aquatic Features in the Project Study Area.

Figure 3-3: Fisheries and Aquatic Features in the Project Study Area

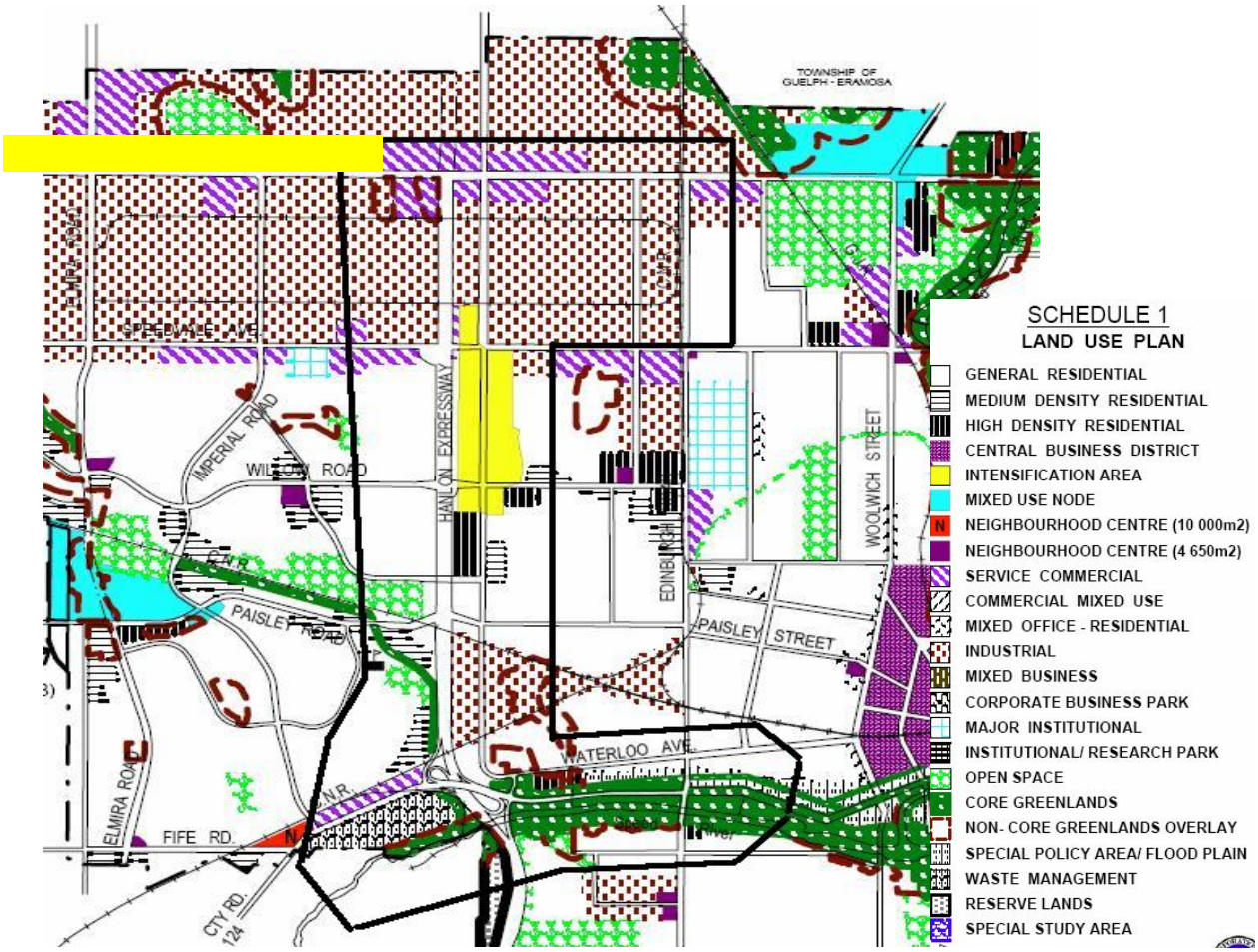


3.2. Socio-Economic Environment Features

3.2.1. Land Use

The Guelph study area is U-shaped, with Campbell TS located on the north leg of the U and Cedar TS on the southern leg. Policy 7.1.1 of the City of Guelph Official Plan (OP) permits transmission lines, transformer stations and distribution stations in all land use designations. Please refer to **Figure 3-3** for land use of the Guelph study area, from the Guelph OP.

Figure 3-3: Land Use in the Guelph Study Area



Source: City of Guelph Official Plan, Schedule 1 Land Use Plan.

- ***"Service Commercial"***- Lands along Woodlawn Road to just west of Edinburgh Road North, and along Speedvale Avenue on both sides of the Hanlon Parkway are designated as Service Commercial. The primary focus of this designation is to provide a location for highway-oriented and service commercial uses that do not normally locate within a downtown because of site area or highway exposure needs. Complementary uses such as small scale offices, convenience uses, institutional, multiple-unit residential and commercial recreation or entertainment uses may be permitted.
- ***"Industrial"***- Except for the Service Commercial areas, the entire northern leg of the Guelph study area, between Woodlawn Road and Speedvale Ave., including the Campbell TS is within lands designated as Industrial. The following land uses are permitted in areas designated as Industrial:
  - Manufacturing, processing, assembly and packaging of goods
  - Laboratories
  - Computer and data processing
  - Research and development facilities
  - Repair and servicing operations
  - Transportation terminals
  - Corporate offices, recreation facilities, public and institutional uses
  - Utilities
- ***"Open Space***"- Lands in the southwest corner of Westwood Road and the Hanlon Parkway are designated as Open Space. The primary use of these lands is for public and private recreational uses and facilities, parks, golf courses, school sites and cemeteries. The designation is also intended to support the protection of natural heritage features and cultural heritage resource conservation.
- ***"General Residential"-*** Much of the land east and west of the Hanlon Parkway south of Speedvale Avenue is designated as General Residential. All forms of residential development are permitted, with the general character of development to be low-rise housing forms. Residential care facilities, lodging houses, coach houses and garden suites are also permitted.
- ***"Intensification Areas"-*** Lands immediately east of the Hanlon Parkway between Speedvale Avenue and Willow Road are designated as Intensification Areas. The purpose of the Intensification Areas is to promote the intensification and revitalization of existing well

defined commercial nodes in order to efficiently use the land base by grouping complementary uses in close proximity to one another and providing the opportunity to satisfy several shopping and service needs at one location. These areas are intended to provide a wide range of retail, service, office, entertainment and recreational commercial uses as well as complementary uses including open space, institutional, cultural and educational uses and hotels.

- ***"High Density Residential"*** – There are two pockets of High Density Residential areas just to the south and southeast of the Intensification Area.
- ***"Core Greenlands"-*** Lands on either side of the Speed River are designated as Core Greenlands. These lands are part of the Greenlands System which recognizes that natural heritage features and their associated landscapes need to be considered in a holistic manner in order to provide a comprehensive and integrated approach for conservation and enhancement. The Core Greenlands areas of the Greenlands System have greater sensitivity or significance including provincially significant wetlands, the significant portion of habitat of threatened and endangered species, and the significant areas of natural and scientific interest (ANSI). Natural hazard lands including steep slopes, erosion hazard lands and unstable soils may also be associated with the Core Greenlands areas. Also, the floodways of rivers, streams and creeks are found within the Core Greenlands designation.
- ***"Waste Management"-*** Lands in the southwest corner of the Wellington/Hanlon Parkway interchange fall within this designation. The permitted uses consist of landfill sites, wastewater treatment plants, transfer stations, facilities for waste reuse, recycling, recovery, or composting. Compatible uses such as agriculture and open space may be permitted.

In the Centre Wellington study area, the majority of lands around Guelph North Jct are designated as "Prime Agricultural". The economy of Centre Wellington is broadly based in agriculture which includes agri-business and agri-tourism.

The Centre Wellington OP, dated May 2005 (last amended July 2010), designated three major land use systems – the Greenlands System, the Rural System and the Urban System. The Prime Agricultural lands around Guelph North Jct falls within the Rural System. The following services and uses are permitted in all land use designations, subject to provisions of the zoning by-law:

- Electric power facilities
- Utilities and services necessary for the transmission of municipal water, sewage, public roads, parking facilities and facilities for the detention, retention, discharge and treatment of storm water.

The Centre Wellington study area contains and is surrounded by active agricultural industries and farming which are the predominant land uses. (See **Figure 3-2 '**Environmental Features in the Centre Wellington Study Area', which also shows land use information).

3.2.2. Socio-economic Characteristics

Within the Guelph study area, the City of Guelph, located in the Southwestern region of Ontario, is one of the fastest growing cities in North America. It is within the Greater Golden Horseshoe approximately 30 km east of Kitchener-Waterloo and 100 km west of downtown Toronto. With an area of 87.72 km^2 and population in 2006 of 115,000 people, Guelph is rich in culture, architecture, parks and riverside green spaces. The separated City of Guelph is within southern Wellington County. Guelph has consistently had faster employment growth than the Province of Ontario and Canada as a whole.

Guelph is an environmentally active community with a distinguished history of environmental stewardship. The City of Guelph has been involved with implementing and overseeing a number of ground-breaking environmental initiatives aimed at preserving energy and natural resources while maintaining a high quality of life for Guelph residents. Guelph's Community Energy Initiative is among only a handful of North American cities to undertake an energy management project of this scope (Guelph Community Energy Plan, 2007).
Guelph has a diverse and stable economic base with a labour force of 66,380 people. Advanced manufacturing is the largest employer in Guelph, accounting for 25% of its total available labour force in over 360 companies. Major economic sectors in Guelph include manufacturing (15,985), retail trade (6,330), finance and real estate (3,160), health care (5,640), business (10,145), agriculture (940) and wholesale trade (2,875) (Statistics Canada, 2006).

The Hanlon Creek Business Park, although outside the boundary of the Guelph study area, is located in proximity. It consists of 671 acres of land bounded by Hanlon Parkway in the northeast, Forestell Road in the southeast, and Downey Road in the west. The business park is designed to protect the site's environmental and natural heritage features including protection of the heritage maple grove and Provincially Significant Wetlands; the restoration of 10 acres of meadowland; reconnecting wetlands to the north and south of Laird Road; and increasing the tree canopy coverage.

Local transit service is provided by Guelph Transit. Guelph was the first municipality in Canada to have its own railway, the Guelph Junction Railway. VIA Rail provides daily passenger rail service from the railway station to London and Toronto.

The Guelph North Jct is located in Wellington County which is a community of 85,000 people living in an area of over 2590 square kilometres. The local municipalities within the County are as follows: Town of Erin, Town of Minto, Township of Centre Wellington, Township of Guelph-Eramosa, Township of Mapleton, Township of Puslinch, and Township of Wellington North. Historical residential and non-residential development has traditionally been strongest for the County's most southerly situated municipalities, including Centre Wellington, Erin, Puslinch, and Guelph Eramosa. The County of Wellington is comprised of rich farmlands, large natural areas and small urban centres.

The Township of Centre Wellington, with population of approximately 26,050, is the largest municipality in Wellington County. Centre Wellington was formed through the amalgamation of Fergus, Elora, and parts of Nichol, Pilkington, West Garafraxa and Eramosa Townships. Major sectors in Centre Wellington include industrial, commercial and residential (Township of Centre Wellington, 2010).

The economy of the Township of Centre Wellington is broadly based in agriculture, industry, commerce and tourism. Historically, the town of Fergus has been the centre of most industrial and commercial development in the Township. Elora-Salem and Belwood have tended towards tourism. The local workforce, which is over 14,500, is employed by sectors such as agriculture

and other resource base industries, manufacturing and construction industries, wholesale and retail trade and other services (Township of Centre Wellington Corporate Strategic Plan, 2004).

Elora Research Station, located at 6182 2nd Line, is a University of Guelph research centre that is adjacent to the Guelph North Jct Site. Most of the 650 hectares at the station is used for feed production and manure disposal for the University beef and dairy herds.

3.2.3. Recreational Uses

Guelph has many leisure facilities for residents. Most of the natural attractions of Guelph are situated near Speed River and Eramosa River, the two rivers which pass through the city. There are a number of existing off-road trails and on-road bicycle routes within the Guelph study area. The majority of off-road trails, bicycle lanes, parks and open spaces are located in the southern half of the Guelph study area. On-road bicycle lanes are situated along the Waterloo Avenue, while the majority of trails are located along the Silver Creek Park and Wellington Street West. According to the City of Guelph Trail Master Plan, there is an opportunity for an off-road trail along Silvercreek Parkway from Woodlawn Rd. to just west of Paisley Rd. (Guelph Trail Master Plan, 2005).

Activities in the Township of Centre Wellington include the Wellington County Museum, Grand River Raceway and Slots, and a range of restaurant facilities, musical performances and art exhibits throughout the year. Major parks in Centre Wellington include Belwood Lake, Elora Quarry and Elora Gorge. Elora Cataract Trail Way which links Elora, Fergus and Belwood communities, and brown trout fishing and tubing through the Grand and Irvine Rivers are among other natural attractions in Centre Wellington.

3.2.4. Resource Uses

Agriculture is a key industry in the project study area and wider region. The importance of agriculture is evident in the region's land use patterns

Agriculture plays an important role in the local economic system. In Guelph, the agriculture sector represents 940 jobs. Guelph is ranked as the #1 agricultural biotechnology cluster in

Ontario. University of Guelph is world-renowned for its impact on agricultural sciences and is a world leader in food science, animal health and veterinary medicine, food safety and nutritional science. The University of Guelph is also home to the Ontario Agricultural College and the Ontario Veterinary College.

Similarly, the economy of Centre Wellington is broadly based in agriculture which includes agri-business and agri-tourism. The local workforce is predominantly employed in agriculture and other resource based industries (Township of Centre Wellington Corporate Strategic Plan, 2004). The University of Guelph's Elora Research Station, one of the largest agricultural research farms in Canada, is located in Wellington County.

The majority of lands around Guelph North Jct are designated as "Prime Agricultural". The Centre Wellington study area is surrounded by active agricultural industries and farming which are the predominant land uses.

3.2.5. Archaeological and Heritage Resources

The City of Guelph and Township of Centre Wellington designate heritage resources in accordance with the *Ontario Heritage Act,* and classify them within the following categories:

- Heritage sites;
- Heritage conservation district; and,
- Archaeological protection areas.

There are 3 designated heritage buildings and 154 listed/registered heritage buildings within the Guelph study area and 4 listed/registered heritage buildings within the Centre Wellington study area. The only built heritage of significance in the immediate project area is the Hydro One Control Building within Cedar TS. The Control Building is considered a Heritage Building, as it was built more than 40 years ago and is considered to have historically significant features (as identified in the Unterman, McPhail, Cuming Draft Report of October 1993 and confirmed by D. Bray November 1999). However, the planned changes to Cedar TS will not have any effect on the Control Building.

A Stage 1 Archaeological Assessment was conducted for the project study area by Archaeological Services Inc. in 2010 (see **Section 7.3.4**). The background research determined that no archaeological sites have been previously registered within 1 km of the project study area. A review of the geography and local nineteenth century land use of the study area suggested that there is potential for the identification of Aboriginal and Euro-Canadian archaeological sites, as per Ministry of Tourism, Culture and Sport guidelines (MTC, 2006), although significant disturbance in some areas is noted.

For the Guelph study area, since the study area does not retain archaeological site potential due to previous ground disturbances, additional archaeological assessment is not warranted.
For the Centre Wellington study area, the report recommended that a Stage 2 Archaeological Assessment be conducted due to limited ground disturbance and the proximity to early Euro-Canadian settlements, early settlement roads and early rail corridors.

The Stage 2 Assessment will be carried out in the Centre Wellington study area in the fall of 2012 and prior to the start of construction.

3.2.6. First Nations Traditional Land Use

Indian and Northern Affairs Canada determined that the Mississaugas of the New Credit First Nation and the Six Nations of the Grand River First Nation were communities with potential interest in the Project. The Mississaugas of the New Credit reserve is located adjacent to the Six Nations of the Grand River reserve, southeast of Brantford.

4. Consultation

Consultation is an important component of any Class EA process. An integrated and effective consultation program ensures that local residents and businesses, interest groups, First Nations and Métis communities, municipal officials and government agencies are identified and made aware of what is being proposed and have opportunities to provide meaningful input before final decisions are made. All input received during the consultation process is given full and fair consideration, and incorporated into the Project, as appropriate.

The Class EA and consultation process for the Guelph Area Transmission Refurbishment Project was first initiated by Hydro One in 2009. The process was put on hold in 2010 when an initiative was launched to develop a broader regional plan for the Kitchener-Waterloo-Cambridge-Guelph area. The regional plan is being developed by the Ontario Power Authority (OPA) along with a working group made up of local utility partners, including Guelph Hydro and Hydro One.

In March 2012, the OPA advised Hydro One that the regional planning study had advanced sufficiently to confirm the need to proceed with the Guelph Area Transmission Refurbishment Project and recommended the proposed transmission refurbishments described in this document. As such, Hydro One resumed the Class EA process and re-introduced the Project, as defined by the OPA, to government agencies and the public.

The consultation process included the following elements:

- Public notices such as newspaper advertisements;
- Notification of First Nations and Métis communities;
- Notification to government agencies and municipal officials , including planners;
- Notification of local MPs, MPPs, and municipal elected officials at the Township of Centre Wellington, County of Wellington and the City of Guelph;
- Meetings with various government agencies and municipal representatives;

- Notification of property owners within the local study areas;
- Four Public Information Centres (PICs) – two in 2009 and two in 2012;
- A community meeting to address issues specific to one residential community in Guelph along the transmission line corridor west of Hanlon Pkwy and near Deerpath Drive;
- A project web page at: www.HydroOne.com/projects ;
- A dedicated project contact, including a toll-free number telephone number and email address to facilitate two-way communication about the Project; and
- Public release of this draft ESR for a public review and comment period as required by the Class EA process

The Ontario Power Authority participated at consultation events to represent the need for the Project. Representatives from Guelph Hydro were kept informed of project status and had representatives at the majority of consultation events in the City of Guelph. The results of the consultation program are summarized in the sections below. Copies of the consultation program materials, such as notifications and newspaper advertisements, project web page, PIC display panels, comment forms and contact lists are included in **Appendix A**.

4.1. First Nations and Métis Communities

Hydro One's First Nations and Métis consultation process is designed to provide relevant project information to potentially affected First Nations and Métis communities and for Hydro One to respond to and consider issues, concerns or questions raised.

Indian and Northern Affairs (INAC) and the Ministry of Aboriginal Affairs (MAA) were contacted in July 2008 and asked to identify any First Nations and/or Métis communities with potential interests or who may be potentially affected by the Project. The project details and study areas were provided to these agencies. Copies of the letters sent and responses received are provided in **Appendix A-1**.

The following are the comments made by INAC and MAA:

- INAC, in a fax received in August 2008, determined that a specific claim has been submitted by a First Nation in the area of interest--Mississaugas of the New Credit First Nation and that in addition there is another First Nation in the general vicinity of the area of interest--Six Nations of the Grand River. INAC also requested that they be removed from future mailings for the study.
- MAA, in a letter received in September 2008, advised that the Project does not appear to be located in an area where First Nations may have existing or asserted rights that could be affected by the Project.

Both the Mississaugas of the New Credit and the Six Nations of the Grand River Elected Council were provided correspondence as follows (see **Appendix A-2**):

June 2009:	Notice of Commencement of the Project/Invitation to the first PIC:
November 2009	Invitation to the second PIC:
August 2010	Project Update
May 2012:	Notice of Project Recommencement/Invitation to third and fourth PICs.

Fax-back forms and newspaper ads were sent with the letters and opportunities to meet to discuss the information presented were also offered. Followup phone calls were made following the letters.

Hydro One also sent letters to the Haudenosuanee Confederacy Council in August 2010 and May 2012 and extended an offer to meet and discuss the Project with Hydro One staff (see **Appendix A-2**).

Mississaugas of the New Credit

Telephone inquiries from the Mississaugas of the New Credit in August and September 2010 were made to determine whether the Project involved new facilities on undisturbed land or involved existing facilities on disturbed lands. Since the Project predominantly involves existing facilities on disturbed lands, they stated they did not have any specific concerns at that time. However, they would like to be updated as the Project progresses and when archaeological information is available. The Stage I Archaeology Assessment for the project area was sent to the Mississaugas of the New Credit community in July 2012.

Six Nations of the Grand River

The Six Nations of the Grand River Elected Council requested a meeting to discuss the Project with Hydro One staff, which occurred in October 2010. Information requested by and provided to the community included:

- A map of the existing Hydro One facilities in the Project Area;
- A map of the existing Hydro One facilities in Ontario;
- The source of the electrical supply into the Guelph area; and
- The Stage 1 Archaeology Report for the project area.

Further communication with identified First Nations communities will occur as the Project progresses and as further Archaeological information becomes available.

Note that a letter was also sent in June 2012 to the First Nation and Métis Policy and Partnerships Office of the Ministry of Energy, to update them on the Project, our consultation with First Nations and Métis communities to date and to request their advice regarding possible

First Nations and Métis interests in the project area. Their response indicated a very low likelihood that the Project would potentially affect any First Nations or Métis rights, but suggested continued consultation with the Mississaugas of the New Credit and the Six Nations of the Grand River (see **Appendix A-3**).

4.2. Federal Government

Federal agencies were identified from the outset of the Project (see **Appendix A-4**) and were sent a series of letters throughout the project consultation (notice of commencement of the project/invitation to the first PIC in June 2009; invitation to the second PIC in November 2009; Project Update in August 2010; notice of project recommencement/invitation to third and fourth PICs in May 2012) (see **Appendix A-5)**.

Transport Canada responded (**Appendix A-6**) that any crossing or works in navigable waters would require a permit. The line section which crosses the Speed River (CGE Jct to Cedar TS) is already built for 230 kV operation (with existing 230 kV towers and conductors) and is not required to be rebuilt. The grounding conductor (skywire) in this line section is to be replaced with Optic Ground Wire (OPGW) conductor. Therefore a permit under the *Navigable Waters Protection Act* (NWPA) will be obtained and adhered to.

The Canadian Environmental Assessment Agency responded (**Appendix A-6**) with the conditions wherein the *Canadian Environmental Assessment Act* would apply, however the Project does not fall within them.

No other Federal Agency expressed any concern with this project.

In addition, the Members of Parliament (MPs) for the ridings of Guelph and Wellington-Halton Hills were also kept informed of the Project and offered briefings.

4.3. Provincial Government

Provincial Agencies were identified from the outset of the Project (see **Appendix A-4** for list) and were sent a series of letters throughout the project (notice of commencement of the

project/invitation to the first PIC in June 2009; invitation to the second PIC in November 2009; Project Update in August 2010; notice of project recommencement/invitation to third and fourth PICs in May 2012). A copy of the notification letters are provided in **Appendix A-5.**

Most of the comments received from provincial agencies related to ensuring that Hydro One obtain any permits that may apply for work done on this project; Hydro One is committed to ensuring that work will not begin until all necessary permit applications have been approved and will comply with any conditions therein.

4.3.1. Ministry of Transportation

Numerous meetings were held with the Ministry of Transportation over the four years that consultation on the Project took place, to ensure compatibility with roads and transmission facilities. Hydro one will continue to work closely with the Ministry of Transportation, particularly as design begins, as Hydro One will require future permits for work in proximity to the Hanlon Parkway.

4.3.2. Ministry of Natural Resources

The Ministry of Natural Resources responded that the Provincially Significant Speed River Wetland Complex is located in the project area and would require protection and also recommended that a biological inventory be conducted to evaluate the potential for species-at-risk and their habitats. Note that the Speed River Wetland Complex is south of the existing CGE Jct, where limited disturbance is expected since there is limited construction required on the line section from CGE Jct to Cedar TS (the ground conductor (skywire) is to be replaced with Optic Ground Wire (OPGW) conductor).

Hydro One will ensure protection of the adjacent wetland features during any work in the CGE Jct area. A biological inventory was conducted in fall 2008 and early winter 2009 to prepare the baseline environmental information (see **Section 3**). Continued communication with the Ministry will occur as the project progresses. See **Appendix A-7** for further detail**.**

In addition, the Members of Provincial Parliament (MPPs) for the ridings of Guelph and Wellington-Halton Hills were also kept informed of the Project and offered briefings.

4.4. Municipal Government

Municipal governments in the study area include:

- The Township of Centre Wellington
- The County of Wellington
- The City of Guelph

A series of letters was sent to municipal officials in 2009 including: a Notice of Commencement of the Project and an invitation to the first PIC in Guelph in June 2009 and subsequently a second PIC in Marden in November 2009; and a Project Update was sent in August 2009 to advise that the Project was being put on hold pending the outcome of a regional supply plan to be undertaken by the OPA in consultation with local distribution companies. The following outlines the communications undertaken upon recommencement of the Class EA process in 2012:

4.4.1. Township of Centre Wellington

Representatives from Hydro One and the OPA met on May 30, 2012 with the Mayor, Chief Administrative Officer, Clerk, Director of Planning, Chief Building Official and local Councillor for Ward 2, in which Hydro One's Guelph North Junction is situated. The purpose of the meeting was to make local officials aware of the Project prior to notifying local residents and to inquire about any potential local concerns regarding the Project. None were expressed. The Director of Planning inquired about the compatibility of a trail system along the transmission corridor between Guelph and Elora and Hydro One confirmed that this project would not deter the potential for a trail system to be developed in the future.

Information on the Project, including a copy of the Notice of re-commencement newspaper advertisement and invitation to the Public Information Centres scheduled for June 14 in Guelph and June 19 in Ponsonby and the Notice of Completion of the draft ESR was sent in advance for the information of Council and senior Township staff.

4.4.2. County of Wellington

Hydro One provided information to the County Warden and Council, the Chief Administrative Officer, the Clerk and the Director of Planning and Development. Although no meeting was requested, Hydro One's Environmental Planner consulted with the Director of Planning and Development. In addition, the County Councillor for Ward 6, within which the Guelph North Junction is located, was invited to attend the Hydro One briefing for Township of Centre Wellington officials at the Township of Centre Wellington office on May 30, 2012.

Copies of all newspaper advertisements (Notice of re-commencement; Notice of Completion of draft ESR), were provided in advance for the information of Council and County staff.

4.4.3. City of Guelph

A series of letters was sent to City of Guelph representatives throughout the Project (notice of commencement of the Project/invitation to the first PIC in June 2009; invitation to the second PIC in November 2009; Project Update in August 2010; notice of project recommencement/invitation to third and fourth PICs in May 2012). An example of the notification letters are provided in **Appendix A-5.**

Two meetings were held with the City of Guelph Planning group in 2009, to discuss the Project and potential effects on the City of Guelph. Items of interest to Planning staff include: opportunities for utilizing transmission corridors for trails and community gardens; the process to facilitate secondary uses on transmission corridors; and recommendations to mitigate noise and visual effects at Cedar TS, where feasible. See **Appendix A-8** for letters and responses.

Prior to public notification of the recommencement of the Project in 2012, representatives from Hydro One, Guelph Hydro and the OPA met on May 31, 2012 with officials from the City of

Guelph's Planning, Building, Engineering and Environment Department, and with representatives from the City's Transportation, Engineering, Real Estate and Community Energy groups. The purpose of the meeting was to brief City staff on the project details, upcoming consultation events, planning and approvals process, and proposed timeline for construction and facility in-service. City staff expressed their desire to be kept informed as the Project moves into the implementation stage. Staff also stressed the importance of maintaining the lines of communication open with local councilors and residents in the project area, and the importance of timely communication especially during the construction phase of the Project. Hydro One and City staff agreed to work closely and share information relative to project implementation should the Project be approved for construction. Hydro One offered the City the opportunity to make information about the Community Energy Initiative available at the Public Information Centre on June 14, 2012 and invited city staff to attend.

The Mayor and Council were provided with an advance copy of the Notice of Recommencement of the Project and details on the Public Information Centres and a briefing was offered. Local councillors for Wards 3, 4 and 5 (where the Project area is located) were also advised prior to the Project being re-announced publicly, and they were offered a briefing. Council was also provided with an advance copy of the Notice of Completion of the draft ESR and a copy of the document was placed at Service Guelph for public review.

4.5. Public Involvement

The public was notified about the Project through various means including Canada Post Unaddressed Admail, flyers, direct mail and newspaper ads. A project website was also maintained for public reference.

4.5.1. Public Information Centre #1

A newspaper advertisement for the commencement of the Class EA and an invitation to the first Public Information Centre was placed in the *Guelph Mercury* on May 29 and June 5, and in the

Guelph Tribune on May 29 and June 2, 2009. A copy of the newspaper notice is included in **Appendix A-9**.

The first PIC was held from 4:00 pm to 8:00 pm on Wednesday, June 10, 2009, at the First Christian Reformed Church in Guelph. The public and stakeholders were notified of this PIC through newspaper ads and mailings. The PIC provided an opportunity for those interested in the Project to find out more and ask questions of the Hydro One project team. An opportunity for City of Guelph Council members and staff, MPs and MPPs to preview the displays and talk to Hydro One staff took place one hour in advance of the PIC, from 3:00 pm to 4:00 pm.

At the PIC, display panels were available for review. The panels described the Project and the need for the facilities, introduced the site selection process, generally described the potential effects and mitigation measures typical for this type of project, and the Class EA process. Also, OPA and Guelph Hydro had display and handout materials focusing on energy conservation. Copies of the panels and the comment form provided to participants are included in **Appendix A-9**.

A total of 27 people attended PIC #1 including a Councillor, a staff member from the City of Guelph, three Guelph Hydro staff and 22 members of the public. Five comment forms were received from the PIC. The comments received from participants at the PIC are summarized in **Table 4-1.** Based on the comments and questions documented throughout the course of the PIC, no significant concerns about the Project were raised.

4.5.2. Public Information Centre #2

On November 10th, 2009 prior to the second PIC, a letter introducing Alternative 3, which included a new station location outside of the original study area, and a copy of the newspaper notice (including the location of the PIC#2) was mailed to approximately 22 property owners who live in close proximity to the Guelph North Junction. Notice of the PIC was also sent to elected officials and staff in the Township of Centre Wellington. This information was also mailed to property owners, schools and churches, elected officials, municipal staff, and government agencies already on the mailing list.

The remaining residences and businesses within the study area including a 500 m radius around Alternative 3 received a copy of the newspaper notice through Canada Post Unaddressed Admail. Approximately 13,000 Admail notices were sent. Copy of the newspaper notifications and letters can be found in **Appendix A-10**.

PIC #2 was held at the Marden Community Centre in the Township of Guelph/Eramosa from 4:00 pm to 8:00 pm. on Wednesday November 25, 2009. The purpose of this PIC was to introduce a new Alternative #3 which was a new station location outside of the original study area for the Project. Following the first PIC, it was determined that locating a station at Guelph Jct. (in the Township of Centre Wellington) just north of the City of Guelph has the potential to meet the needs of the City of Guelph and provide other supply reliability benefits to the surrounding communities. This PIC provided the opportunity for interested stakeholders to obtain information on Alternative #3 and to ask questions and provide input to the Hydro One project team. The advertisement for the second PIC was placed in the *Guelph Mercury*, *Guelph Tribune* and *Wellington Advertiser* on November 13 and 20, 2009.

Those attending the PIC were asked to sign in and were provided with a comment form. Panels were displayed providing information similar to what was presented during PIC #1 as well as information on the proposed new alternative. The display panels presented at PIC #2 and a copy of the comment form are presented in **Appendix A-10.**

Twenty people attended the PIC including three Guelph Hydro staff, one City of Guelph staff and one member of the Centre Wellington Residents' Association. No media were present. No significant concerns about the Project or the proposed alternative were raised and minor concerns were addressed in conversation with project team. One completed comment form was received and is summarized in **Table 4-1.**

4.5.3. Public Information Centres #3and #4

A newspaper advertisement for the recommencement of the Project and invitation to Public information Centres in Guelph and the Township of Centre Wellington was placed in the *Guelph*

Mercury on June 7, the *Guelph Tribune* on June 12 and 14, and the *Wellington Advertiser* on June 15, 2012. Refer to **Appendix A-11**.

Public Information Centre #3 was held on Thursday, June 14, 2012 from 5:00 p.m. to 8:00 p.m. at the First Christian Reformed Church, Guelph, while Public Information Centre #4 was held the following week, on Tuesday, June 19 from 5:00 p.m. to 8:00 p.m. at the Ponsonby Public School, north of Guelph.

Public notification for the PICs also included direct mailings to all premises (approximately 1000) within 150 metres of the transmission line between CGE Jct and Campbell TS and within 150 metres of Cedar TS and Campbell TS. In addition, all property owners within a 500 metre radius of Guelph North Jct were sent an individually-addressed notice for the PICs.

Representatives from Hydro One and the OPA were available at the PICs to discuss the Project with area residents. Display panels were available for review that outlined: the need to refurbish aging transmission facilities supplying Guelph and the surrounding area; the redefined project scope; the Class EA planning process; and the tentative project schedule leading to an in-service date for the new facilities by the end of 2015. Copies of the display panels were provided as handouts along with comment forms on which visitors could record their questions and comments about the Project. Handouts were also provided on energy conservation, as well as Health Canada's fact sheet on Electric and Magnetic Fields at Extremely Low Frequencies. Representatives from Guelph Hydro also attended the PIC on June 14.

About fifty people attended PIC #3, including one of the local councillors from Guelph's Ward 4, and three representatives from the City of Guelph. No media were present. Eight completed comment forms were received with the predominant issues being EMF, property values and the location of the transmission line and are summarized in **Table 4-1.**

Thirteen people attended PIC #4, including the local Ward 2 Councillor from the Township of Centre Wellington and a representative from Pollination Guelph. (Pollination Guelph works via volunteers to enlarge, conserve and develop habitat for pollinators (including butterflies and bees) and has approached Guelph Hydro and Hydro One with a request to utilize property for a

pollinator project. Hydro One's project team received the information and will circulate it internally for review and comment. Any use of Hydro One or provincial corridor (Bill 58) lands would be subject to an agreement and applicable fees).

The majority of the visitors to PIC #4 were from the Deerpath Drive area community in Guelph. No completed comment forms were received.

4.5.4. West End Community Meeting

A Community Information Meeting was held from 5:30 pm to 8:30 pm on June 27, 2012 at the West End Community Centre, in response to requests from residents in the Deerpath Drive neighbourhood and one of the local councilors, to allow for discussion of concerns specific to their neighbourhood. Flyers were distributed in advance to homes in the Deerpath Drive neighbourhood. The meeting was attended by Hydro One representatives, a third party facilitator and recorder, a representative for the local developer who owns the vacant lot adjacent to Deerpath Drive, two spokespersons for the Guelph Wellington West Residents Association and about fifty people from the community. Hydro One presented information on the Project that was specific to the Deerpath Drive neighbourhood and solicited input on the community's concerns. Copies of the presentation were provided as handouts along with comment forms on which visitors could record their questions and comments about the Project as well as indicate whether they had a preference for steel pole or steel lattice structures. Two completed comment forms were received (one with no preference for structure type; one preferring steel poles). The flyer, presentation materials, comment form and facilitator's meeting summary notes can be found in **Appendix A-12**

Consideration of Transmission Line Routing Options

In response to the suggestions proposed by residents in the Deerpath Drive area, a number of options to the planned undertaking in this 1800' (550 metre) line section were investigated.

1. *The proposed undertaking*
2. *Expanding the existing transmission corridor width by 30'*
3. *Moving the transmission line to the back of the developer's property with no overlap on other property*

4. *Moving the transmission line to the back of the developer's property with overlap on other property*
5. *Burying the transmission line on the existing corridor*

Each option is discussed below. For comparative purposes, a description of the existing transmission line and the proposed undertaking are outlined first:

The existing transmission line

The existing transmission line in the Deerpath Drive community is a double circuit 115 kV line with five transmission suspension structures (twin wood poles 60'-80' tall) on an existing 110' wide corridor. The structures are located approximately 25' east of the centre of the transmission corridor. Hydro One does not own the transmission corridor but has an easement.

1. *The proposed undertaking*

The proposed undertaking is for a double circuit 230 kV line with four steel pole suspension structures (120'-130' tall), on an existing 110' wide corridor easement, located at the centreline of the corridor (25' closer to residents than the existing line).

The proposed undertaking would: not require any additional property easement; not take additional land out of use for potential development; meets Hydro One standards; and be the lowest cost option.

2. *Expanding the existing transmission corridor width by 30'*

This option would be a double circuit 230 kV line with three steel pole suspension structures (120'-130' tall) on a 140' wide corridor easement. The structure centreline would be offset 10' east of the corridor centreline (same setback to the residents as existing).

Expanding the existing transmission corridor by 30' would: allow the same structure centreline as existing and thereby minimize the visual effects for residents in the Deerpath Drive neighbourhood; allow for increased accessibility for corridor maintenance activities for Hydro One; take additional land out of use for potential development; and have an incremental cost (including property costs for the additional 30' easement) of approximately $1.2 million as compared to the proposed undertaking. Hydro One confirmed during a June 2012 site visit, that

the current property owner is unwilling to expand the existing corridor easement, so THIS OPTION IS NOT POSSIBLE.

3. Moving the transmission line to the back of the developer's property with no overlap on other property

This option would be a double circuit 230 kV line with FOUR transmission structures. There would be a double steel pole structure (see **Figure 4-1**) at each of the two turning points where the line deviates from the existing easement. There would be an anchor lattice tower (which is of heavier steel construction than a suspension lattice tower, see **Figure 4-2**), at the intermediate turning point at the back of the property and a narrow base lattice suspension tower adjacent to the Hanlon Parkway.

Moving the line to the back of the developer's property would: minimize the visual effect for the majority of residents in the Deerpath Drive neighbourhood but increase the visual effect for residents adjacent to the turning structures; increase the visual effect for future residents on the development property; allow for increased accessibility for corridor maintenance activities; take additional land out of use for potential development; and have an incremental cost (assuming no property costs) of approximately $0.7 million as compared to the proposed undertaking. Hydro One will continue negotiations to determine feasibility of this option.

Figure 4-1: Photo of 230 kV Double Steel Pole Transmission Turning Structure

Figure 4-2: 230 kV Steel Lattice Anchor Tower

4. *Moving the transmission line to the back of the developer's property with overlap on other property*

This option would be a double circuit 230 kV line with four transmission structures. There would be a double steel pole structure (see **Figure 4-1**) at each of the two turning points where the line deviates from the existing easement. There would be an anchor lattice tower (which is of heavier steel construction than a suspension lattice tower, see **Figure 4-2**), at the intermediate turning point at the back of the property and a narrow base lattice suspension tower adjacent to the Hanlon.

Moving the line to the back of the developer's property with overlap on other properties (i.e. the City of Guelph and/or the Ministry of Transportation and/or the Goderich-Exeter Railway (GEXR)), would: minimize the visual effect for the majority of residents in the Deerpath Drive neighbourhood but increase the visual effect for residents adjacent to the turning structures; increase the visual effect for future residents on the development property; allow for increased accessibility for Hydro One corridor maintenance activities; take additional land out of use for potential development; have an incremental cost of approximately $2.5 million (including costs for new corridor easement rights) as compared to the proposed undertaking; and would not allow for permanent easement rights for Hydro One. Due to the unavailability of permanent easement rights, THIS OPTION IS NOT ACCEPTABLE.

5. *Burying the transmission line on the existing corridor*

This option would be double circuit 230 kV underground transmission cables for approximately 1800' (550 m). The cables would be placed within the existing corridor easement and within the road allowance where it forms part of the corridor. At the terminations of the underground section, the cables would revert to overhead transmission lines. A Cable Junction would be required at both terminations for the conversions. Each Cable Junction would be within a fenced area and include; one lattice anchor tower, six lattice tapping towers, six pothead structures and six surge arrestor structures (see **Figure 4-3**). The Cable Junction site must be on property owned by Hydro One, not an easement.

Burying the transmission line on the existing corridor would: minimize the visual effect for most residents in the Deerpath Drive neighbourhood and for future residents in the development property; significantly increase the visual effect for residents at the Cable Junctions; increase

security and maintenance requirements; and have an incremental cost of approximately $9.1 million (including necessary property costs for the purchase of overhead/underground Cable Junction sites) as compared to the proposed undertaking. Due to the significant incremental cost, THIS OPTION IS NOT ACCEPTABLE.

Figure 4-3: Photo of Cable Junction Converting 230 kV Overhead Line to Underground Cables

4.6. Other Stakeholders

Other interest groups and stakeholders were identified during the Class EA process and similarly sent a series of letters throughout the Project (notice of commencement of the Project/invitation to the first PIC in June 2009; invitation to the second PIC in November 2009; Project Update in August 2010; notice of project recommencement/invitation to third and fourth PICs in May 2012). Among others, these groups included agricultural associations, Chambers of Commerce and ratepayer's associations. A sample of the notification letters are provided in **Appendix A-5.**

In addition, Hydro One kept Guelph Hydro informed during the consultation process and ensured that their management and staff had adequate information about the Project in order to address and refer any inquiries from their customers.

4.7. Summary of Key Issues

Table 4-1 summarizes the input received from Federal and Provincial government agencies, Municipal staff, public and interest groups. The last column identifies Hydro One's response to the issue raised.

Table 4-1: Summary of Comments

Issue	Comment	Response
Federal/Provincial Government Agencies		
Transport Canada	Requirement for permits if construction activities require the crossing of navigable waters (i.e. Speed River)	The line section which crosses the Speed River (CGE Jct to Cedar TS) is already built for 230 kV operation (with existing 230 kV towers and conductors) and is not required to be rebuilt. The grounding conductor (skywire) is to be replaced with Optic Ground Wire (OPGW) conductor. A permit under the *Navigable Waters Protection Act* (NWPA) will be obtained and adhered to
Ministry of Transportation	Requirement for encroachment permits for work near the Hanlon Pkwy Requirement to coordinate Hydro One and Ministry plans for future upgrades	Hydro One has worked closely with the Ministry and will continue to share plans and to seek appropriate permits during all stages of the Project
Ministry of Natural Resources	Identified that the Provincially Significant Speed River Wetland Complex is in the Guelph study area near the CGE Jct Requested a biological inventory be conducted	Hydro One will ensure protection of the adjacent wetland features during any work in the CGE Jct area. A biological inventory was conducted in fall 2008/early winter 2009 to collect baseline environmental information for this project
Municipal Staff		

Issue	Comment	Response
City of Guelph Planning Group	Interested in opportunities for utilizing transmission corridors for trails and community gardens and the process to facilitate such secondary uses on transmission corridors	Secondary land use that is compatible with Hydro One's operational requirements would be considered for licensing to external parties. Since each use is evaluated on its own merits, it would be best to contact Hydro One Real Estate representatives directly to discuss. Note also that not all corridors in the Guelph area were formerly owned by Hydro One; therefore whether a secondary use is compatible would be governed by the landowner.
	Recommended noise and visual mitigation at Cedar TS where feasible	Environmental Compliance Approval for noise will be required from the MOE and Hydro One will comply with all noise mitigation requirements. Landscaping to minimize the visual effect of the two new auto-transformers at Cedar TS is not possible on the north side of the station due to the proximity to private property. Consideration for tree planting on the east side of Cedar TS (i.e. on the Edinburgh Road South side) will be given
Public and Community Groups		
Opportunities for public input	Several residents from the Deerpath Drive area neighbourhood wanted to know how their issues and concerns will be considered in the decision-making process for this project.	The Class EA process provides opportunities for on-going input whether through conversations and comment forms at public information centres or community meetings, or contact with Hydro One's project team via the toll-free telephone line or to the Community Relations email or fax. Formal written submissions will also be received by Hydro One during the public review and comment period for the draft Environmental Study Report (ESR) between August 9 and October 9, 2012. The Company will make best efforts to resolve any outstanding concerns during that period. Concerned parties may also submit a written request (Part II Order) prior to the end of the public review and comment period for the draft ESR asking the Minister of the Environment to subject the Class EA

Issue	Comment	Response
		project to a higher level of assessment (an individual EA). There are also formal opportunities for interested parties to participate in the Ontario Energy Board's public hearing on Hydro One's "Leave to Construct" application.
Property values	Several residents from the Deerpath Drive area neighbourhood expressed concern that upgrading the existing transmission line might have a detrimental effect on their property values	Hydro One does not believe there is a material, sustained impact on the value of adjacent or nearby properties when a transmission line is being upgraded. Based on Hydro One's experience, any impact on property value would typically be evident during the project construction period, with any impacts decreasing over time following project completion. Given that Hydro One's existing transmission line has been in this location since the 1950s and that development has subsequently been approved in the area, any impact on the value of properties adjacent to or near the existing transmission line would have been factored into the selling price of these properties.
	A few individuals wanted to know if they would be compensated by Hydro One for any potential impact on property values	It is Hydro One's practice to pay compensation to owners of properties from which Hydro One requires property or property rights to build its facilities. This is consistent with the practice of similar utilities or agencies that are building infrastructure such as gas pipelines or highways. Where additional property rights are required for this project (for example temporary access rights for construction), Hydro One will pay for these rights through negotiated agreements with affected property owners.
Tidiness of the vacant lot on Deerpath Drive	Residents who live in this community noted at PIC #3 held in June 2012, that there has been a lot of dumping on the property and they	Hydro One has easement rights for its transmission line on this property but does not own the property. As such, residents raised the issue with the property owner and their local Councilor.

Issue	Comment	Response
	would like to see it cleaned up.	
Burying the transmission line	Several residents from the Deerpath Drive area neighbourhood asked Hydro One to consider burying the line so as to eliminate visual impact and perceived impacts on property values as well as EMFs	Hydro One's policy is to build high-voltage lines above ground. Generally, transmission lines are buried only if there is a technical or space constraint that would prevent overhead construction. The cost of burying transmission lines is prohibitive, often five to seven times more than overhead construction. This would place a heavy burden on project costs and thus on Ontario electricity ratepayers. It should be noted that burying the transmission line does not eliminate EMFs.
Visual appearance of the proposed 230 kV transmission line	Several residents from the Deerpath Drive neighbourhood expressed concern about the visual change that taller towers would have on their community and on the enjoyment of their properties	The existing five 115 kV twin wood pole structures along the Deerpath Drive section of the transmission corridor range in height from 18m-24m (60 ft-80 ft) depending on topography of the individual location. Hydro One is proposing to install 230 kV steel poles or 230 kV narrow base lattice steel structures, approx. 37m-40m (120 ft-130 ft) tall, based on community preference. (The majority who expressed an opinion preferred steel poles). Because the 230 kV structures are taller, the spans between them can be longer. As such, Hydro One would be able to replace the existing five twin wood pole structures with four steel structures, thus somewhat reducing the visual appearance of the proposed facility. It is anticipated that there would only need to be one structure along the corridor directly adjacent to Deerpath Drive and Hydro One would attempt to locate this structure so that it is not directly in front of anyone's property (i.e. potentially at the 'T' where Melrose Place meets Deerpath Drive).
Location of the existing	Several residents from the Deerpath Drive area	Hydro One's existing easement along this section of the transmission

Issue	Comment	Response
transmission corridor	neighbourhood expressed concern that the 230 kV transmission structures would be moved closer to the curb along Deerpath Drive. It was suggested that Hydro One explore moving the transmission line and corridor closer to the Hanlon Pkwy.	corridor is 34 m (110') wide with the structures located approx. 8 m (25') east of centre. This width can accommodate a 230 kV transmission line, however, to maintain adequate clearance for the conductors from the eastern edge of the corridor, Hydro One would need to locate the new 230 kV structure along Deerpath Drive about 8 m (25 ft) closer to the centre, and therefore closer to the curb. Hydro One committed to exploring options to relocate the transmission line and corridor closer to the Hanlon Pkwy, however, explained that this would require acceptance of any proposed alignment with the property owner (s) which include the property owner/developer Armel Corp, the MTO, the City of Guelph and the Goderich-Exeter-Railway (GEXR), and the negotiation of mutually-acceptable property rights. Hydro One would not be able to accept an alternative alignment that would significantly increase the cost of the project, delay its in-service date or which property rights would not be guaranteed in perpetuity. Based on Hydro One's exploration of the alternatives suggested by the community (as described in **Section 4.5.4**).
Structural stability of the transmission structures	One resident expressed concern that severe weather, such as the 1998 Ice Storm, could cause transmission structures to fail and that this would not be an acceptable risk in a residential neighbourhood	Hydro One's transmission towers are designed in accordance with Canadian Standards Association (CSA) to withstand severe weather conditions such as high winds and ice accumulation on conductors. In many cases, Hydro One design criteria exceed CSA requirements. Should extreme weather conditions prevail, transmission towers are designed to buckle or crumple in the direction of the right-of-way. The tension of the conductors (wires) pulling between towers also ensures they will buckle in the direction of the right-of-way. Therefore, one cannot conclude that a tower that is as tall as or taller than half of the right-of-way width presents a hazard to structures adjacent to the transmission corridor.

Issue	Comment	Response
		It is extremely rare for transmission towers to fail. During more than 100 years of running Ontario's transmission system, a Hydro One (or Ontario Hydro) tower has never failed and struck an adjacent home or building. There has never been a failure of a steel pole transmission structure, such as the ones Hydro One is proposing to use in the residential area west of Hanlon Pkwy. It is true that a number of older transmission towers in eastern Ontario buckled during the Ice Storm which affected significant portions of Eastern Canada and the Northeastern United States from January 4-10, 1998. Environment Canada, in a post-storm report, described this storm as unparalleled in its duration, scope, and overall severity, noting that the amount of precipitation that physically became ice adhering to surfaces of objects at ground level was unprecedented, and has not been experienced in periods reaching more than hundreds of years.
Width of the existing transmission corridor	Several residents were aware that Hydro One had inquired with the landowner/developer to increase the width of the existing easement, and wondered if the corridor is wide enough for the 230 kV transmission line.	Corridor widths for 230 kV transmission lines vary across the province from as little as 66 ft to more than 120 ft. Ideally Hydro One would like to obtain additional easement rights from the landowner/developer to expand the width of the existing right-of-way so that the new 230 kV structures could remain the same distance from centre and from Deerpath Drive. This option is not acceptable to the landowner/developer.

4.8. Final Notification

Hydro One is providing a 60-day public review and comment period for the draft ESR to allow interested parties sufficient time to review the document and provide their comments. Although 30 days is the typical length for the review and comment period for Hydro One Class EA draft ESRs, it has been lengthened in recognition of the overlap with the peak summer vacation season. This draft ESR is being made available for review from Thursday August 9, 2012 to Tuesday October 9, 2012 inclusive.

Prior to Day 1 of the review and comment period, the Notice of Completion of this draft ESR was sent via email or mail to First Nations, government agencies, municipal leaders, local MPPs and MPs and all parties on Hydro One's project contact list. (See **Appendix A-5**).

A Notice of Completion of the draft ESR was placed in the *Guelph Mercury* on August 9, the *Guelph Tribune* on August 9 and the *Wellington Advertiser* on August 10, 2012. (See **Appendix A-13**). The Notice provides details on where the draft ESR may be viewed, how and to whom interested parties may provide their comments, and the deadline for receiving comments. It also advises the public of the provisions in the *Environmental Assessment Act* for a Part II Order request and how to make such request.

Copies of the draft ESR will be made available for review on the project website at www.HydroOne.com/projects and hardcopies will also be available for consultation at the following locations:

City of Guelph
(ServiceGuelph desk in the City Hall lobby)
City Hall
1 Carden Street
Guelph, Ontario
Tel: 519-822-1206

Guelph Public Library
West End Branch (at West End Community Centre)
21 Imperial Road South

Guelph, Ontario
Tel: 519-829-4403

Wellington County Public Library
Marden Branch (at Marden Community Centre)
7368 Wellington Road 30
Guelph, Ontario
Telephone: 519-763-7445

Interested parties are asked to send comments on the draft ESR in writing by the end of business day Tuesday October 9, 2012 to:

Janice Martin,
Environmental Planner
Hydro One Networks Inc.
483 Bay St, South Tower, 6th Floor
Toronto, ON M5G 2P5
Tel: 1-877-345-6799; Fax: 416-345-6919
Email: Community.Relations@HydroOne.com

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 public review and comment period to the Minister of the Environment asking for a higher level of assessment via a Part II Order request. Instructions on how to fully participate in the Class EA process were provided in Hydro One's Notice of Completion of the draft ESR newspaper advertisement (see **Appendix A-13**) published in the local newspapers, and sent to all individuals on Hydro One's project mailing list, as well as to all individuals who signed in at any of the PICs or who contacted Hydro One by telephone or email about the Project.

5. Alternative Selection

This section documents the process of identification and evaluation of alternatives that was undertaken to select a preferred alternative for the proposed Guelph Area Transmission Refurbishment Project. The preferred alternative was initially to be identified through a two-stage process, where stage one set out the criteria for a preferred alternative and stage two compared and ranked the alternatives based on the natural, socio-economic and technical criteria that were identified in stage one. The alternative with the greatest advantages (i.e., the alternative that most favourably met the natural, socio-economic and technical selection criteria) was to be chosen as the preferred alternative.

As previously noted in **Section 2**, since initially, there were two and then three alternatives identified to achieve the goals of the Guelph Area Transmission Refurbishment Project, environmental data for all three alternatives was collected. Then in March 2012, the OPA recommended the preferred alternative for the Guelph Area Transmission Refurbishment Project (which is different from the three alternatives initially proposed, but is represents a combination of the initial three alternatives). Additional alternatives, such as the 'Do Nothing' option and the 'Greenfield' option were also considered with the preferred alternative but were deemed unfeasible, and therefore screened-out from consideration based on the reasoning in the following sections.

5.1. Alternative Selection and Description

The project study area, as discussed in **Section 2**, was delineated using technical requirements and is defined as a portion of the City of Guelph and a portion of the Township of Centre Wellington in Wellington County. The alternative identification criteria are presented in **Table 5-1**.

In addition to the preferred alternative, two additional possibilities were considered for the Guelph Area Transmission Refurbishment Project, but were eliminated as follows:

- The 'Do Nothing' Alternative: would be to leave the existing transmission facilities as is. This would not be feasible as there would be no improvement to electrical supply capability or reliability for south-central Guelph
- The 'Greenfield' Alternative: would be to create an entirely new transmission corridor or new stations. This would not be feasible as it would pose significant risk, environmental constraints and effects, and would greatly delay the project timeline. It is also not in line with the *Provincial Policy Statement 2005,* to construct new facilities or take new lands out of their current use if there are existing facilities or lands that could be used.

  Since both possibilities were deemed unfeasible and no longer considered, the preferred alternative remains.

The proposed undertaking meets the alternative identification criteria.

Table 5-1: Alternative Identification Criteria

Criteria	Definition/Rationale
No conflict with designated significant natural features and/or habitats	Designated natural areas (ESAs, ANSIs, PSWs, significant woodlands, regulation limits of watercourses etc.) have been identified for protection and should be avoided where possible
No conflict with on-site and adjacent land uses	Existing development buildings, and other utilities (e.g., buried water pipelines) should be avoided
Stations and right-of-way meet minimum size requirements for upgrades:	• The current footprint of Cedar TS is large enough to accommodate the required changes. • The existing ownership and easement rights are sufficient for a double circuit 230 kV transmission line. • The current footprint of Hydro One's property surrounding Guelph North Jct is sufficient for an SS.
Proximity to load centre	In order to maximize the reliability of the supply of electricity to the load centre and decrease the amount of distribution lines required, sites should be in close proximity to the load centre which the facilities are expected to serve
Proximity to access roads and existing transmission lines	To minimize both costs and Project footprint size, station sites should be in proximity to the existing transmission line and be easily accessible by road.
Minimal visibility to local businesses, residents and/or motorists	Where possible the site should be set back from any sensitive viewshed receptors

5.2. Alternative Evaluation Criteria

In order to assess the preferred alternative, evaluation criteria were developed considering the general and specific characteristics of the planned station and line route and the requirements of the Class EA process. These criteria assist in the identification of potential effects on the natural and socio-economic environment, and technical considerations of the Project. The preferred alternative is the one with the least potential for short- and long-term environmental and socio-economic effects, the least technical constraints and the lowest development costs. The site evaluation criteria are presented in **Table 5-2**.

The proposed undertaking meets the alternative evaluation criteria.

Table 5-2: Alternative Evaluation Criteria

Natural Environment	Socio-economic Environment	Technical Criteria
Avoid to the extent possible: • Areas of greater ecological diversity or sensitivity and/or designated natural areas (e.g. ESA); • Areas with Species at Risk; • Areas considered to support biological habitats (e.g. fish or wildlife); • Wetland areas (e.g. PSW); • Mature woodlots and orchards; • Fisheries habitat; • Conservation Authority regulated areas; • Federal lands such as Federal Parks; and • First Nations Reserves.	Avoid or minimize: • Disruption to existing residences, buildings and lands with approved and/or proposed plans for development; • Avoid close proximity to/or minimize disturbance of hospitals, nursing homes, churches, schools, day care centres; • Avoid close proximity or minimize disruption to parks and recreational areas or areas with scenic qualities; • Avoid areas potentially contaminated by historic industrial use; • Avoid significant heritage and historic sites; • Avoid First Nations Reserves; and • Hydro One generally endeavours to avoid or minimize, to the extent possible, disturbance to Class I, II, and III agriculture lands and specialty crop areas.	Preference is given to sites: • Proximate to all-weather roads; • Requiring short length of new roads or with existing access roads; • Located at an adequate distance from highways to minimize equipment damage from road salt; • With acceptable surface drainage conditions; • With flat topography (requiring minimal grading); and • If additional land is required, with a willing seller, to avoid land expropriation.

6. Project Description

The transmission refurbishments will include:

- **Upgrade Cedar TS in the City of Guelph**

Two new 230/115 auto-transformers, the associated electrical equipment, spill containment and applicable noise mitigation will be added, as well as a new 115 kV switchyard and small buildings to house system protection and control equipment and auxiliary station power supply. Also at Cedar TS, the existing double circuit 115 kV line F11C/F12C from Detweiler TS will be connected to the B5G/B6G line. As much as is possible, vegetation within the existing fence, at the southwest end of the property, will be left. See **Figure 6-1** for a preliminary proposed layout of the station.

Figure 6-1: Preliminary Proposed Layout of Cedar TS

- **Upgrade Transmission Line Section in the City of Guelph**

  The existing line and structures from Campbell TS to Cedar TS will be removed. Vegetation will be selectively cleared to allow for temporary access roads, work areas around towers and line clearance. New structure foundations will be poured and new double circuit 230 kV structures will be erected. The 230 kV line and insulators will be installed.

- **Upgrade Guelph North Jct in the Township of Centre Wellington**

  An area of approximately 100 metres x 80 metres, or 0.8 hectares (2 acres) will be graded; a crushed stone base will be added; the station will be grounded and fenced; switching facilities will be installed, as well as small buildings to house system protection and control equipment and auxiliary power supply. There will also be an access road built from Side Road 10 to the new station. See **Figure 6-2** for a preliminary proposed layout of the station.

Figure 6-2: Preliminary Proposed Layout of Guelph North SS

6.1. Design Phase

Following completion of the Class EA process, detailed engineering designs for the proposed infrastructure will be carried out. These plans will identify the final design plans for: Cedar TS; the upgraded transmission line; the line connection from the upgraded transmission line into Campbell TS; Guelph North SS; the associated temporary and permanent access roads; and the construction staging areas. The plans will be based on necessary surveys and consultation, including a geotechnical survey, and consultation with provincial and municipal officials. Concurrent with finalization of the station and line designs, all other provincial and municipal approvals will be obtained as required.

An 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 and environmental commitments set out in the final ESR. The Environmental Specification is developed based on the *"Environmental Guidelines for Construction and Maintenance of Transmission Facilities" (Hydro One, 2009).*

A licensed archaeologist was retained to conduct a Stage 1 Archaeological Assessment for the project area. This was done consistent with MTCS guidelines and the results of the assessment were sent to the MTCS. The findings of the Stage 1 Archaeological Assessment indicated that a Stage 2 Archaeological Assessment is not required for most of the project area, due to it being subjected to extensive and deep land alteration. However, a Stage 2 Archaeological Assessment is required for the Guelph North Jct area since this area has remained relatively undisturbed and has archaeological potential due to the proximity to early settlement roads and an early railroad. (ASI, September 2010). Prior to construction (and likely in the fall, 2012 after the current crop has been removed, a licensed archaeologist will be retained to conduct a Stage 2 Archaeological Assessment for the Guelph North SS site. This will be done consistent with Ministry of Tourism, Culture and Sport requirements and the Ministry and First Nations will be notified if any archaeological finds are uncovered.

Following completion of the Class EA process, applications will also be made for any permits or approvals that may be required (see **Section 1.5.3**).

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 undertaking.

Construction of the Guelph Area Transmission Refurbishment Project will involve the following activities:

Upgrade Cedar TS in the City of Guelph

- Deliver and install 230/115 kV auto-transformers and associated equipment;
- Install underground services and drainage facilities;
- Install station foundations and steel support structures;
- Construct buildings;
- Extend the fencing around the new auto-transformers on the Hydro One site; and
- Clean-up and restore.

Upgrade Transmission Line Section in the City of Guelph

- Establish temporary access roads, where required;
- Remove existing transmission line and structures;
- Deliver and install equipment;
- Prepare the site;
- Install structure foundations;
- Assemble structures;
- Install conductors; and
- Clean-up and restore.

Upgrade Guelph North Jct in the Township of Centre Wellington

- Establish permanent access road;
- Prepare site, including clearing and grading;
- Install station fencing;
- Deliver and install breakers and associated equipment;
- Install underground services and drainage facilities;
- Install station foundations and steel support structures;
- Construct of buildings; and
- Clean-up and restore.

Throughout the construction period, 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 includes 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 and First Nations communities.

6.3. Maintenance and Operation Phase

The Guelph Area Transmission Refurbishment Project is expected to be in service by the end of 2015. Stations are operated remotely by 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.

At Guelph North SS, there will be no large oil-filled equipment so there is no need for spill containment. There will be underdrainage at the site to accommodate the flow of surface water.

At Cedar TS, the oil-filled auto-transformers 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 Response and Preparedness Plan will govern spill response. Spill cleanup and response equipment will be located on site.

6.4. Project Schedule

The anticipated schedule for project activities is provided 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 commission of the proposed facilities:

Table 6-1: Anticipated Project Schedule

Activity	Period
Issue Draft ESR for 60 day review and comment period	August 9 to October 9, 2012
Submit Final ESR to the Ministry of Environment	Fall 2012
Submit Section 92 application to Ontario Energy Board	Fall 2012
Planned start of Design and Construction	Spring 2013
Planned in-service	End of 2015

7.0 Potential Environmental Effects and Mitigation

This chapter describes the potential environmental and socio-economic effects associated with the development of the Guelph Area Transmission Refurbishment Project in the City of Guelph and Township of Centre Wellington. The proposed facility upgrades were determined through the selection process that is documented in **Section 5**.

The assessment of potential environmental effects for the proposed facility upgrades considered the baseline environmental conditions information that was collected for the project study area (**Section 3)**.

The potential effects resulting from the construction and operation of the Guelph Area Transmission Refurbishment Project are similar to other projects undertaken by Hydro One and are well understood. 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 of the proposed project. **Table 7-1** provides a summary of potential effects, their mitigation and residual (net) effects for the Guelph Area Transmission Refurbishment Project. Both short-term construction and long-term operation residual effects are discussed.

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			
Typical combustion, environmental noise and dust emissions	There is potential for noise and dust emissions from site preparation and construction activities. Effects on air quality and noise will be temporary and limited to the site preparation and construction periods.	• Maintain equipment to ensure that operation conforms to normal parameters. • Use effective dust suppression techniques, such as on-site watering and street cleaning. • Limit construction activities to daylight hours (7:00 am to 7:00 pm) on weekdays and Saturdays and no construction on Sundays and Statutory Holidays. • Noise levels to conform to Model Municipal Noise Control By-Law. • Inform local residents and businesses if hours need to be extended to facilitate their completion. • Mud will be removed from roads, as required.	No significant residual effects are predicted.
Spills	Incidental spills of oil, gasoline and other liquids during construction.	• Implement appropriate clean-up measures • All refuelling or lubrication of equipment is to be at least 120 m away from waterbodies.	No significant residual effects are predicted.

Environmental Component	Potential Effects	Proposed Mitigation	Residual (Net) Effect
Solid Waste	Solid waste will be generated during construction.	• Solid waste will either be recycled or disposed of at a licensed landfill.	No significant residual effects are predicted.
Groundwater/Stormwater	De-watering during construction activities	• Ground water stormwater or slurry will not be discharged to the ground surface • Erosion and sediment control will be provided during construction	No significant residual effects are predicted.
Natural Environment			
Environmentally Significant Areas	Provincially Significant wetland complex and ANSIs nearby	• Project location is near but not within areas of significance	No significant residual effects are predicted.
Species At Risk	Displacement of SAR and/or habitat destruction	• No SAR or SAR habitat has been identified within the local study areas • If any should be identified, the habitat will be protected or avoided	No significant residual effects are predicted.
Terrestrial Features	Vegetation removal and displacement of nesting birds.	• Clearly demarcate limits of vegetation removal. • Fell all trees parallel with existing corridor. • Dispose of all woody material. • Vegetation clearing outside of migratory bird nesting season (May 1 to July 31), if practicable.	No significant residual effects are predicted.

Environmental Component	Potential Effects	Proposed Mitigation	Residual (Net) Effect
		• Otherwise, conduct a pre-construction survey to identify breeding bird nests. • No disturbances of nests found until young have fledged. • Remove as few trees as possible within Cedar TS, to retain the visual barrier for residents and the recreational field adjacent to a school.	
Aquatic Features	Erosion Spills	• Minimize disturbance of existing vegetated slopes near the Northwest drainage ditch. • Use of in-line erosion control measures such as erosion blanket, rip rap, straw bale, rock flow checks and vegetated buffers. • Sediment and erosion control measures are to be left in place until all disturbed areas have been stabilized. • Measures are to be in place to minimize mud tracking by construction vehicles, and to ensure timely cleanup of any tracked mud, dirt and debris along local roads and areas outside of the immediate work area where the above sediment controls would not be in place. • Sediment laden water and runoff originating from construction areas will be treated using	No significant residual effects are predicted.

Environmental Component	Potential Effects	Proposed Mitigation	Residual (Net) Effect
		appropriate methods. • Refuelling and maintenance of equipment during construction will be undertaken in confined areas away from any surface water channels. • Spills of potentially hazardous materials such as fuels and insulating oils will be reported, managed and cleaned up in accordance with all pertinent legislation and Hydro One procedures.	

Environmental Component	Potential Effects	Proposed Mitigation	Residual (Net) Effect
Socio-Economic Environment			
Human Settlement	Short-term disruption of traffic in Project vicinity due to equipment and materials delivery and worker vehicular traffic.	• Provide advance notice to the city emergency response units. • As required, developed traffic plans with municipal officials. • Plan deliveries to minimize delays. • Ensure construction signs are in place to warn motorists. • Monitor and respond to complaints from residents.	No significant residual effects are predicted.

Environmental Component	Potential Effects	Proposed Mitigation	Residual (Net) Effect
Public safety	Public could be potentially exposed to typical construction hazards in the vicinity of the construction areas.	• Construction areas are 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. • Flag persons to be used in accordance with the Traffic Safety Plan.	No significant residual effects are predicted.
Appearance of the landscape	Temporary lay-down areas will be required along the transmission corridor during the site preparation and construction periods.	• Any alteration to the landscape associated with construction and temporary storage facilities will be restored.	No significant residual effects are predicted.
Heritage and archaeological resources	Based on the recommendation of the Stage 1 Archaeological Assessment conducted by Archaeological Services Inc. (2010), a Stage 2 Archaeological Assessment is required for the Guelph North	• The Stage 2 Assessment will be carried out in Guelph North Jct area in the fall of 2012 prior to the start of construction. • Should any artifacts be uncovered during construction, a licensed archaeologist will be contracted to assess significance and if	No significant residual effects are predicted.

Environmental Component	Potential Effects	Proposed Mitigation	Residual (Net) Effect
	Junction portion of the Project. Archaeological Services Inc. (ASI) recommended that since the Guelph study area does not retain archaeological site potential due to previous ground disturbances, no additional archaeological assessment is warranted.	necessary develop an appropriate plan of action including notification of the MTCS and First Nations.	
Recreational uses	There are a number of existing off-road trails and on-road bicycle routes within the Guelph study Area.	• The Project will not affect the local recreational trails. No mitigation is proposed.	No significant residual effects are predicted.
LONG TERM EFFECTS			
Releases to the Environment			
Typical combustion, environmental noise and dust emissions	The operation of the station auto-transformers will produce a humming sound.	• The nearest receptor is approximately 40 m north of the proposed auto-transformers at Cedar TS. • An MOE ECA for noise will be obtained and adhered to.	No significant residual effects are predicted.
Spills	There is unlikely potential for release of transformer oil or fuels during operation and maintenance activities.	• Appropriate clean-up measures as per the Emergency Response and Preparedness Plan will be implemented at Cedar TS. • Cedar TS will be fully equipped with spill	No significant residual effects are predicted.

Environmental Component	Potential Effects	Proposed Mitigation	Residual (Net) Effect
		containment and oil water separator facilities. • An MOE ECA for drainage will be obtained and adhered to.	
EMF	Exposure to EMF.	• Health Canada has concluded that typical exposures present no health risks. • Hydro One will respond directly to those expressing concern and provide third party information on the status of research and knowledge of the issue. • See **Appendix D** for the Health Canada EMF Fact Sheet	No health effects are predicted.
Natural Environment			
Terrestrial Features	Loss of some trees and brush from within the existing Cedar TS	• Tree planting on the Edinburg Road side of Cedar TS	No significant residual effects are predicted.
Aquatic Features	CGE Jct is close to the Provincially Significant Speed River Wetland Complex The grounding conductor (skywire) is being replaced with Optic Ground Wire (OPGW) conductor in the line section from CGE Jct to Cedar TS which crosses the Speed River.	• Hydro One will ensure protection of the adjacent wetland features during work in the CGE Jct area. • A permit under the *Navigable Waters Protection Act* (NWPA) will be obtained and adhered to.	No significant residual effects are predicted.

Environmental Component	Potential Effects	Proposed Mitigation	Residual (Net) Effect
Socio-Economic Environment			
Human settlement	The existing stations and line are in areas where utilities are acceptable land use	• None	No significant residual effects are predicted.
Public safety	Persons could be at risk if they entered station property	• Station fencing and security systems will be installed and monitored	No significant residual effects are predicted.
Appearance of the landscape	The taller structures on the existing transmission corridor will be visible to more residents	• None	No significant residual effects are predicted.
Resource use: Agriculture	The Guelph North SS will remove 0.8 hectares of land from agricultural production	• None	No significant residual effects are predicted.
Land use and planning policies	Using existing station properties and transmission corridor easements complies with the Provincial Policy Statement goal of the using existing infrastructure before considering developing new infrastructure.	• None	No significant residual effects are predicted.

7.1 Releases to the Environment

The construction of the proposed Guelph Area Transmission Refurbishment will result in typical combustion, environmental noise and dust emissions, whereas environmental noise and EMF emissions will occur during its operation. Solid wastes will be generated during construction. There is unlikely potential for release of oils and other liquids during construction, operation and maintenance activities. The following briefly describes the potential releases to the environment and the proposed mitigation measures to minimize or obviate potential adverse effects.

7.1.1 Typical Combustion, Environmental Noise and Dust Emissions

Construction has the potential to affect the air quality in the vicinity of the facilities. Emissions which are associated with construction activities are primarily typical combustion and dust emissions from construction equipment. As with any construction site, these emissions will be of relatively short duration, intermittent and unlikely to have any effect on the surrounding air shed.

Mitigation measures used to minimize potential air quality effects are primarily directed towards maintaining construction equipment in good working condition to minimize combustion emissions to the extent practicable.

To reduce particulate emissions, effective dust suppression techniques, such as on-site watering and road cleaning, will be used. During construction, the practices and procedures outlined in documents, such as *"Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities"* (Cheminfo, 2005) prepared in conjunction with the Construction and Demolition Multi-stakeholder Working Group for Environment Canada, provides appropriate direction. It is anticipated that the net effects on the local air quality during

construction would be negligible and thus no other mitigation measures are required. There will be no atmospheric emissions from the Project during operation.

Construction may also be a potential source of short-term, intermittent local environmental noise. All work is expected to be completed using common construction methods. The noise associated with the construction would most likely be a result of activities, such as general site grading, foundation work and construction traffic. All of these activities, which are expected to take approximately 24 months, will require the use of various pieces of heavy equipment, e.g., dozers, front-end loaders, small trucks, backhoes, bobcats, dump trucks, compactors, cement trucks and/or cranes. Other construction activities, such as those related to the placement of the facility components (e.g., auto-transformers) are expected to generate less noise. The movement of delivery and worker vehicles will also add to the noise levels during the construction period.

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. This Model By-Law also suggests a restriction on the operation of any equipment in connection with construction from 7:00 pm one day to 7:00 am the next day, and all day Sunday and Statutory Holidays.

The nearest noise sensitive points of reception are single, detached, two-storey homes located approximately 75 metres north of the existing four transformers and approximately 40 metres north of the proposed two auto-transformers.

Auto-transformers will produce a humming sound during operation. Noise can be readily mitigated with conventional technology (e.g., auto-transformer selection, noise enclosures, noise barriers, etc.). Given the distance to nearby receptors and available technology, mitigation techniques will be utilized by Hydro One staff such that background noise levels in the vicinity of the homes will not increase. As indicated in **Section 1.5.3**, Hydro One will

ensure that noise levels at the proposed Guelph Area Transmission Refurbishment meet environmental protection requirements, as station design is subject to an ECA for noise under the *EPA*. An acoustic assessment will be performed (as part of the required approval process) to determine potential sound effects and if sound control measures are needed to satisfy MOE guidelines for the Noise Analysis (see **Appendix C** for the Environmental Noise Checklist for Cedar TS).

7.1.2 Groundwater/Stormwater

Groundwater, stormwater and slurry will not be discharged to the ground surface. These materials will be transferred to onsite containment (i.e., a plastic storage tank or open evaporation pit lined with an impermeable membrane). Pump-out water or slurry will be analyzed prior to disposal.

If laboratory analysis determines that pump-out water is not contaminated above legislated levels, such materials may then be discharged onto the adjacent ground surface according to the following requirements:

- Pump-out/vacuumed waters/slurries shall 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.); and
- Comply with relevant sections of OPSS 518 - *Control of Water from Dewatering Operations* or specific municipal requirements to protect the environment.

Erosion and sediment control and storm water management will be addressed in the Environmental Specification document for the construction sites.

7.1.3 Spills

During construction there is unlikely potential for the release of oils and fuels from construction vehicles. Refuelling of construction vehicles will be completed away from the drainage ditch on the transmission corridor.

During operation, transformers use mineral oil as an insulating fluid. The station will be fully equipped with spill containment and oil/water separator facilities. As indicated in **Section 6.3**, in the event of equipment failure, oily water will not escape from the site. An Emergency Response and Preparedness Plan will govern spill response. Spill cleanup and response equipment will be located on site.

Any spills of potentially hazardous materials such as fuels and insulating oils will be reported, managed and cleaned up in accordance with all pertinent legislation and Hydro One procedures.

7.1.4 Solid Wastes

Solid waste generated at the site during construction or operation will be tested at an accredited laboratory and removed from the site. After removal, solid wastes will either be recycled or disposed at a licensed landfill.

7.1.5 Electric and Magnetic Fields

No effects associated with electric and magnetic fields are predicted. The Health Canada website provides important information on the issue: www.hc-sc.gc.ca/iyh-vsv/environ/magnet_e.html. For Health Canada's Fact Sheet addressing issues related to EMF, see **Appendix D**.

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).

It is acknowledged that some research findings are controversial and contradictory. However, a mechanism or explanation of 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".

7.2 Natural Environment

7.2.1 Environmentally Significant Areas

According to the NHIC database one Provincially Significant Wetland Complex is found within the immediate vicinity of the Guelph study area, the Speed River Wetland Complex. Three other provincially significant wetlands occur in the Guelph study area including the Ellis Creek PSW complex, the Guelph Southwest PSW complex and the Marden South PSW complex. This is further discussed in Section 3.1.1 Terrestrial Features.

A search of the NHIC database indicated that the Guelph Interstadial Earth Science ANSI occurs to the west of the Guelph study area.

There are no Nature or Conservation Reserves within the Guelph study area.

7.2.2 Species at Risk

A total of 6 Species at Risk have been assessed and are listed in **Section 3;** three mammal species and three herptile species. The transmission corridor will not change the current habitat in this area and Hydro One will work with MNR for the protection of these species and their habitat in the area.

7.2.3 Terrestrial Features

As described in **Section 3**, the Centre Wellington study area is surrounded by active agricultural industries and farming which are the predominant land uses.

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. The Ontario *Fish and Wildlife Conservation Act (FWCA)* prohibits the destruction or taking of nests or eggs of wild birds, with the exception of American Crow, Brown-headed Cowbird, Common Grackle, House Sparrow, Red-winged Blackbird or European Starling.

In order to mitigate contravening the *MBCA* and/or *FWCA*, vegetation clearing should be avoided during the bird breeding season (May 1 to July 31), if possible. Otherwise, a breeding bird survey must 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.

7.2.4 Aquatic Features

The Speed River and the Northwest Drain are in the Guelph study area and the Tributary to Cox Creek is in the Centre Wellington study area, as described in **Section 3**.

Construction erosion control measures will be put in place so as to minimize erosion effects, including:

- Minimize disturbance of existing vegetated outside ditching and grassed slopes where regrading is required.
- Minimize time exposure of un-vegetated soils.
- Use of in-line erosion control measures such as erosion blanket, rip rap, straw bale, rock flow checks and vegetated buffers, thereby mitigating high flow velocities and excessive erosion/sedimentation.
- Sediment and erosion control measures are to be left in place until all disturbed areas have been stabilized.
- Measures are to be in place to minimize mud tracking by construction vehicles, and to ensure timely cleanup of any tracked mud, dirt and debris along local roads and

areas outside of the immediate work area where the above sediment controls would not be in place.

- Sediment laden water and runoff originating from construction areas should be treated using appropriate methods.
- Refuelling and maintenance of equipment during construction will be undertaken in confined areas away from any surface water channels. There will be no adverse effects as a result of the Project.

The following erosion control guidelines will be considered during construction:

- *Ontario MOE Stormwater Management Planning and Design Manual*, 2003 (http://www.ene.gov.on.ca/envision/gp/4329eindex.htm).
- Ontario MOE, *Stormwater Pollution Prevention Handbook (Part I)* and the *Part II – Pollution Prevention and Flow Reduction Measures Fact Sheets*;
- Ontario MNR, *Guidelines on Erosion Control for Urban Construction Sites,* 1989.
- *Ontario MNR, Technical Guidelines- Erosion and Sediment Control*, 1989.

Station drainage will be subject to an Environmental Compliance Approval (ECA). The ultimate location of discharge will be determined at the design stage and be subject to Ministry of Environment approval.

Any spills of potentially hazardous materials such as fuels and insulating oils would be reported, managed and cleaned up in accordance will all pertinent legislation and Hydro One procedures. An Emergency Response Plan, including on-site spill response kits, will ensure that spills are quickly contained and cleaned up.

7.3 Socio-Economic Environment

7.3.1 Human Settlement

The Guelph study area is designated by service commercial usage, industrial usage, open space for parks and recreation, and residential usage. Residential homes are found within the

Guelph study area and are in closest proximity to Hydro One facilities adjacent to Cedar TS and on the transmission corridor adjacent to Deerpath Drive.

Traffic disruptions at the construction entry/exit locations may occur during construction. Hydro One will develop plans for traffic management with City of Guelph and Township of Centre Wellington officials, as well as monitor and respond to any resident or 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 Public Safety

Any construction site poses a potential safety hazard if not properly controlled. The operation of heavy construction equipment represents a potential hazard to the public. Safety is Hydro One's top priority. 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. This includes ensuring that the station and transmission line upgrades are executed in accordance with all applicable codes and regulations. Additional safety measures involve the continuous monitoring of facility integrity once in service.

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 that 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 would be provided to Emergency Medical Service (EMS).

All work will be governed by the Hydro One Health, Safety and Environmental System policies and procedures. An Emergency Preparedness and Response Plan for the Cedar TS will govern work during station construction and operation.

Perimeter fencing will entirely enclose all station sites (Cedar TS, Campbell TS, Guelph North SS), and will be maintained to prevent public access.

7.3.3 Appearance of the Landscape

The new layout at Cedar TS will limit the removal of existing vegetation within the station as much as is possible, since residences and a recreational field adjacent to a school abut the station property.

Due to the small size and location of the proposed Guelph North SS, there is no landscaping required.

7.3.4 Heritage Resources

The only built heritage of significance is in the Guelph study area and is the Hydro One Control Building within Cedar TS. The Control Building is considered a Heritage Building, as it was built more than 40 years ago and is considered to have historically significant features (as identified in the Unterman, McPhail, Cuming Draft Report of October 1993 and confirmed by D. Bray November 1999).
The planned changes to Cedar TS will not have any effect on the Control Building.

7.3.5 Archaeological Resources

A Stage 1 Archaeological Assessment was conducted by Archaeological Services Inc. for the project study area in 2010.

For the Guelph study area, the report recommended that additional archaeological assessment was not required due to the existing level of ground disturbance.
For the Centre Wellington study area, the report recommended that a Stage 2 Archaeological Assessment be conducted due to limited ground disturbance and the proximity to early Euro-Canadian settlements, early settlement roads and early rail corridors.

The Stage 2 Assessment will be carried out in the Centre Wellington study area in the fall of 2012 and prior to the start of construction.

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 and First Nations.

7.3.6 Recreational Uses

As indicated in **Section 3.2.3** there are a number of existing off-road trails and on-road bicycle routes within the Guelph Study Area. The work undertaken for this Project will have no effect on any trails or other recreational uses.

7.3.7 Resource Uses

7.3.7.1 Agriculture

The Centre Wellington study area includes agricultural cropland surrounded by active agricultural industries and farming as the predominant land uses (as described in **Section 3.2.1**). It is predicted that the Project will have minimal effect on agricultural resources and no mitigation is proposed.

7.3.7.2 Forest Resources

There are no forest resources in the project study area that will be affected.

7.3.7.3 Mineral Resources

There are no forest resources in the project study area that will be affected.

7.3.8 Land Use and Planning Policies

This project complies with all existing policies and plans in the project study area. Upgrading existing facilities meets the requirements of the *Provincial Policy Statement (PPS) (OMMAH, 2005),* which states that "the use of existing infrastructure and public service facilities should be optimized, whenever feasible, before consideration is given to developing new infrastructure and public service facilities".

8.0 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 *Environmental Protection Act* (*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. 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 the

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:

- noise, vibration and dust levels;
- water drainage, runoff, silt and spills;
- waste materials management;
- traffic management;
- protection of archaeological and heritage features;
- preservation of trees where possible, on the transmission line corridor and within Cedar TS;
- avoidance of breeding and nesting birds;
- stormwater management measures at the construction sites; and
- corridor restoration.

A post-construction monitoring program will include inspection of areas that have been restored, including potential erosion areas identified during construction, as required. The effects of the Project, the effectiveness of the mitigation approaches and the need for remedial action will be assessed in the program.

9.0 Conclusions

The Kitchener-Waterloo-Cambridge-Guelph (KWCG) area is one of the larger load centres in Ontario. Its electricity demand peaked at over 1,400 megawatts (MW) in the summer of 2011, and is expected to continue to grow over the next 20 years.

Despite its large electricity demand, there are no major sources of generation supply within the KWCG area. As a result, the area relies heavily on the transmission system to deliver electricity from the Ontario grid to its customers. All sources of electrical supply, with the exception of the supply from the north, have reached or are approaching their maximum capacity for planning purposes.

To maintain a reliable supply of electricity to the KWCG area, the Ontario Power Authority (OPA), Hydro One Networks (Hydro One), local distribution companies (LDCs) and the Independent Electricity System Operator (IESO) are developing near and longer-term plans for the area. These plans will consider an integrated mix of solutions including conservation, local generation, distribution and transmission.

The Guelph Area Transmission Refurbishment Project is one of the solutions needed to provide increased capacity for growth in the South-Central Guelph and Kitchener areas, and to improve the reliability of electricity supply to customers in the KWCG area for the next decade.

This draft ESR has been prepared in compliance with the requirements of the Ontario *EA Act* and describes the Class EA process that has been carried out for this Project.

Since June of 2009, Hydro One has conducted comprehensive public, First Nations and government agency consultation to inform stakeholders about the Project, as well as identify and resolve potential concerns. Provincial ministries, elected officials, and municipal planners were consulted. First Nations, affected area residents and businesses and other interest groups were also consulted by way of meetings, written or telephone communications.

Public Information Centres (PICs) were held in June 2009, November 2009 and June 2012. Local residents, businesses, interest groups, First Nations communities and government agencies were notified about the Project and the PICs through newspaper advertisements and Canada Post Unaddressed Ad mail or direct mailings. A project webpage was also created on Hydro One's website to keep the public and stakeholders informed about the status of the Guelph Area Transmission Refurbishment Project, at: http://www.hydroone.com/Projects/Guelph

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 station or line construction, operation and maintenance were identified.

This draft ESR is being made available for public review and comment for 60 calendar days, from August 9, 2012 to October 9, 2012. Comments received during this review period, along with Hydro One's responses will be summarized in the final ESR. Any request asking for a higher level of assessment (Part II Order Request), for an Individual Environmental Assessment, will also be included in the final ESR. The final ESR will be filed with the Ontario Ministry of the Environment (MOE).

Contingent upon the successful completion of the Class EA process, as well as approval from the Ontario Energy Board (OEB) for "Leave to Construct" approval under Section 92 of the *OEB Act 1998,* detailed engineering and construction is expected to commence in the spring of 2013, with a planned in-service date of December 2015.

10.0 References

Archaeological Services Inc. (ASI). 2010. Stage 1 Archaeological Assessment (Background Research and Property Inspection). Guelph Area Transmission Infrastructure Refurbishment. Report to Hydro One Networks Inc. 13 p.

Dillon Consulting Limited. 2010. Draft Environmental Baseline Guelph Area Transmission Infrastructure Refurbishment. Report to Hydro One Networks Inc. 77 p.

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Ontario Hydro. 2009. Environmental Guidelines for the Construction and Maintenance of Transmission Lines, March 1981, Revision 2009.

Ontario Ministry of the Environment. 1992. Class Environmental Assessment for Minor Transmission Facilities", Report No. 89513, Revision No. 6, April 1992.

Ontario Ministry of the Environment (MOE). 2001. Guide to Environmental Assessment Requirements for Electricity Projects. 78 p.

Ontario MOE Stormwater Management Planning and Design Manual, 2003 (http://www.ene.gov.on.ca/envision/gp/4329eindex.htm).

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Ontario MNR, Technical Guidelines- Erosion and Sediment Control, 1989.

Ontario Ministry of Municipal Affairs and Housing (OMMAH). 2005. 2005 Provincial Policy Statement. 37 p.

Statistics Canada. 2006. Community Profile from the 2006 Census.

Unterman, McPhail, Cuming Draft Report of October 1993 and confirmed by D. Bray November 1999).

LIST OF APPENDICES

Appendix A: Consultation

A-1 Communication with INAC and MAA

INAC

- Letters to INAC
- Response from INAC

MAA

- Letter to MAA
- Response from MAA

A-2 Communication with First Nations

Mississaugas of the New Credit

- Notice of Commencement of the Project/Invitation to PIC #1: June 2009
- Invitation to PIC #2: November 2009
- Project Update: August 2010
- Notice of Project Recommencement/Invitation to PIC #3 &4: May 2012

Six Nations of the Grand River Elected Council

- Notice of Commencement of the Project/Invitation to PIC #1: June 2009
- Invitation to PIC #2: November 2009
- Project Update: August 2010
- Notice of Project Recommencement/Invitation to PIC #3 &4: May 2012

Haudenosuanee Confederacy Council

- Project Update: August 2010
- Notice of Project Recommencement/Invitation to PIC #3 &4: May 2012

A-3 Communication with First Nation and Métis Policy and Partnerships Office of the Ministry of Energy

- Letter to MOE
- Response from MOE

A-4 Stakeholder Listing

A-5 Notification Letters to Stakeholders (examples)

- Notice of Commencement of the Project/Invitation to PIC #1: June 2009
- Invitation to PIC #2: November 2009
- Project Update: August 2010
- Notice of Project Recommencement/Invitation to PIC #3 &4: May 2012
- Notice of Completion of Draft ESR/Review Period: August 2012

A-6 Responses from Federal Agencies
- Transport Canada
- Canadian Environmental Assessment Agency

A-7 Response from Provincial Agencies
- Ministry of Natural Resources

A-8 Response from Municipal Agencies
- City of Guelph Planning Department

A-9 PIC #1 (June 2009)
- Newspaper Advertisement
- PIC Panels
- Comment Form

A-10 PIC #2 (November 2009)
- Newspaper Advertisement
- PIC Panels
- Comment Form (same as for PIC #1)

A-11 PIC #3 and #4 (June 2012)
- Newspaper Advertisement
- PIC Panels
- Comment Form

A-12 Community Meeting (June 2012)
- Facilitator's Meeting Summary Notes (including Community Flyer/Invitation and Presentation Overheads)
- Comment Form

A-13 Letter to Stakeholders for Notice of Completion of Draft ESR (example)

A-14 Project Website
- http://www.hydroone.com/Projects/Guelph

Appendix B: Letter from OPA, March 2012

Appendix C: Environmental Noise Checklist for Cedar TS

Appendix D: Health Canada 2010 EMF Fact Sheet