CLASS ENVIRONMENTAL ASSESSMENT

Draft Environmental Study Report Supply to Essex County Transmission Reinforcement Project

hydro one

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February 2010

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Environmental Services and Approvals
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Executive Summary

Introduction and Proposed Undertaking

Hydro One Networks Inc (Hydro One) is planning to reinforce the electricity transmission system that supplies Essex County and Windsor. There are two stages to this project. The first stage will reinforce the supply for the eastern part of Essex County by the construction of a new 230 kilovolt (kV) to 27.6 kV transformer station (TS), to be located in the Municipality of Leamington, and a new double circuit 230 kV transmission line to tie the TS into the provincial grid. The second stage will be the construction a new 230 kV transmission line within an existing transmission corridor between Lauzon TS, located on the Lauzon Parkway south of the E.C. Row Expressway in the City of Windsor, and Sandwich Jct. near Maidstone.

The proposed facilities fall within the definition of projects covered by the *Class Environmental Assessment for Minor Transmission Facilities* (Class EA*)* which is approved under the *Ontario Environmental Assessment Act (EA Act).* The transmission lines are also subject to "Leave to Construct" approval from the Ontario Energy Board (OEB) under Section 92 of the *Ontario Energy Board Act (OEB Act).*

This Draft Environmental Study Report (ESR) has been prepared in compliance with the requirements of the *EA Act.* It describes the analysis undertaken for this project to meet the requirements of the Class EA process.

Purpose of the Undertaking

The undertaking is required to ensure an adequate supply of electricity to meet the future needs in the eastern part of Essex County including the Town of Lakeshore and Municipality of Leamington. It will also improve overall security and reliability of power supply for the City of Windsor and Essex County.

In the OEB submission, Hydro One will indicate its intent to proceed first with construction of stage one of the proposed project. These facilities are needed in the near-term to provide adequate supply, reliability and transmission capacity to consumers in the eastern part of

Essex County. However, Hydro One will advise the OEB that it will defer construction of the Lauzon TS x Sandwich Jct. transmission line until the electricity demand in the Windsor area returns to 1060 MW (the same level as in 2007). Hydro One will seek OEB approval for this section of the project about two years prior to the forecast of these conditions.

Contingent upon the successful completion of the EA process and the OEB approval process, the expected schedule of stage one for the detailed engineering is the summer of 2011. Construction of the proposed Leamington TS is expected to start in 2011 and construction activities are expected to continue until the facilities are placed in service in 2013.

Identification and Assessment of Transmission System Alternatives

There are two transmission system alternatives that were analyzed by Hydro One to meet the need;

- Alternative 1: a new 230 kV to 115 kV autotransformer station and associated 'tap' lines in the Woodslee area of the Town of Lakeshore would be required. The existing 115 kV transmission circuits would require upgrading between the proposed station and Hydro One's Kingsville Transformer Station. This would involve replacing the existing conductor (wires) with a higher capacity conductor and replacing the wood pole structures on the existing transmission right-of-way (ROW). Upgrading of the existing distribution system out of Kingsville TS would also be required.
- Alternative 2: a new transformer station in the Leamington area and associated "tap" line to connect it to the grid would be required along with an additional transmission line between Lauzon TS and Sandwich Jct.

The "Do Nothing" alternative was examined and if the project was not implemented there would be inadequate capacity to meet the growing load requirement in the Leamington area and there would be a risk to transmission system security in the Windsor/Essex area.

After comparing the two system alternatives, Alternative 2 was selected for this project because it better meets the need for the project; it has a lower cost and technical advantages over Alternative 1, and results in fewer potential effects on the social-economic factors

examined. When the natural environment was assessed, there was no significant difference between the alternatives. Hydro One sought input from the community through a PIC and communication with local officials, First Nations and stakeholders. The consultation process resulted in a strong a preference being shown for Alternative 2.

Identification and Assessment of Transmission Line Routes and Transformer Station Sites in Leamington/Lakeshore for Alternative 2

The technical specifications and system requirements for the new proposed electrical facilities associated with Alternative 2 were determined. Environmental factors were established to assist in the identification of alternative transmission line routes and TS sites and the selection of the preferred route and site.

Preferred Transmission Line Route and Transformer Station Site in the Municipality of Leamington & Town of Lakeshore

Biophysical, socio-economic and technical criteria were established and alternative routes and TS sites were evaluated using these environmental factors. The preferred route, referred to as Alternative Route A in the Draft ESR, makes extensive use of the existing infrastructure on the Leamington utility corridor and the location for Leamington TS is adjacent to this ROW at Mersea Road 6. Both preferred selections meet the technical criteria for the project and are associated with the least amount of natural and social environmental effects of any of the alternatives. Also the preferred TS site had a willing seller .

The Draft ESR describes potential short term and long term environmental effects and proposed mitigation measures related to the construction of the new proposed transmission line and Leamington TS on the preferred site.

Hydro One will fully comply with the requirements of the Class EA process for the proposed project. Hydro One will precede with the undertaking as outlined in the Final ESR incorporating input from the public, municipalities, and agencies. Hydro One will seek all regulatory approvals, licenses, and permits required for the proposed project.

Public and Agency Consultation

Since February 2008, Hydro One has conducted extensive public and government agency consultations to inform stakeholders about the project, as well as to identify and mitigate potential concerns. Provincial ministries, First Nations communities, government agencies, county and local towns/municipalities and interest groups had the opportunity to be involved by way of meetings, and written or telephone communication. Hydro One also met with the officials from the Municipality of Leamington, Town of Lakeshore, Town of Tecumseh, and the City of Windsor prior to notifying the public of the Class EA and holding the first Public Information Centre (PIC).

Three PICs were held for this project; in April and July 2008 and July 2009. The local community and key interest groups were notified about the project and the PICs by way of Canada Post Unaddressed Admail, newspaper advertisements and direct mail.

At the request of local residents to examine an alternative route north of the Hamlet of Staples, a workshop was held with local potentially affected property owners on Alternative Route A, north of County Road 8, to discuss and evaluate transmission line route alternatives.

The public and Municipality of Leamington strongly favoured the use of the municipally owned utility corridor as much as possible. Preference was given by government officials and the public in the Leamington area to bury the line, if not to use poles or narrow-base towers. By siting the towers on the Municipal property line it was felt that the impact of standard tower bases would be minimized. Compatibility of the transmission line to the trail in Leamington was discussed with the Municipality and the design of the ROW will take the trail into account.

Construction impacts on farm infrastructure and operations was also a concern where the proposed ROW swung away from the utility corridor in the area of Staples. Compensation and the impact of a line on property values were issues in this area because Hydro One would be taking new easements. Potential interference with communications and electronic equipment, as well as noise associated with transmission lines, were also flagged as issues.

Appearance of the upgraded transmission corridor in the Town of Tecumseh, and naturalization of the transmission corridor in the Tecumseh/Windsor area were the two major issues discussed dealing with the Lauzon x Sandwich Jct. ROW.

At all PICs Electric and Magnetic Fields (EMFs) and local employment/supplier opportunities were discussed.

As the Class EA was being completed, MNR notified Hydro One that a reptile species found in the vicinity of the proposed right-of-way which was up–listed to endangered. Hydro One has committed to work with MNR to protect the species and its habitat in this area.

All issues and concerns were addressed through discussions with Hydro One staff.

30 Day Public Review and Comment Period

Hydro One prepared the Draft ESR and it is being made available for public review and comment for 30 calendar days, from Feb. 11 to March 12, 2010. During the review period, comments and issues from stakeholders and the public regarding the proposed project will be received and addressed. Both the issues raised by the stakeholders and Hydro One's responses will be documented and summarized in the Final ESR. Any request to elevate to a higher level of assessment by way of a Part II Order request ("bump-up") along with Hydro One's response, will also be included in the Final ESR. The Final ESR will be filed with the Ministry of the Environment (MOE).

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1. Introduction

Hydro One Networks Inc. (Hydro One) is planning to reinforce the electricity transmission system that supplies Essex County and the City of Windsor. There are two stages to this project. The first stage is to construct a new transformer station (TS) to address the growing electricity need in the Leamington area and a new double circuit 230 kilovolt (kV) transmission line to connect the station to the grid. The second stage is to construct an additional double circuit 230 kV transmission line on the west side of Essex County and into the City of Windsor along an existing transmission line corridor. The location of the project is provided in **Figure 1-1**. Details on the role of transmission facilities in the supply of power to customers is found in **Appendix A**.

The proposed facilities fall within the definition of projects covered by the *Class Environmental Assessment for Minor Transmission Facilities* (Class EA*)* which is approved under the *Ontario Environmental Assessment Act (EA Act)*. The transmission lines are also subject to "Leave to Construct" approval from the Ontario Energy Board (OEB) under Section 92 of the *Ontario Energy Board Act (OEB Act)*.

This Draft Environmental Study Report (ESR) has been prepared in compliance with the requirements of the *EA Act*. It describes the analysis undertaken for this project to meet the requirements of the Class EA process.

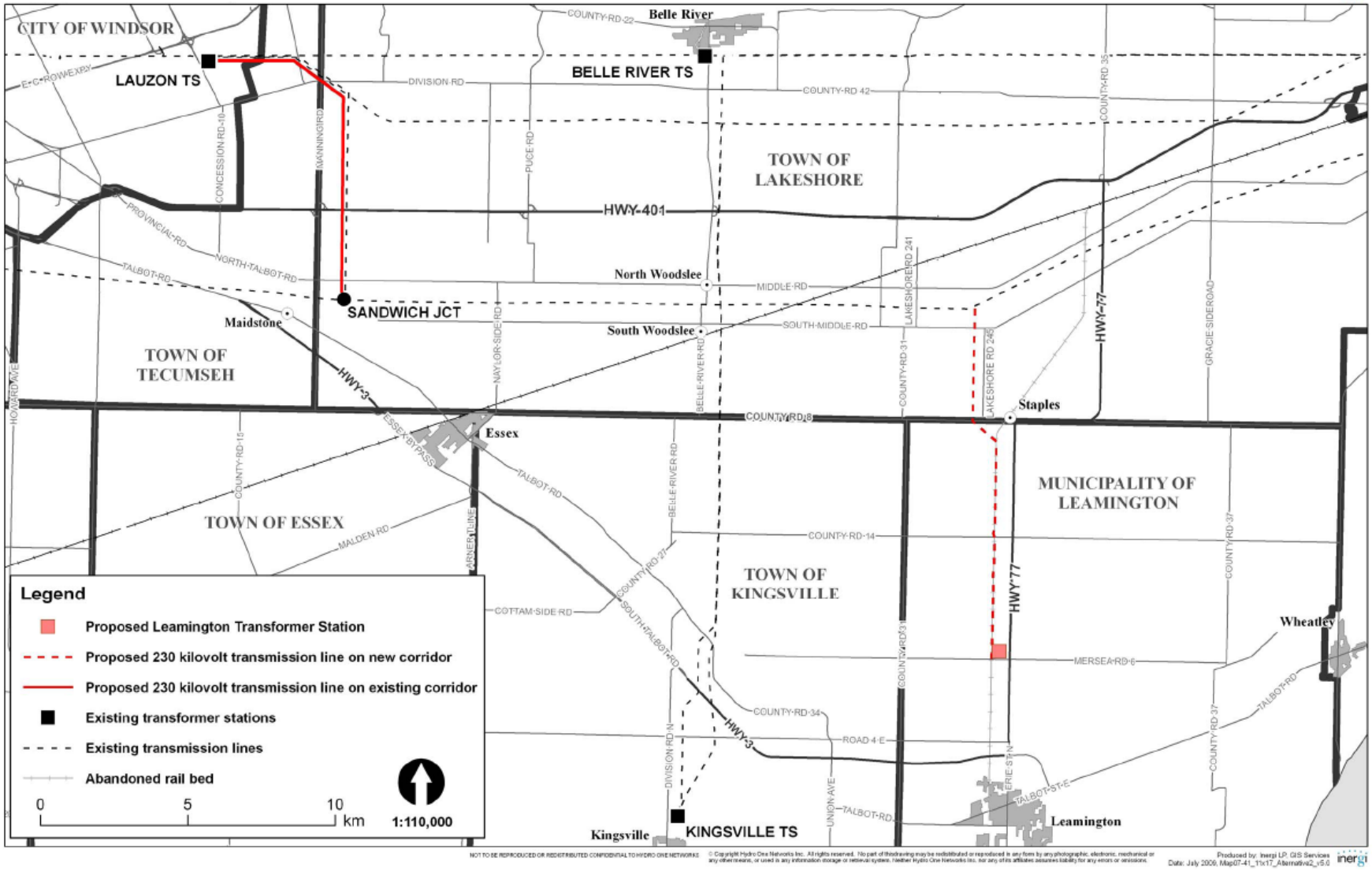


Figure1-1 Project Location Map

1.1 Purpose of the Undertaking

Hydro One, in consultation with the OPA, completed a planning study which identified reliability, supply security and congestion issues in the Windsor-Essex area and the need to reinforce the area's transmission facilities. The undertaking is required to ensure an adequate supply of electricity to meet the future needs in the eastern part of Essex County including the Town of Lakeshore and Municipality of Leamington. It will also improve overall security and reliability of power supply for Windsor and Essex County.

Although the need for the project is driven by local requirements, the proposed facilities will also facilitate the connection of future renewable energy projects resulting from the Green Energy initiative and *The Green Energy Act.*

1.2 System Options to Address Need

There were two system options that would address the need in the area and are referred to as Alternative 1 and 2. These are shown in **Figure 1-2.** Technical, environmental, cost and socio-economic factors were assessed during the Class EA process. Stakeholder and public feedback were also obtained for both options. These alternatives were:

- Alternative 1: a new 230 kV to 115 kV autotransformer station and associated 'tap' lines in the Woodslee area of the Town of Lakeshore would be required. The existing 115 kV transmission circuits would be upgraded between the proposed station and Hydro One's Kingsville Transformer Station. This would involve replacing the existing conductor (wires) with higher capacity conductor and replacing the wood pole structures on the existing transmission right-of-way. Upgrading of the existing distribution system out of Kingsville TS would also be required
- Alternative 2: a new transformer station in the Leamington area and associated "tap" line to connect it to the grid would be constructed along with an additional transmission line between Lauzon TS and Sandwich Jct. This alternative is discussed in more detail in **Section 1.3**.

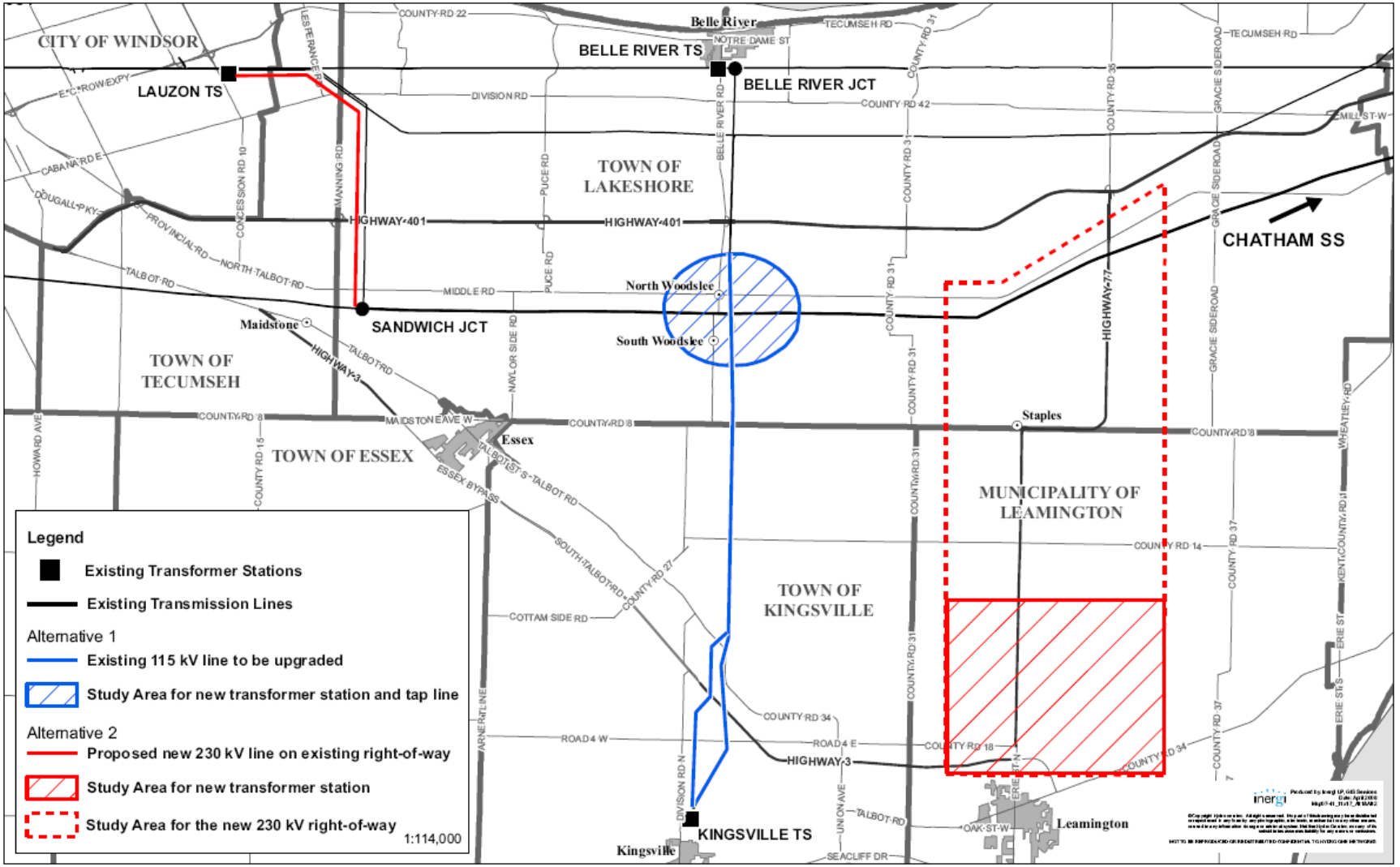


Figure 1-2 Transmission System Alternatives

Load transformation stations in Kingsville and Tilbury are supplied by two 115 kV circuits (K2Z and K6Z), and with the existing transmission network, and without the implementation of one of these projects, each circuit would be thermally over loaded following the loss of the other. Not proceeding with the project would result in inadequate transmission capacity to meet the load requirements at these stations. It would also result in inadequate capacity to meet the growing load requirement in the Leamington area.

The existing transmission network is inadequate to provide security of supply to loads in the Windsor – Essex area. Following the loss of two 230 kV circuits in the area, the remaining transmission is inadequate to meet load restoration objectives. In addition, when the area demand exceeds 1060 MW, these remaining circuits would be unable to provide adequate voltage to support the area load. Not proceeding with the project would expose the area to the risk of prolonged load loss following the loss of two 230 kV circuits in the area.

1.3 The Proposed Undertaking

Based on an analysis of technical, environmental and socio-economic factors, and public and stakeholder feedback, Hydro One is proposing the staged construction of the following new facilities to ensure an adequate and reliable supply of power for the future:

- Stage 1: a new transformer station on Mersea Road 6 in the Municipality of Leamington and a new double circuit 230 kV transmission line on a new corridor to connect the station to the existing 230 kV lines south of Highway 401 in the Town of Lakeshore; and
- Stage 2: an additional double circuit 230 kV transmission line on the existing corridor between Lauzon TS in the City of Windsor and Sandwich Junction near Maidstone.

A project description with more details of the undertaking is provided in **Section 8.0. Figure 1-3** is a photo of the towers on the existing corridor between Lauzon TS and Sandwich Jct. Similar towers will be used on the two proposed transmission lines. **Figure 1-4** is a photo of a TS under construction that is typical of the one planned for the Leamington area.

Figure 1-3 Transmission towers similar to those proposed in Alternative 2.

Figure 1-4 Construction of a TS similar to the proposed Leamington TS

The new transmission facilities will be owned and operated by Hydro One. The design of the facilities will be in accordance with conventional utility practices and will meet the requirements of the Transmission System Code (OEB 2009) for Ontario. The design, construction and operation of the transmission facilities will be in accordance with all applicable environmental legislation and comply with Hydro One's *Environmental Guidelines for the Construction and Maintenance of Transmission Facilities* (Hydro One 2009).

Depending on the successful completion of the EA and the OEB approval processes, detailed engineering is planned to start in the summer of 2011 for Leamington TS and associated transmission line. The target in-service date is 2013. The second stage of the project (Lauzon TS x Sandwich Jct.) has been deferred until the economic conditions and demand for electricity in the Windsor area is forecast to return to the same level as in 2007 or about 1060 MW. Hydro One will seek OEB approval for this stage of the project about two years prior to the forecast of these conditions.

1.4 Approval Process and Regulatory Requirements

During the planning, design and construction process there are many legislative requirements that must be met. Following are the key pieces of legislation that will have to be adhered to for this project.

1.4.1 Ontario Environmental Assessment Act

This Draft ESR was prepared in conformance with the *Class Environmental Assessment for Minor Transmission Facilities, Revision 6 April 1992*, which is approved under the *EA Act*. The Class EA defines the environmental planning process, which must meet all the requirements of the *EA Act*. It includes the process for initial and final notification of a recommended undertaking, the associated public consultation process, a public review period for the Draft ESR, and the filing of the Final ESR with the Ontario Ministry of the Environment (MOE). The Class EA document also identifies 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 *Guide to Environmental Assessment Requirements for*

Electricity Projects (EA Guide). The projects subject to the Class EA also are consistent with Category B projects.

Projects covered under the Class EA include:

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

Transmission facilities which exceed these criteria such as 230 kV transmission lines longer than 50 km or a new 500 kV (or greater) transmission line more than 2 km in length fall outside of the Class EA definition and are automatically categorized as Individual EAs (i.e., Category C projects in the EA Guide). Distribution facilities (i.e., less than 115 kV) fall below *EA Act* thresholds and are not subject to *EA Act* requirements (i.e., Category A projects in the EA Guide).

The Class EA process has proven to be an effective way of ensuring that transmission projects with a predictable range of effects are planned and carried out in an environmentally acceptable manner.

Consultation is an important part of the Class EA process. Following a consultation process with citizens of the public, government agencies, First Nations and municipalities and upon arriving at a recommended undertaking or project, Hydro One issues a final notification to all parties who have indicated a continuing interest in the project. A Draft ESR is made available for review and comment for a 30-day period. If there are no concerns expressed during the 30-day review period, the project is considered to be acceptable and a Final ESR is filed with the MOE for information purposes. Concerns raised during the study are noted in the ESR along with how they were addressed.

In the event that there are concerns expressed prior to and during the 30-day review period, Hydro One will attempt to resolve the remaining concerns to bring closure to the EA

process. If Hydro One cannot resolve the environmental concerns raised during the study, the objector(s) may request a higher level of assessment referred to a Part II Order request. If Hydro One considers this request to be inappropriate, then a written objection along with the Hydro One response and the Draft ESR will be forwarded to the Director of the MOE Environmental Assessment and Approvals Branch (EAAB) for a decision by the Minister of the Environment as to whether or not the project requires an Individual EA. If the request is denied, there is an opportunity to appeal to the Minister of the Environment.

1.4.2 Ontario Energy Board Act, 1998

Under current legislation, 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*. 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 first stage Leamington TS x Leamington Jct. in accordance with Section 92 of the *OEB Act* in late 2010. The OEB review process for Hydro One's "Leave to Construct" application also includes opportunities for the public, First Nation communities and stakeholders to input and be involved.

1.4.3 Other Permits, Licenses and Approvals

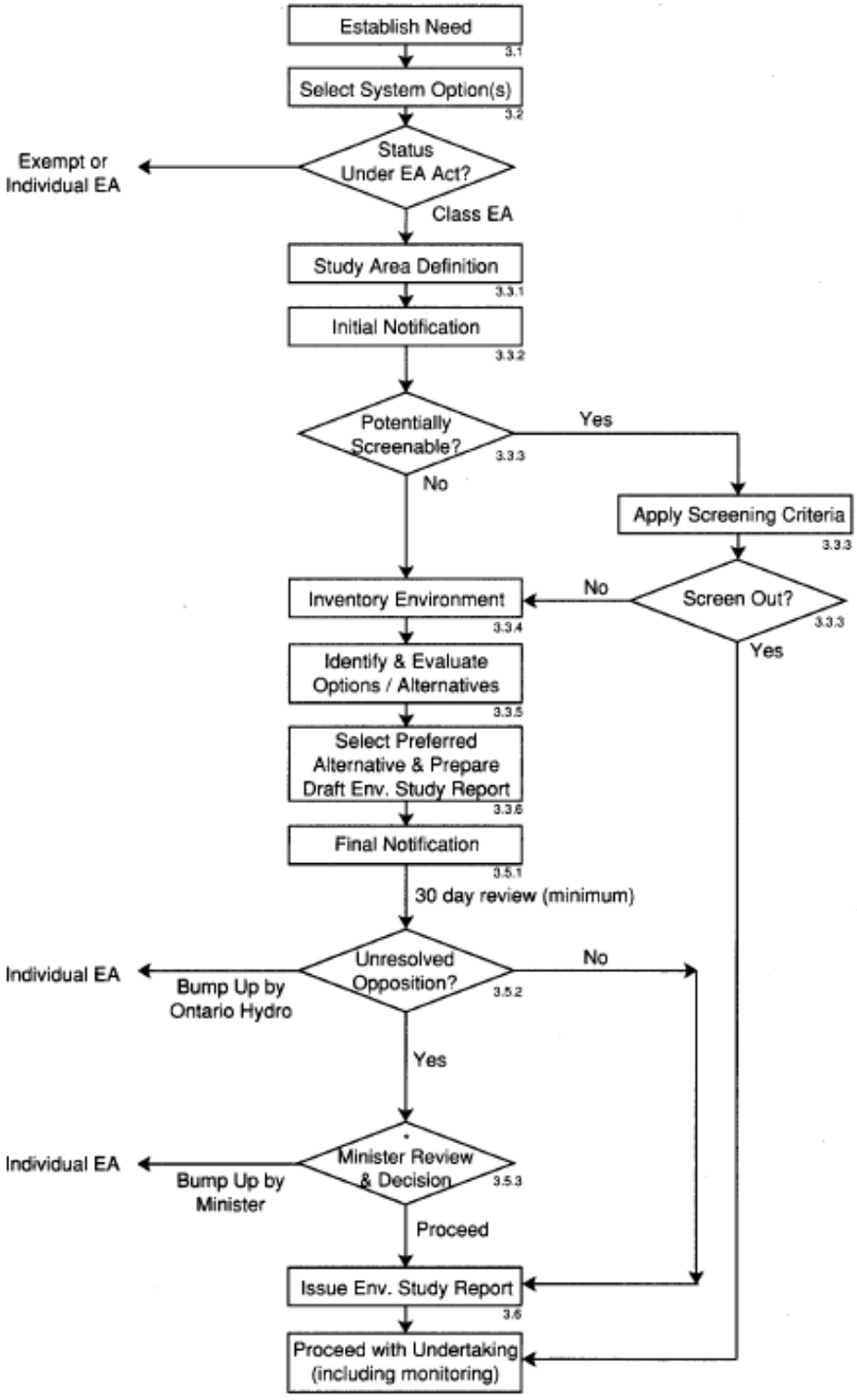
In addition to the *EA Act* and OEB Section 92 approval, there are a series of necessary permits, licenses and approvals that may be required under federal, provincial and municipal legislation. Hydro One will obtain all the necessary permits and approvals. Some of the potential permits, licenses, approvals and compliance requirements are provided in **Table 1 - 1** below:

Table 1-1: Potential Notifications, Permits and Approvals

Agency	Potential Notification/Permit/Approval
Ministry of Transportation	Crossing Permit for construction affecting Highway 401 on the Lauzon TS x Sandwich Jct. transmission line.
Utility owners	Agreements on construction procedures for crossing linear utilities such as water mains and gas pipelines on both transmission lines.
Ministry of the Environment	Certificates of Approval for noise and drainage related to Leamington TS.
Ministry of Culture	Stage II Archaeological Assessment Clearance Letter for the proposed lines and station.
Regional and local Municipalities	Approval and permits for road crossings and "entrances", allowances/severances, vehicle restrictions and traffic management plan, drainage crossings and Building Permits, as required on the station both lines.

2. Class EA Process

The Class EA for this project was planned according to the requirements defined by the *Class Environmental Assessment for Minor Transmission Facilities, Revision 6, April 1992*. The purpose of this document is to provide a basis for approval under the *EA Act* of a defined class of projects. The Class EA defines an environmental planning process which meets all the requirements of the *EA Act*. The proposed undertaking falls within the scope of the Class EA. The Class EA study process is illustrated in **Figure 2-1**.



Source: *Class Environmental Assessment for Minor Transmission Facilities, Revision 6 April l992.*

Figure 2-1 Class Environmental Assessment Study Process

2.1 Study Areas Identification

At the outset of the study, the technical specifications and system requirements for the new electrical facilities were determined and criteria and guidelines were established to assist in identifying study areas. The study area boundaries were established after a review of the system alternatives, the existing facilities in the area and the biophysical and socio-economic constraints within the vicinity. See **Figure 2-2** for the project study areas**.**

It was determined that to reinforce the transmission facilities in Essex County there were two viable alternatives: the first was to construct an autotransformer station and associated tap lines north of Kingsville TS and upgrade the existing 115 kV wood pole transmission line. The second alternative was to construct a TS in the Leamington area and a 230 kV transmission line to connect the TS to the provincial grid. This alternative would also require a new 230 kV line on the existing transmission line corridor between Lauzon TS x Sandwich Jct. Since these facilities are so far apart, each had its own study area. Therefore there are three study areas that were assessed for new or upgraded facilities. The following provides a description of the study areas:

Kingsville Study Area

This study area lies within the Town of Lakeshore and the Town of Kingsville.

A new autotransformer station would be required near the crossing of the 115 kV line from Belle River Jct. x Kingsville TS and the 230 kV lines between Chatham SS x Sandwich Jct. For technical and economic reasons, the proposed TS should be within a 2.5 km radius from the line crossing and therefore this became the boundary of the TS study area. This project would also require and upgrade of the 115 kV transmission line between the proposed TS and Kingsville TS and therefore the study area for the transmission line upgrade extended 500 m on both sides of the existing transmission line.

Leamington Study Area

This study area lies within the Town of Lakeshore and the Municipality of Leamington. The TS study area boundaries were chosen because of the proximity to the forecasted load growth centre and would allow for shorter distribution lines, hence improving reliability, reducing losses and optimizing the system. The area was selected because a new transmission line would be able to tap into the existing double circuit 230 kV transmission lines between Chatham SS x Sandwich Jct.

The Leamington TS study area is located north of the community of Leamington between Hwy 3 to slightly north of Mersea Road 7; the east boundary is approximately 4 km from Hwy 77 and the west boundary is approximately 2 km from Hwy 77. The transmission line study area overlaps the TS study area and extends north to the existing 230 kV transmission lines between Chatham SS x Sandwich Jct.

Lauzon Study Area

This study area lies within the Towns of Lakeshore and Tecumseh and a small portion extends into the City of Windsor. An additional transmission line is required to increase the security of the transmission supply in the Windsor/ Essex area. The study area boundaries for the proposed transmission line was based on 500 m distance from the centre of the existing government-owned transmission corridor between Lauzon TS x Sandwich TS.

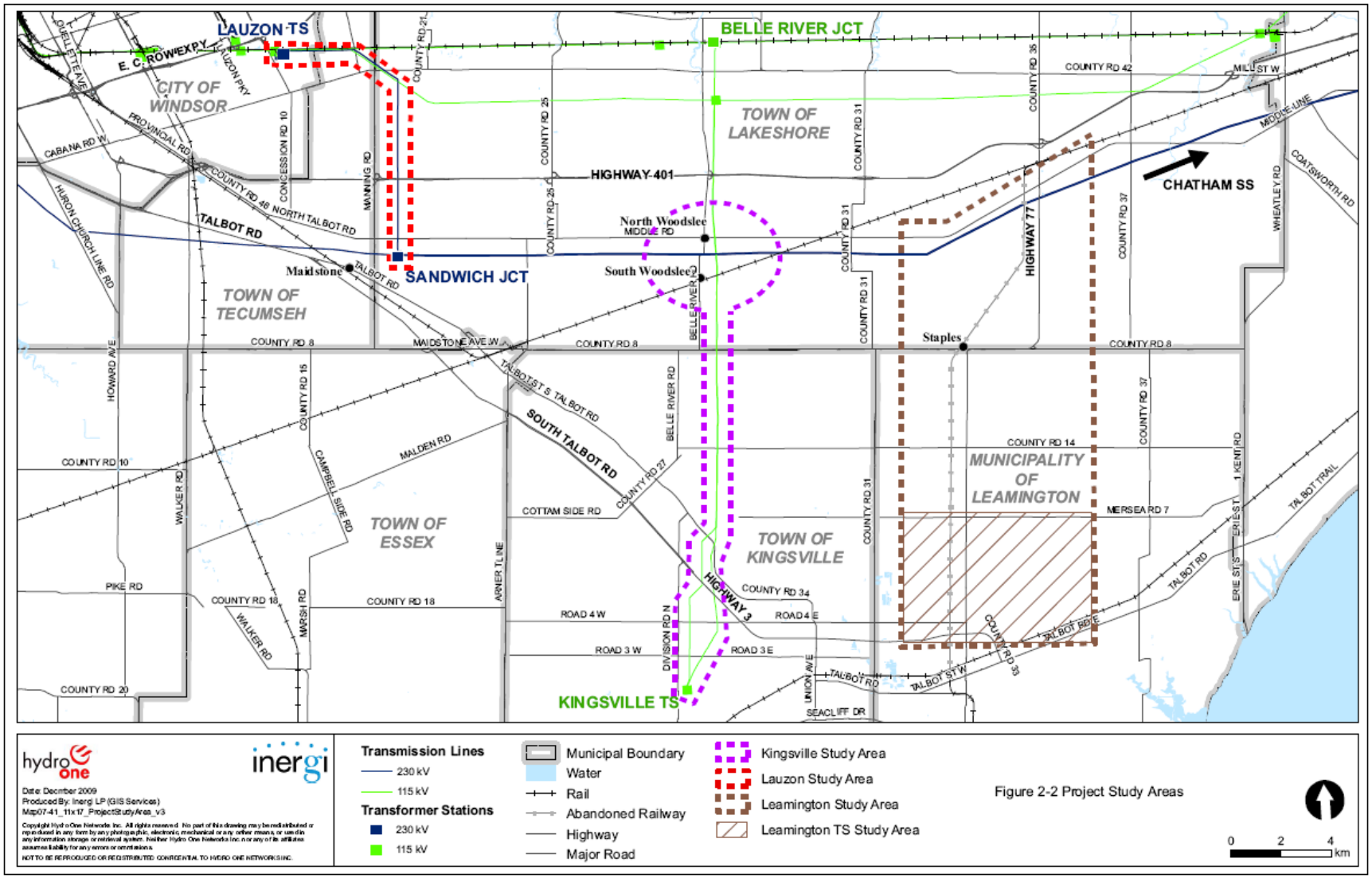


Figure 2-2 Project Study Areas

2.2 Initial Stakeholder and Public Notification and Ongoing Consultation

The proposed project was formally announced on February 22, 2008. Initial notification letters were sent to all relevant federal and provincial ministries, agencies, county and local towns/municipality, interest groups and local conservation authorities. A stakeholder contact list is provided in **Appendix B1.** A copy of the notification letter is provided in **Appendix B2**.

Ongoing consultation was conducted throughout the project with government agencies, municipal officials and the local community. Details of the consultation process are provided in **Section 4.**

2.3 Environmental Inventory

Information was collected and analysed for the relevant natural and social environment factors. This information is consistent with the requirements set out in Appendix G of the MOE *Guide to Environmental Assessment Requirements for Electricity Projects* and includes the following:

- Biological Resources;
- Forestry Resources;
- Agricultural Resources;
- Mineral Resources;
- Recreational Resources;
- Appearance of the Landscape;
- Human Settlement; and
- Heritage Resources.

Data was compiled from publications, Geographic Information Systems (GIS) files from municipal and provincial agencies, and from discussions with agency staff. A list of

references can be found in **Section 12**. A site visit was conducted by a biologist in the spring of 2008 and species observed are listed in **Appendix C.**

A wide variety of data and information sources were used in collecting information to establish the Environmental Inventory. These included:

- Primary data – field data collected for identifying, quantifying, verifying and analyzing natural environment features; field site visits, and windshield surveys to collect natural environmental data; socioeconomic data and archaeological surveys;
- Secondary data – relevant data obtained from numerous agencies, e.g., Statistics Canada, MOE, Ministry of Energy and Infrastructure, Ontario Ministry of Natural Resources (MNR), Essex Region Conservation Authority (ERCA), Lower Thames Valley Conservation Authority (LTVCA), Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA), and local Towns and Municipalities;
- Information obtained through consultations with the general public by means of PICs and a workshop.

2.4 Identification and Evaluation of Alternatives

Hydro One sought input on the transmission alternatives, transmission line routes and TS site selection from the community through PICs and meetings with local and agency officials and other stakeholders. **Section 4** provides more details on the consultation process.

Meetings and discussions were held with municipal officials and provincial government agencies. The route and site selection process was based on avoiding, as much as practical:

- Existing residences and businesses;
- Areas with sensitive biophysical and social features;
- Lands approved for commercial/industrial development;
- Class 1 and 2 agricultural lands.

Hydro One presented to the public and stakeholders the selection criteria, the evaluation of the alternatives and the rationale for the final selection. **Sections 5, 6 and 7** provide more detail on the evaluation criteria and selection process.

2.5 Draft Environmental Study Report and Notification

The potential short term and long term residual environmental effects of the project were identified and corresponding mitigation measures were proposed. The Notice of Completion of the Draft ESR was sent to the provincial ministries and agencies, First Nations and parties that had indicated a continuing interest in the project. A public notice was placed in local newspapers to announce the start and end of the 30-day public review and comment period as well as locations where a paper copy of the Draft ESR could be viewed. This Draft ESR can also be downloaded from the project website http://www.hydroone.com/Projects/Pages/Default.aspx.

At the end of the 30-day public review period, 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. Upon the completion of the Class EA process, the Final ESR will be filed with the MOE.

3. Environment and Socio-Economic Features

This section provides a description of the natural and social environmental conditions in the study areas for the proposed project. The data was compiled from published literature and maps, discussions with various agencies, and information gathered during field surveys. This information was augmented and updated by data from the ERCA, LTVCA, MNR's Natural Heritage Information Centre (NHIC), Census Canada, the Municipality of Leamington, the Towns of Lakeshore, Kingsville and Tecumseh and the City of Windsor. In addition, a Stage 1 Archaeological Assessment was completed for each of the study areas.

The various natural and socio-economic environment features are described below. See **Appendix C: Environmental Baseline Report** for more details.

3.1 Natural Environment

The following section describes the study areas with regards to natural features, which are illustrated in **Figures 3-2, 3-3** and **3-4**.

3.1.1 Climate

The climate of southern Ontario is moderated by the proximity to the Great Lakes, and varies appreciably from one location to another and from year to year (Brown *et al.,* 1968). The variability in southern Ontario climate is caused by local differences in topography, distance from the Great Lakes, and the direction of the prevailing winds. The study areas are located within the Kent and Essex Climatic Region (Brown *et al*., 1968). There are several large bodies of water that moderate the climate of the study areas: those being Lake Huron, Lake St. Clair and Lake Erie. These significant water bodies cause relatively mild winters with moderate precipitation.

January is the coldest month of the year, with an average temperature of – 4.5 degrees Celsius (^{0}C) while July is the hottest month of the year with an average temperature of 22.1 ^{0}C.

Essex County contains the warmest climate in Canada and experiences conditions and a growing season similar to those of the northern Corn Belt of the United States (Chapman and Putnam 1984). This warm climate affects the type of vegetation, wildlife and agriculture which are common to the area.

3.1.2 Geology

The bedrock of the region consists of a sequence of flat-lying Paleozoic sedimentary rocks overlying the crystalline Precambrian basement. The main structural features of the region are the Michigan Basin and the Algonquin –Findlay Arch.

The southern portion of Essex County is underlain by the Detroit River Group of limestones and dolostones. Most of the central and eastern parts of the region are underlain by the Dundee Formation, which consists of light brown medium-grained fossiliferous limestone. The area around the south shore of Lake St. Clair is underlain by the Hamilton Formation, which consists of grey shales and grey crystalline cherty limestones. The Upper Silurian Salina Formation underlies these upper formations throughout Essex County.

3.1.3 Physiography

Regionally, surficial deposits are divisible into two main categories. The most widespread are fairly deep sediments deposited by Quaternary glaciation, mainly of the Wisconsinan Substage. These are ice-contact sediments (tills) deposited directly from glaciers during ice advance and retreat and also include landforms such as drumlins, moraines and kames.

Essex County is situated within the physiographic region of southern Ontario known as the St. Clair Clay Plains, which cover an area of nearly 5,900 km^2. This region is one of little relief, with thick clay deposits (30 to 60 m deep) overlying limestone bedrock. Ground surface elevation is between 175 and 213 m above sea level. There are minor variations in levelness of the ground surface that have a great effect on vegetation and soils (Chapman and Putnam, 1984).

The physiographic sub-region is the Essex Clay Plain, which encompasses all of Essex County and the southern part of Kent County. This sub-region is located between the basins of Lake Erie to the south and Lake St. Clair to the north and consists of a bevelled clay till with discontinuous deposits of glaciolacustrine clays and sands (Chapman and Putnam, 1984). The region is generally flat, though a number of areas break the continuity of the plain. These include the Blenheim Moraine, a moraine near Leamington, a slight elevation around Harrow and several low gravel ridges.

3.1.4 Soils

Essex County is characterized by three major soil associations: the Brookston Soil Association (which occupies the largest portion of the area); the Berrien Association and the Haldiman Association. Soils in most of Essex County are poorly-drained and numerous drainage ditches have been dug to improve the drainage. Some small undrained areas contain peat or muck accumulations. The majority of soils in the county are heavy in texture. Due to the level topography of the area, erosion is generally not a problem.

Soil maps of the study areas are presented in **Appendix C**: Environmental Baseline Report.

3.1.5 Surface and Groundwater Hydrology

Due to the flat topography and heavy soils of the region, artificial drainage is used extensively to improve agricultural output. Drains and ditches throughout the county are deep, ranging from 2 to 3 m, and fields are often tiled. These ditches have been constructed in order to provide drainage and aeration for agricultural fields. These watercourses can be evaluated for ecological significance according to three classes.

The different classes recognized by local conservation authorities are described below:

- Drain Class C – has permanent warm-water flowing all year. Aquatic species in this category are more tolerant to habitat changes. These watercourses are warm-water and productive, with an average temperature of > 25°C;

- Drain Class E – has permanent coldwater and is the most desirable of the three types due to diverse habitat available year-round and the more sensitive species found in this environment. This natural feature should be preserved, protected and enhanced where possible; and
- Drain Class F – has standing water pools or is intermittent, conveying water during rain events, snowmelt and spring run. Such watercourses provide migration corridors, access to food and spawning habitats for many species of fish, amphibians and waterfowl.

Table 3-1 below summarizes the various watercourses present within the study areas

Table 3-1: Summary of Watercourses Located Within the Study Areas

STUDY AREA	TOTAL WATERCOURSES	WATERCOURSE CLASSIFICATION
Kingsville Study Area	19	Class E: 1 Class C: 0 Class F: 18
Leamington Study Area	11	Class E: 0 Class C: 2 Class F:9
Lauzon Study Area	10	Class E: 2 Class C: 1 Class F: 7

The southern portion of the Kingsville study area is located within the Mill Creek and Wigle Creek watersheds, which drain south into Lake Erie. The northern part of the study area is located mainly within the Belle River watershed, and partly within the Duck Creek watersheds. Both of these watersheds drain north into Lake St. Clair.

The Leamington study area overlaps the Sturgeon Creek, Hillman Creek, Litte Creek and Ruscom River sub-watersheds, and on the east extends into the Lower Thames watershed (ERCA, 2009). The Ruscom River watershed covers the northern half of the study area and

drains into Lake St. Clair. The Sturgeon Creek watershed at the south end of the study area drains north to south into Lake Erie, west of Point Pelee. Hillman Creek, covering a south-eastern corner of the study area, drains west to east and discharges into Lake Erie, east of Point Pelee (ERCA, 2009). There are 11 watercourses within the study area, of which there are no Class E watercourses, while two are Class C and nine watercourses are Class F.

The Lauzon study area is located within the Little River and Pike Creek sub-watersheds. Drainage in both of these watersheds is south to north, with both the Little River and Pike Creek discharging into Lake St. Clair (ERCA, 2009). There are 10 watercourses in this area, seven of which are Class F, while one is class C and two are Class E**.** The two Class E watercourses are the Little River, which crosses the existing ROW close to the Lauzon TS, and Pike Creek, which crosses the ROW just before it turns south.

Essex County's hydrogeology is mainly controlled by surficial glacial deposits. The water table level is very shallow and is continuous with regional lakes, rivers, streams and drains. The groundwater system represents a recharge/discharge relationship between ground and surface water systems, regional and local precipitation, plant transpiration, and human consumption. In most areas the water table is seldom more than 5 m below ground (MOE 2008).

Figure 3-1 below presents the watershed boundaries within Essex County:

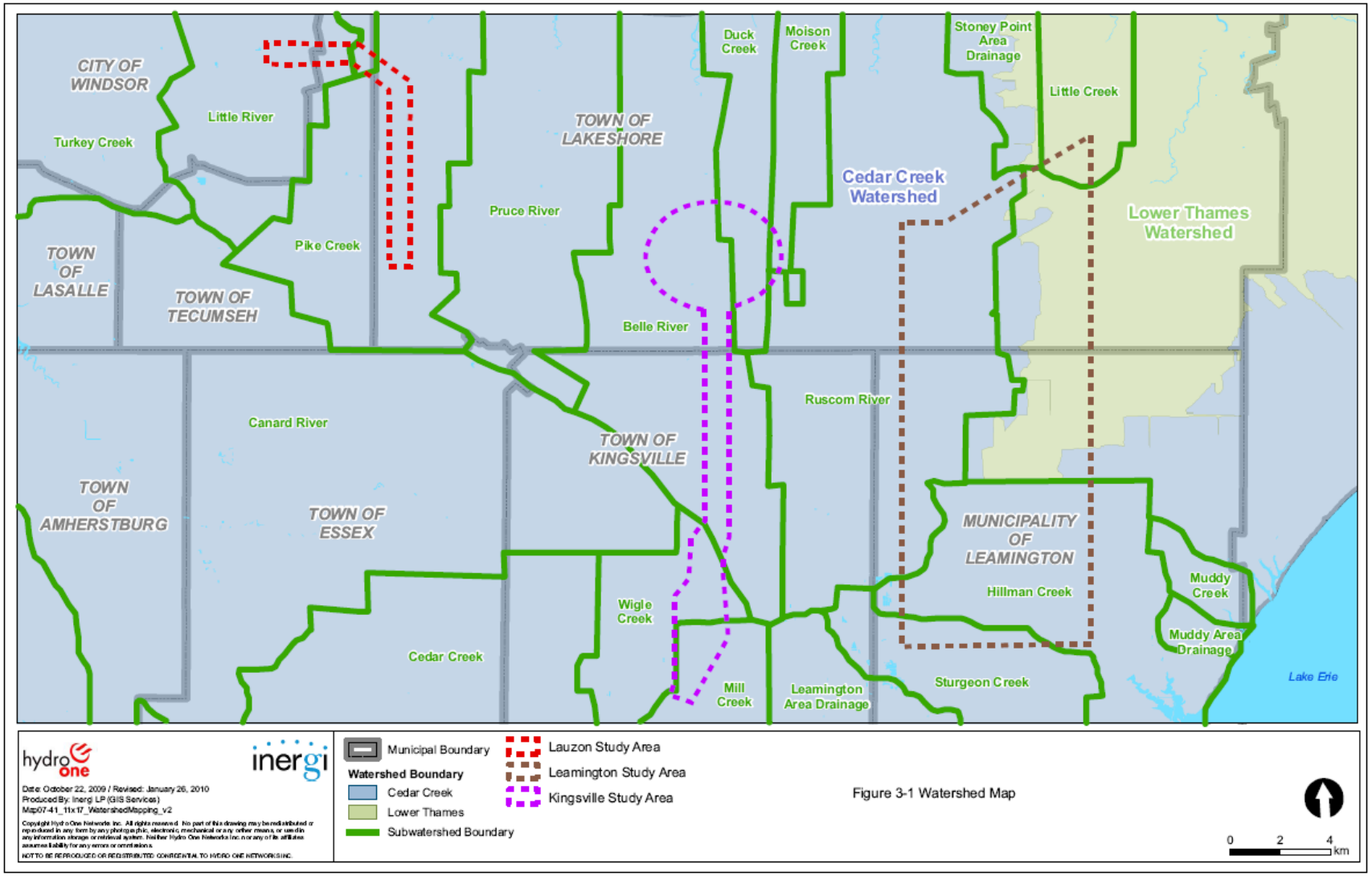


Figure 3-1: Watershed Map

3.1.6 Vegetation

Essex County is located within the Niagara Forest Section of the Deciduous Forest Region (Rowe, 1972). The forest communities of the Niagara Forest Section are dominated by broad-leaved trees. The Deciduous Forest Region (also commonly referred to as the Carolinian Zone) lies along the northern shores of Lake Erie and Lake Ontario, and the southeastern shore of Lake Huron. It is the northern extension of the large deciduous forest of the northeastern United States. Within Canada, southern Ontario is the only area where the Carolinian Zone exists. Many plant species are at their northern limit of distribution and are considered rare and at risk in Ontario, but are secure in the United States.

The Deciduous Forest Region is a mixed forest influenced by the mild, lake moderated climate (MNR, 2002). Characteristic species of the Carolinian Zone include Black walnut (*Juglans nigra*), Butternut (*Juglans cinerea*), Cucumbertree (*Magnolia acuminata*), Tulip tree (*Liriodendron tulipifera*), Sassafras (*Sassafras albidum*), Red Mulberry (*Morus rubra*) and several species of oak (*Quercus* sp.) and maple (*Acer* sp.) (Armson, 2001).

The primary land use within Essex County is agricultural. While CLI (1990) classifies most of the land as Class 2 (very slight limitation to the growth of commercial forests), forestry is not significant in Essex County. Most of the original forest of Essex County has been cleared for agriculture and very few large woodlots remain. Forest cover in the County is only approximately 5%, one of the lowest in Southern Ontario. However, there are small, highly-fragmented wooded areas found at the back of fields or along property lot lines.

In the Kingsville study area, there are four woodlots within the northern part of the study area (i.e. north of the Kingsville-Lakeshore Municipal Boundary); the most significant of these is associated with a ravine and is isolated. Five woodlots are located in the southern part of the study area and are generally composed of tree and shrub species typical to the Carolinian Forest. The forest floor near the existing transmission line included many common plants, in particular an abundance of Wild Geranium (*Geranium maculatum*) (S4, apparently secure) and White Trillium (*Trillium grandiflorum*) (S5, secure).

Forty-one woodlots are present in the Leamington study area, although the majority of these woodlots are highly fragmented and small (many are less than 5 ha in size) and the majority of the historical forest cover in the study area has been cleared to make way for agriculture. Andrew Murray O'Neal Memorial Woods (AMOMW) is located west and adjacent to the Leamington utility corridor between Mersea Roads 4 and 5. Saplings of various Carolinian plant species grow within the AMOMW. These species include what appears to be Summer Grape (*Vitas aestivalis*) (S4, apparently secure), Red Mulberry (*Morus rubra*) (S2, imperiled) and Flowering Dogwood (*Cornus florida*) (S2, imperiled). The Woods contain Black Walnut, (*Juglans nigra*) (S4, apparently secure), Basswood (*Tilia Americana*) (S5, secure), White Pine (*Pinus strobus*) (S5, secure) and various Hickory, Oak and Elm species. Big O Conservation Area is located in the north-east corner of the Leamington study area, adjacent to the existing 230 kV east-west transmission line where it spans Hwy 77. Forest cover within Big O Conservation Area is composed of Lowland Maple-Poplar forest (LTVCA 2009).

In the Lauzon study area, the existing transmission corridor runs east from the Lauzon TS along the north boundary of McAuliffe Woods Conservation Area. This Conservation Area is under the jurisdiction of the ERCA. The following tree and shrub species were found under and adjacent to this transmission line: Ash Pumpkin (*Fraxinus profunda*) (S2, imperiled according to NHIC), and Black Oak (*Quecus velutina*) (S4, apparently secure) (or Pin Oak *Quercus palustris* (S3, vulnerable) or both) and Cockspur Thorn (*Crataegus crus-galli*) (S5, secure). Following the existing transmission line south towards Sandwich Jct., there are seven other woodlots that are within the study area boundaries. The largest woodlot lies along the southern boundary of the study area and is approximately 18 ha in size.

Within Essex County there are also twelve vegetation communities of special concern recorded by NHIC. These include three communities that are classified as Pin Oak Mineral Deciduous Swamp Type, two communities classified as Moist – Fresh Tallgrass Prairie Type and two communities classified as Moist – Fresh Black Oak – White Oak Tallgrass Woodland Type. The additional five vegetation communities of concern within Essex County are: Juniper Dune Shrubland Type, Poison Sumac Organic Thicket Swamp Type, Red Cedar Dune Savannah Type, Hop-tree Dune Shrubland Type and Moist – Fresh Black Oak Tallgrass Savannah Type. Many of these communities contain plant species not

typically found in the woodlots, including prairie and savannah (grasses and other herbaceous plants) species. The provincial rank of these communities ranges from S1 (critically imperilled) to S3 (vulnerable), but none of the twelve communities overlap with any of the study areas. Seven of the communities are located at the far west end of Essex County, just south of Windsor. Three are located on Point Pelee, while the remaining two vegetation communities of concern are located south and west of the Kingsville study area (NHIC 2008).

For more details and a listing of tree and shrub species that were observed during a field survey see **Appendix C: Environmental Baseline Report.**

3.1.7 Environmentally Significant Areas

Environmentally significant areas include Provincially Significant Wetlands (PSWs) and Areas of Natural and Scientific Interest (ANSIs) designated by the MNR, as well as Environmentally Sensitive Areas (ESAs) and Natural Environment Areas (NEAs) designated by municipalities and conservation authorities.

Life Science ANSIs are natural areas selected to protect outstanding landscapes, environments and biotic communities. There is one ANSI in the Leamington study area (Cameron Scott's Woods, Life Science ANSI). There are no PSWs within the study areas.

NEAs are identified in the County of Essex Official Plan (incl. Schedule "A" map *In:* County of Essex 2005), the Official Plans (OP) of the Town of Kingsville, Municipality of Leamington, Town of Lakeshore, Town of Tecumseh and the City of Windsor, and by the NHIC (2009).

The NHIC indicates that the following natural features occur near Kingsville TS, but do not fall within the Kingsville study area:

- Greenbrier Woods Life Science Site to the east;
- Ruthven Rocky Woods Life Science ANSI;
- Jack Miner Woods Life Science Site; and

- Jack Miner Bird Sanctuary and Miner Crown Game Preserve

The OP of the Town of Tecumseh identifies one NEA, McAuliffe Woods in the Lauzon study area, which the ERCA considers a Conservation Area. McAuliffe Woods is a located south of the existing transmission line as it runs east from Lauzon TS. McAuliffe Woods contains a network of trails for year-round recreational use (ERCA 2009).

In the Leamington study area, there are five ESAs:

- Sweetfern Woods – a Life Science Site west of Hwy 37. Sweetfern Woods is composed of Lowland Red Maple-Mixed Oak Forest, Lowland Early Successional Aspen Forest, Closed Mixed Shrub Thicket, Open Mixed Shrub Thicket and Overgrown Conifer Plantation (ERCA 1994).
- Leamington White Oak Woods – a Life Science Site west of Hwy 37. Leamington White Oak Woods contains Carolinian species including Tulip Tree (*Liriodendron tulipifera*), Sassafras (*Sassafras albidum*) and Flowering Dogwood (*Cornus florida*), although some northern species are also present (Oldham 1983).
- Cameron Scott's Woods, a Life Science ANSI east of Hwy 31 between Country Roads 14 and 18. Cameron Scott's Woods is composed of Lowland Maple-Ash Forest and Upland Oak Forest, but has been substantially affected by activities associated with development in the surrounding area (Klinkenberg 1984)
- Big O Conservation Area – located adjacent to the existing 230 kV east-west transmission line where it spans Hwy 77. Big O Conservation Area contains areas of Lowland Maple-Poplar forest, Grassland, Marsh and a small pond, as well a recreational trail (LTVCA 2009).
- Andrew Murray O'Neal Memorial Woods (AMOMW) - located between Concession Roads 4 and 5, adjacent to the Municipality of Leamington's utility corridor. AMOMW consists of a mixed Carolinian forest and includes a recreation trail (ERCA 2009). The OP for the Municipality of Leamington identifies AMOMW as an NEA. The ERCA considers AMOMW a Conservation Area.

Table 3-2 presents a list of the ESAs for the study areas.

Table 3-2 Environmentally Significant Areas within the Study Areas

ESA Type	ESA Name	Location (Study Area)	Area Size (ha)	Reference
Natural Environment	McAuliffe Woods	Lauzon	9.0	ERCA, 2009
Life Science Site	Sweetfern Woods	Leamington	30.4	ERCA, 1994
Life Science Site	Leamington White Oak Woods	Leamington	37.0	Oldham, 1983
Life Science ANSI	Cameron Scott's Woods	Leamington	40.0	Klinkenberg, 1984
Natural Environment/ Conservation Area	Andrew Murray O'Neal Memorial Woods	Leamington	7.0	Leamington, 2008; ERCA, 2009
Environmentally Significant Area	Big O Conservation Area	Leamington	4.5	LTVCA, 2009

3.1.8 Wildlife

Mammals

Many different species of mammals are found in Essex County. According to Eder (2002) a total of 34 mammals species have ranges including Essex County and may overlap the study areas. Mammal species common to Essex County include the Little and Big Brown Bats (*Myotis lucifugus*) and (*Eptesicus fuscus*), Eastern Grey Squirrel (*Sciurus carolinensis*), Eastern Cottontail (*Sylvilagus floridanus*), Raccoon (*Procyon lotor*), Striped Skunk (*Mephitis mephitis*), Red Fox (*Vulpes vulpes*), Coyote (*Canis latrans*) and White-tailed Deer (*Odocoileus virginianus*).

Appendix C: Environmental Baseline Report provides a table which lists the mammal species likely present within Essex County.

Of the 34 mammal species found in Essex County, three are considered rare. These include the Gray Fox (*Urocyon cinereoargenteus*) (considered threatened by MNR and COSEWIC); the

Eastern Pipistrelle (*Pipistrellus subflavus*)*;* and the Eastern Mole (*Scalopus aquaticus*). The only rare species recorded, the Eastern Mole, was in 1997 in the Leamington study area. This species is considered Special Concern (SC) both provincially and federally and imperiled (S2) by NHIC (2009).

White-tailed deer (*Odocoileus virginianus*) is the principal large wildlife species in Essex County. Deer have seasonal ranges as a result of current land use practices. In the spring, summer and early autumn, deer disperse to woodlot edges. They are most abundant where there is an optimal mix of forest cover and farmland. During the winter, deer congregate in areas of denser cover. A restriction to the deer populations in the region is the availability of woodlots and suitable wintering yards. The CLI (1990) has categorized the lands in Essex County as Class 2 (very slight limitations to the production of ungulates) and Class 2W (Class 2 Winter ranges).

Avifauna

Numerous bird species inhabit the woodlots, meadows and agricultural lands in Essex County. According to Bezener (2000), aside from migrating birds, a total of 176 species may be expected for the study areas. From this number, 87 species occur in summer for breeding, 49 are year-round, and 40 are only seen in the winter.

According to NHIC (2009), a federally and provincially endangered species (END, S2B), the Acadian Flycatcher, was recorded (in 1994) within the Leamington study area. There are numerous other rare birds recorded within Essex County including Prothonotary Warbler (*Protonotaria citrea*), Northern Bobwhite (*Colinus virginianus*), Least Bittern (*Ixobrychus exilis*), King Rail (*Rallus elegans*), Short-eared Owl (*Asionflammeus*), and Golden-winged Warbler (*Vermivora chrysoptera*). The eastern part of Essex County has habitat for the Least Flycatcher, and also for the Sandhill Crane (*Grus canadensis*). These species are considered S4 (Apparently Secure) or S5 (Secure) at the provincial level. Records for regionally rare birds were present in the OBBA for the Kingsville study area. The Kingsville study area is known to provide habitat for the Grasshopper Sparrow (*Ammodramus savannarum*), Western Meadowlark (*Sturnella neglecta*), and Least Flycatcher (*Empidonax minimus*).

Waterfowl are present but have limited occurrence within the study areas, since the few areas of open water mostly consist of municipal drains. Waterfowl recorded in Essex County include Double-crested Cormorant (*Phalacrocorax auritus*), Great Blue Heron (*Ardea Herodias*), Green Heron (*Butorides virescens),* Great Egret (*Ardea Alba*), Wood Duck (*Aix sponsa*), American Black Duck (*Anas rubripes*), Mallard (*Anas platyrhynchos*), Blue-winged Teal (*Anas discors*), Green-winged Teal (*Anas crecca*), Northern Shoveler (*Anas clypeata*), Northern Pintail (*Anas acuta*), and Ruddy Duck (*Oxyura jamaicensis*). The study areas are classified by the CLI (1990) as Class 7 waterfowl habitat (Severe limitations to Waterfowl such that almost no waterfowl are produced) with the exception of small strips of Class 5 waterfowl habitat (moderately severe limitations to the production of waterfowl) along the larger watercourses in the Lauzon and Kingsville study areas.

Herpetofauna

According to Fisher, Joynt and Brooks (2007), there is a total of 36 amphibian and reptile species that may be found within Essex County. This total includes seven turtles, one lizard, 14 snakes, five salamanders and nine frogs and toads. Generally, herpetofauna are dependent on wetland ecosystems usually associated with mature forests; there are no PSWs located near the study areas and the majority of the original forest cover has been cleared for agricultural purposes.

Based on NHIC's (2007) Herpetofaunal Atlas (data after 1983), nine species of amphibians and reptiles have been recorded within or very close to the study area for Kingsville. These include five amphibians and four reptiles. There are 14 species of amphibians and reptiles recorded within or close to the Leamington and Lauzon study areas. These include the five amphibians and four reptiles, two salamander species, a frog species, and two reptile species.

According to provincial ranks used by NHIC (2009), all of the 14 above species are considered secure (S5) or apparently secure (s4) except for the Common Snapping Turtle and Blanding's Turtle, each considered vulnerable (S3). According to NHIC (2009), the Five-lined Skink (*Eumeces fasciatus*), a federally and provincially threatened species (S3) is found within the Leamington study area, but it has not been sighted since 1981. There is

also one sensitive endangered reptile species that may be present in each of the study areas which receives immediate species and general habitat protection under MNR.

Invertebrates

Essex County is home to a large number of invertebrate species. No invertebrate species of concern have been recorded within the Kingsville study area. Within the Leamington study area, five invertebrate species of concern were recorded during the past 25 years. These include one insect, Duke's Skipper (*Euphyes dukesi*) (S2) and four molluscs: the Hairy Siltmouth (*Stenotrema hirsutum*) (S1); the Carolina Mantleslug (*Philomycus carolinianus*) (S1, S2); the Toothed Globe (*Mesodon zaletus*) (S1, S2) and the Domed Disc (*Discus patulus*) (S2, S3).

3.1.9 Fisheries Resources

The following areas support fish habitat: wetlands, streams and drainage ditches. There are no natural wetlands within the study areas; hydraulic features that may be affected by the project consist of streams and municipal drains. All drains and ditches in the Leamington and Lauzon study areas are deep, ranging from 2 to 3 m, and are often tiled. These ditches have been constructed in order to provide drainage and aeration for agricultural fields.

According to Mandrak and Crossman (1992), 83 species of fish can be expected to be present in Essex County and the waters bordering the region. This is approximately 50 percent (%) of the 165 species found in Ontario (Cudmore-Vokey et al. 2004). Two of these species, the Silver Chub (Macrhybopsis storeriana), and the Orangespotted Sunfish, (Lepomis humilis), are ranked as species of concern (SC) provincially, and the silver chub is also classified SC by COSEWIC. It should be noted that while the Orangespotted Sunfish is ranked SC by MNR, it is an exotic species and ranked not applicable (SNA) by NHIC. According to NHIC (2009), there have been no fish species of concern recorded within the study areas.

3.1.10 Species at Risk

Species at Risk (SAR) are those species given status rankings by the federal Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and/or the provincial Committee on the Status of Species at Risk in Ontario (COSSARO).

Species are assessed by COSEWIC based on scientific knowledge, community knowledge, and Aboriginal traditional knowledge. the *Species At Risk Act* (*SARA*) is the legislation that provides regulatory authority for the protection of species designated by the COSEWIC. *SARA* prohibits the killing and/or harming of all listed endangered and threatened species and their habitats. It also protects the critical habitat of listed aquatic species, many migratory bird species and any listed species on federal land (COSEWIC 2008).

Because the distribution of species across the country is often not uniform, certain species may require different designations at the federal and provincial levels. COSSARO submits reports to the Minister of Natural Resources classifying species as either "at risk" or "not at risk", or indicating that insufficient information is present to classify a species. Species classified as "at risk" are placed on the Species at Risk in Ontario (SARO) list (COSSARO 2008). Species listed as endangered or threatened and their habitats are afforded protection under Ontario's *Endangered Species Act, 2007*.

Tables 3-3a, 3-3b and 3-3c list the SAR recorded in the study areas within the last 25 years.

Table 3-3a Species at Risk within the Kingsville Study Area

EO_ID[a]	Family	Scientific Name[b]	Common Name[b]	NHIC[c]	Provincial[d]	Federal[d]	Most Recent Date Recorded
32600	Juglandaceae	*Juglans cinerea*	Butternut	S3?	END	END	1985
63841	Moraceae	*Morus rubra*	Red Mulberry	S2	END	END	1986
2290	Lythraceae	*Ammannia robusta*	Scarlet Ammannia	S1	END	END	1997
67073	Rosaceae	*Rosa setigera*	Climbing Prairie Rose	S3	SC	SC	2002

a, Element Occurrence Identification, **EO_ID** according to NHIC databank.

b, Scientific and common names according to NHIC (2008). Species shaded green are those reported earlier than 1984.

c, Provincial ranks used by NHIC (2008): **S1** = critically imperiled; **S2** = imperiled; **S3** = vulnerable; **S4** = apparently secure; **S5** = secure; **SH** = possibly extirpated (historically); **S?**, not ranked yet.

d, Federal COSEWIC (2009)/Provincial SARO (2009): **END** = endangered; **END-R** = regulated under *Endangered Species Act;* **THR** = threatened; **VUL** = vulnerable; **SC** = special concern; **EXP** = extirpated; **EXT** = extinct; **NAR** = not at risk; **DD** = data deficient.

Table 3-3b Species at Risk within the Leamington and Lauzon Study Areas

EO_ID[a]	Family	Scientific Name[b]	Common Name[b]	NHIC[c]	Provincial[d]	Federal[d]	Most Recent Date Recorded
5397	Fagaceae	*Castanea dentata*	American Chestnut	S2	END	END	1986
2155	Fagaceae	*Quercus shumardii*	Shumard Oak	S3	SC	SC	1983
66663	Cornaceae	*Cornus florida*	Eastern Flowering Dogwood	S2?	END	END	1994
17053	Rosaceae	*Rosa setigera*	Climbing Prairie Rose	S3	SC	SC	2000-2001
3554	Smilacaceae	*Smilax rotundifolia*	Round-leaved Greenbrier	S2	THR	THR	1990
17246	Thelypteridaceae	*Phegopteris hexagonoptera*	Broad Beech Fern	S3	SC	SC	1977
435	Tyrannidae	*Empidonax virescens*	Acadian Flycatcher	S2B	END	END	1994
N/A*		*Emydoidea blandingii*	Blanding's Turtle	S3	THR	THR	Post-1983
13135	Talpidae	*Scalopus aquaticus*	Eastern Mole	S2	SC	SC	1997

a, Element Occurrence Identification, **EO_ID** according to NHIC databank.

b, Scientific and common names according to NHIC (2008). Species shaded green are those reported earlier than 1984.

c, Provincial ranks used by NHIC (2008): **S1** = critically imperiled; **S2** = imperiled; **S3** = vulnerable; **S4** = apparently secure; **S5** = secure; **SH** = possibly extirpated (historically); **S?**, not ranked yet.

d, Federal COSEWIC (2009)/Provincial SARO (2009): **END** = endangered; **END-R** = regulated under *Endangered Species Act;* **THR** = threatened; **VUL** = vulnerable; **SC** = special concern; **EXP** = extirpated; **EXT** = extinct; **NAR** = not at risk; **DD** = data deficient.

***** Observation recorded in the Herpteofaunal Atlas (NHIC, 2009)

Table 3-3c Fish Species at Risk in Primary Core Regions Overlapping the Study Areas

Family	Scientific Name[a]	Common Name[a]	NHIC[b]	Prov.[c]	Federal[c]	ROM[d]	Primary Core Region (s)[e]
Cyprinidae	*Notropus anogenus*	Pugnose Shiner	S2	END	END	N,V	Lake St. Clair, Detroit River, 5 others
Cyprinidae	*Macrhybopsis storeriana*	Silver Chub	S2	SC	SC	N,V	Lake St. Clair, 3 others
Cyprinidae	*Opsopoeodus emiliae*	Pugnose Minnow	S2	SC	SC	N,V	Detroit River, 3 others
Ictaluridae	*Noturus stigmosus*	Northern Madtom	S1	END	END	I(5,F)	Lake St. Clair, Detroit River, 1 other
Acipenseridae	*Acipenser fulvescens*	Lake Sturgeon	S3	SC	END, THR	N	Lake St. Clair, Detroit River, 4 others
Percidae	*Ammocrypta pellucida*	Eastern Sand Darter	S2	THR	THR	N	Lake St. Clair, 3 others
Percidae	*Percina copelandi*	Channel Darter	S2	THR	THR	N	Lake St. Clair, Detroit River, 2 others
Lepisosteidae	*Lepisosteus oculatus*	Spotted Gar	S1	THR	THR	N,V	Lake St. Clair, 4 others
Catostomidae	*Minytrema melanops*	Spotted Sucker	S2	SC	SC	N,V	Lake St. Clair, Detroit River, 1 other
Catostomidae	*Ictiobus cyprinellus*	Bigmouth Buffalo	SU	SC	NAR	I(5,F),V	Lake St. Clair, Detroit River, 5 others
Esocidae	*Esox americanus vermiculatus*	Grass Pickerel	-	SC	SC	N	Lake St. Clair, 3 others
Centrarchidae	*Leopomis humilis*	Orangespotted Sunfish	SNA	SC	-	I(5,F),V	Lake St. Clair, Detroit River, 1 other

a, Scientific and common names according to NHIC (2008).

b, Provincial ranks used by NHIC (2008): **S1** = critically imperiled; **S2** = imperiled; **S3** = vulnerable; **S4** = apparently secure; **S5** = secure; **SU**, Unrankable; **SNA**, not applicable.

c, Federal **COSEWIC** (2008)/Provincial **SARO** (2008): **END** = endangered; **END-R** = regulated under *Endangered Species Act;* **THR** = threatened; **VUL** = vulnerable; **SC** = special concern; **EXP** = extirpated; **EXT** = extinct;**NAR** = not at risk; **DD**, data deficient.

d, Distribution status used by ROM (Mandrak and Crossman 1992): **E** = endemic; **I** = introduced; **N** = native; **EN** = endangered; **EX** = extirpated; **T** = threatened; **V** = vulnerable; **X** = extinct. **I(x,y): x=1** = intentionally introduced; **x=2** = transfer of native species; **x=3** = ballast water; **x=4** = aquarium release; **x=5** = natural dispersal; **x=6** = various methods; **y=S** = successful; **y=F** = failed; **y=U** = unknown.

e, Primary Core Regions are specified by ERCA (2009).

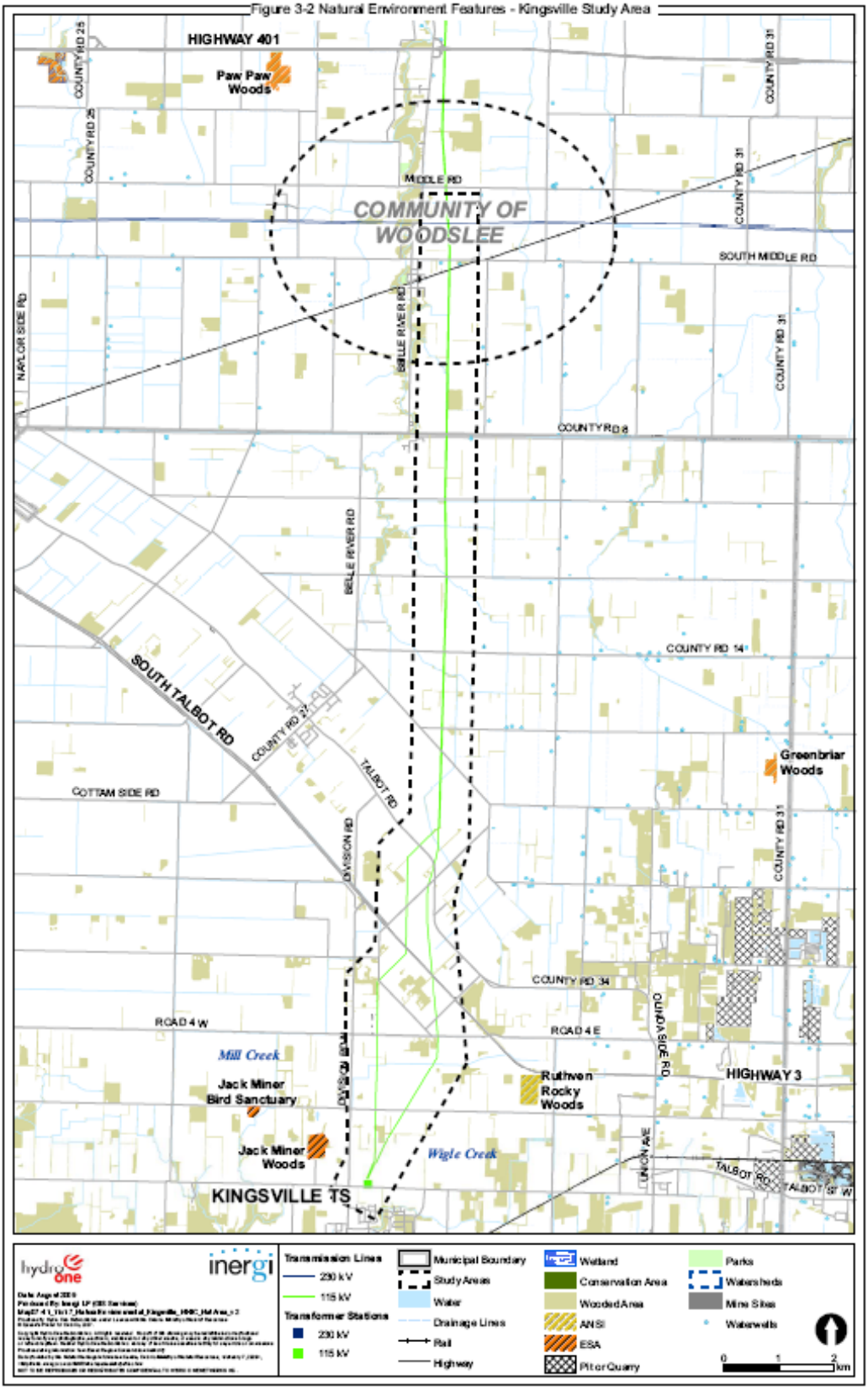


Figure 3-2 Natural Environmental Features: –Kingsville Study Area

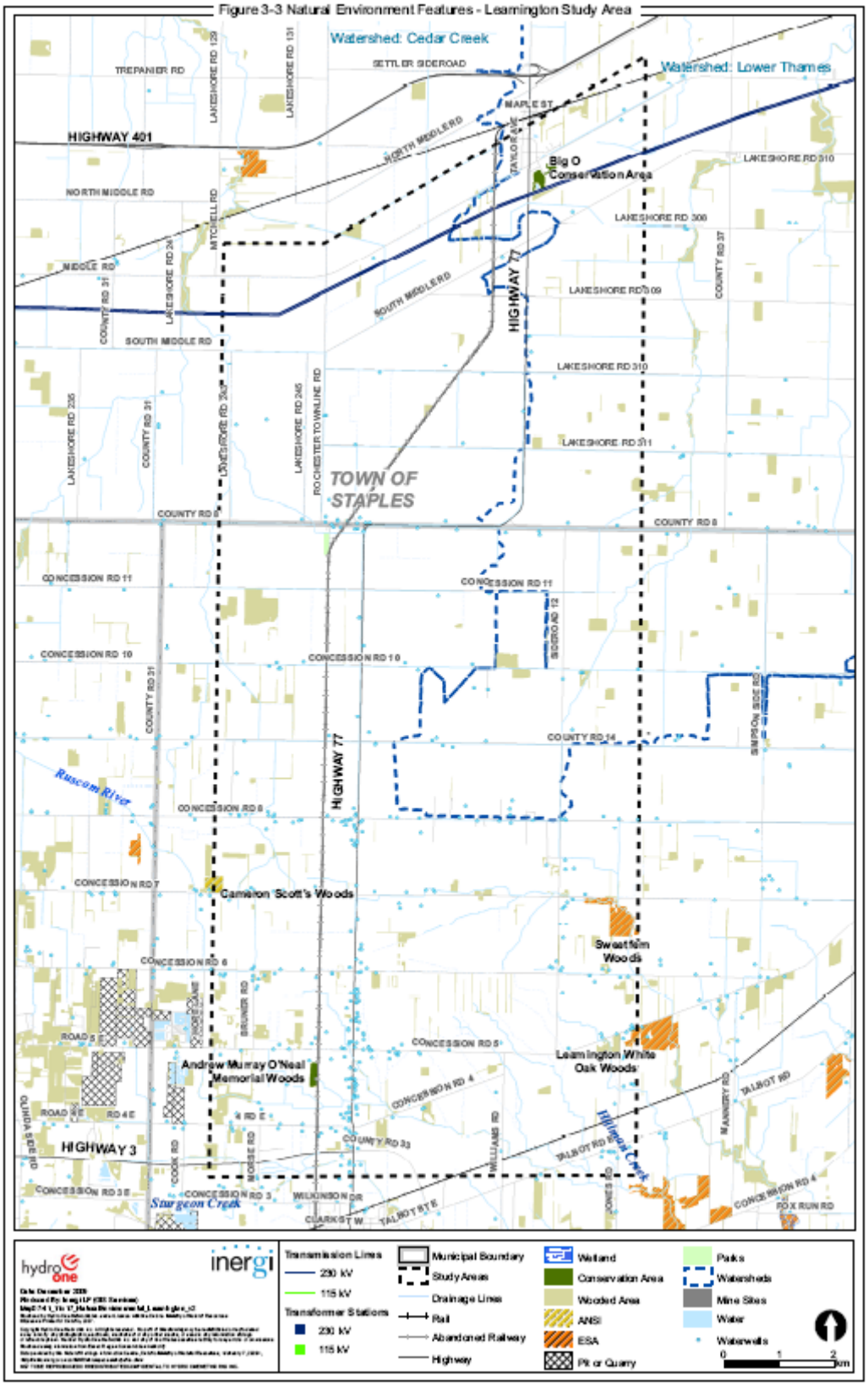


Figure 3-3 Natural Environmental Features: Leamington Study Area

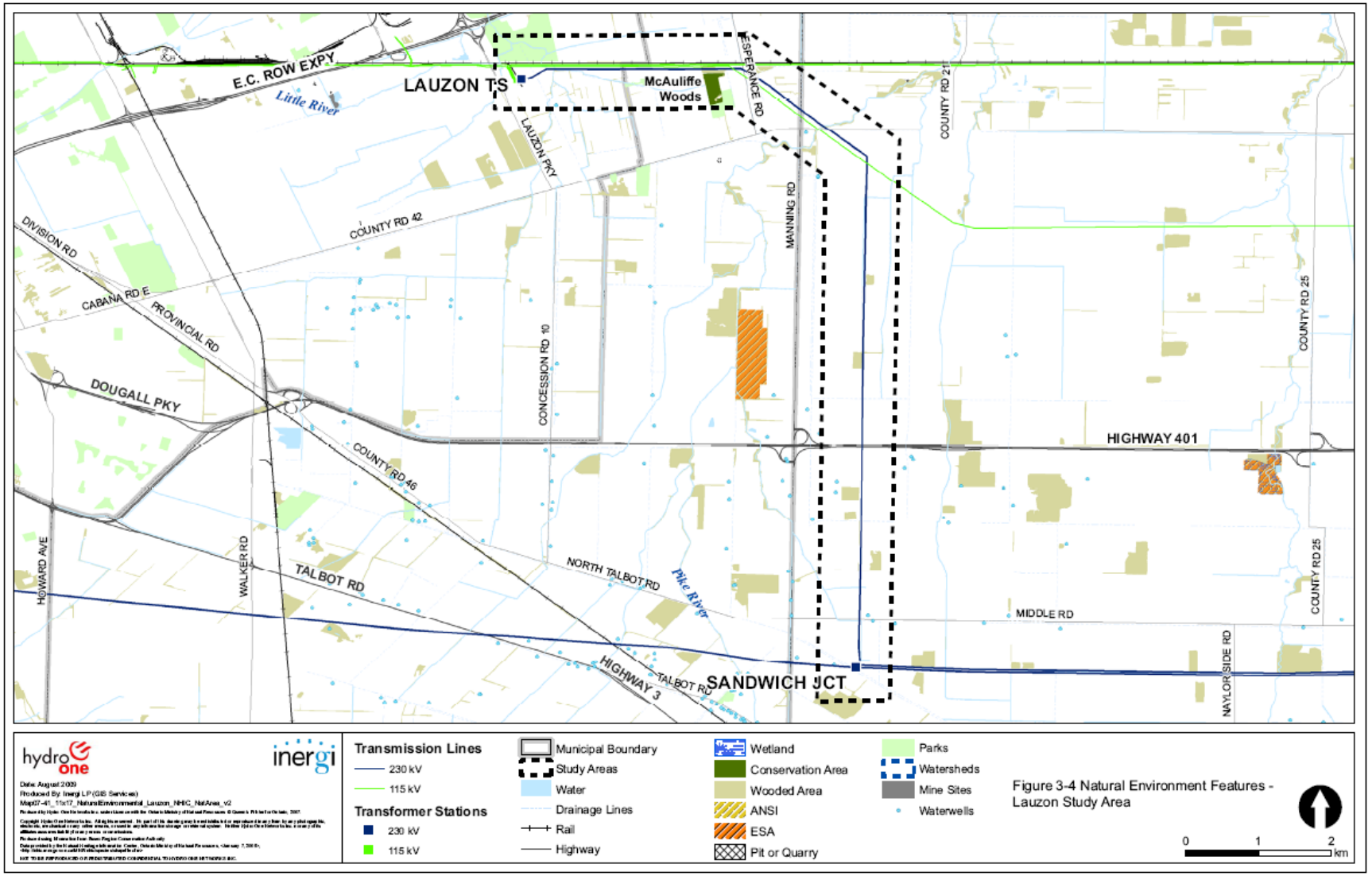


Figure 3-4 Natural Environmental Features: Lauzon Study Area

3.2 Socio-economic Features

A detailed description of the existing land uses, future development plans, population, employment and other socio-economic characteristics of Essex County and the study areas is described below.

3.2.1 Population and Demographics

The County of Essex had a population of 393,402 as of 2006, and had experienced a population increase of 4.9% since 2001. The average population density in the County of Essex was 212.5 persons per square kilometre (km^2) as of 2006(Statistics Canada, 2006).

Growth rates within Essex County will vary. The Town of Lakeshore and the Municipality of Leamington are expected to grow much faster than City of Windsor or the Town of Tecumseh, with the Town of Lakeshore growing fastest (59.7% by 2028 if the current annual growth rate remains stable) and the Municipality of Leamington also growing (23.6% by 2028). The projected annual growth rates for Lakeshore and Leamington are approximately 3.4% and 1.2% respectively (Statistics Canada, 2006).

3.2.2 Employment and Economy

According to Statistics Canada (2006), Dissemination Areas (Das) are "small area composed of one or more neighbouring blocks, with a population of 400 to 700 persons. All of Canada is divided into dissemination areas. The dissemination area is a new standard geographic area. It replaces the enumeration area as a basic unit for dissemination." In 2006, the average unemployment rate for the DAs that overlapped the Kingsville study area was 6.4%. The unemployment rate for the DAs overlapping the Leamington study area for was 4.4 % and the average unemployment rate for the DAs that overlapped the Lauzon study area was 6.9%. The average unemployment rate for the province of Ontario in 2006 was 6.4% (Statistics Canada, 2006).

Agriculture plays a significant role in Essex County's economy, with over 1,789 farms covering 73% of the area of Essex County in 2001 (census results not available for 2006) (Statistics Canada, 2001). See Section 2.2.3 below for more detail.

The largest industrial sector of the Kingsville study area is manufacturing (in both the Town of Kingsville and Lakeshore), followed by agriculture and other resource based industries. In the Leamington study area, manufacturing is the largest industrial sector for the Town of Lakeshore while agriculture and other resource based industries are the largest industrial sectors for the Municipality of Leamington.

The largest industrial sector in the Lauzon study area is manufacturing (Statistics Canada, 2006).

3.2.3 Agriculture

The primary land use within Essex County is agricultural and it is one of the most intensely farmed regions in Ontario. The majority of land in Essex County is cropland with some land used for intensive cultivation (CLI, 1990). The region is the warmest part of the province and experiences conditions and a growing season similar to those of the northern Corn Belt of the United States (Chapman and Putnam, 1984). Important crops found in this area include corn, soybeans, hay and soft winter wheat. The region is also known for producing the earliest truck crops of the province, growing asparagus, tomatoes, strawberries, sweet corn, cucumbers and tender fruits.

The Canada Land Inventory (CLI) categorizes land into seven classes and thirteen subclasses. These designations reflect the soil's potential to produce field and forage crops. Lands classified as Class 1 are considered the most productive, while those classified as Class 7 are considered the least productive. Class 1 to 4 agricultural lands are generally considered capable of being farmed productively while lands with Class 1, 2 and 3 designations are considered prime for general field crop production. The classification system reflects limitations such as slope, shallow soils, climate, drainage, and fertility among others. The CLI (1990) classifies the majority of the soil in the study areas as Class 2 soils with some sections of Class 3 soils and very small sections of Class 1 soils. The Class 1 soils are found partially in the Leamington study area.

Maps of the CLI Agricultural Land Classes occurring in the study areas are presented in **Appendix C: Environmental Baseline Report.**

3.2.4 First Nations Communities

No Reserves Lands are located within or near the study areas. According to the 2006 Statistics Canada Census, Essex County is home to 6,380 persons with Aboriginal identity (out of a total population of 389,590). There are 3,645 persons who have North American Indian identity and 2,400 persons have Métis identity. The total aboriginal population for the Kingsville study area was 17 in 2006; the aboriginal population for the Leamington study areas was 13; and the total aboriginal population for the Lauzon study area was 16.

The following First Nations have submitted specific claims within Essex County:

- Caldwell First Nation;
- Walpole Island First Nation;
- Chippewas of Kettle and Stony Point First Nation;
- Chippewas of the Thames First Nation;
- Oneida Nation of the Thames;
- Munsee-Delaware Nation;
- Moravian of the Thames First Nation; and
- Aamjiwnaang First Nation.

3.2.5 Resource Use

Aggregate resources are not abundant within Essex County. There is one area within the Kingsville municipal border that is designated as "Extractive Industrial" and is zoned for quarries, sand and gravel pits or other surface mining.

There are two significant petroleum deposits located within the Town of Lakeshore; the larger of the two deposits is north of the Leamington study area, just east of Belle River. The second petroleum deposit is located within the study area. According to the MNR Petroleum Resources Centre, petroleum wells can be categorized as "unplugged" or

"plugged." Only the former category is of concern and associated with setback requirements. According to Section 10.2 (1) of the *Oil, Gas and Salt Resources Act,* "No person shall erect, locate or construct a building or structure of a type prescribed by the regulations within 75 m of a well or facility unless the well or facility has been decommissioned in accordance with the *Oil, Gas and Salt Resources Act* and the regulations." There are plugged and unplugged petroleum wells present within the boundaries of the Leamington study area. There is one petroleum well within the Lauzon study area but it is further than 100 m from the existing 230 kV transmission line.

3.2.6 Archaeological and Heritage Features

A Stage 1 Heritage/Archaeological Assessment was conducted by Timmins Martelle Heritage Consultants Inc. in 2008 for each of the project study areas. In the Kingsville study area, the Stage 1 background review noted significant differences in soils, topography and drainage between the northern and southern portions of the study area. It documented extensive areas of archaeological potential associated primarily with historic transportation routes, natural watercourses and a glacial beach ridge.

Archaeological potential is found in the Leamington study area. The southern portion of the study area has nearly uniform high potential due to the presence of watercourses, sandier soils and glacial beach features. The flat northern portion of the study area has more limited archaeological potential due to poor drainage and near absence of natural watercourses. In the latter section, the zones of archaeological potential are limited to the roadways that were open in 1881 and the lands adjacent to the Ruscum River. Also, a search of the Ministry of Culture's archaeological sites database revealed the presence of numerous registered sites along the western study area boundary and, particularly within the southwest corner of the study area.

A Stage 1 Archaeological Assessment determined that a good portion of the Lauzon study area had potential for the discovery of either First Peoples or historic era archaeological sites. Those lands demonstrating the highest archaeological potential are in close proximity to the Little River and Pike Creek as well as historic transportation routes.

On January 23, 2009, Hydro One received notification from the Ontario Ministry of Culture Archaeological Licensing Office that the Stage 1 Archaeological Assessments for each study area had met the terms and conditions set by the Ministry and that the reports had been accepted into the Provincial Register.

A Stage 2 archaeological assessment will be undertaken in the appropriate areas prior to the commencement of construction.

3.2.7 Existing Land Uses

Kingsville Study Area

In the Kingsville study area, the Town of Lakeshore designates most of the study area as "Agricultural", which consists entirely of CLI Class 2 and 3 prime agricultural land and associated rural uses. North and South Woodslee are located within the study area and are both designated as "Hamlet", with some adjacent areas designated "Waterfront Residential" (Lakeshore, 2008). A ravine and watercourse run through North and South Woodslee, and the adjacent wooded area is designated "Lake St. Clair Floodprone Areas/Inland Floodplain Development Control Area". Several smaller woodlots are also present throughout the study area.

The Town of Kingsville also designates most of the southern half of the study area as "Agricultural". Several small woodlots are present throughout the Kingsville study area. In the area referred to in the Kingsville Official Plan (1994) as Gosfield North", there is one small area designated "Special Residential" along the Kingsville-Lakeshore municipal border, and some small areas designated "Commercial/Light Industrial" in the area near the intersection of Division Road and Highway 3. In the Gosfield South area, there are small areas designated as "Commercial/Industrial", "Residential", "Extractive Industrial" and "Highway Commercial" (Kingsville, 1994). There are two separate areas in the southern portion of the study area designated as "Parks & Open Space" that lie directly adjacent to the study area boundary. There is a new subdivision being built south of Kingsville TS.

Leamington Study Area

The portion of this study area which lies within the Town of Lakeshore is designated almost entirely as "Agricultural" (Lakeshore, 2008). Staples lies within the study area and is designated as a "Hamlet". Small segments of the study area are designated "Lake St. Clair Floodprone Areas/Inland Floodplain Development Control Area" and occur in the wooded riparian areas adjacent to watercourses and drainage ditches (Lakeshore, 2008). Comber straddles the study area boundary in the northeast corner; the portions of Comber that lie within the study area are designated as "Residential", "Employment", "Service Commercial", "Parks & Open Space" and "Central Area" (Lakeshore, 2008). Several small woodlots are also present throughout the study area.

There is very little commercial activity within the Leamington portion of the study area. The nearest urban centre is the Municipality of Leamington located south of the study area, although the Hamlet of Staples lies within the study area on the Leamington-Lakeshore municipal boundary and one other area designated as a "Hamlet" is located at the intersection of Mersea Road 8 and Highway 77. Within the Municipality of Leamington, the study area is zoned almost entirely as "Agricultural". Agriculture, including an extensive vegetable and flower greenhouse farming area, is an extremely important component of Leamington's economy (Leamington, 2008). The southern portion of the Leamington study area contains areas designated as "Business Park", "Rural Residential" and Highway 77 Corridor Commercial District". There is also one small NEA adjacent to the utility corridor; Andrew Murray O'Neal Memorial Woods.

The Leamington utility corridor (i.e. abandoned CN railway) is designated as "Open Space and Recreation" according the Municipality of Leamington OP. Portions of the utility corridor are being used by a municipal watermain and a Talisman Energy pipeline. A Union Gas pipeline easement runs parallel to the utility corridor. This corridor is also used as a recreation path. Hydro One has an easement along the utility corridor from the south end of the study area up to County Road 14.

In Section 2.9 of the Municipality of Leamington's OP, it states that "All existing electric power facilities and the development of any new electric power facilities that operate at

50 kV and above, or facilities that transform from above 50 kV to less than 50 kV, (such as transmission lines, transformer stations and distributing stations) shall be permitted in any land use designation without an amendment to this Plan provided that such development has been approved under the provisions of the *EAA,* including regulations made under the *Act,* and any other relevant statutes" (Municipality of Leamington OP, 2008).

Lauzon Study Area

The Lauzon study area overlaps portions of the City of Windsor and the Towns of Tecumseh and Lakeshore. The entire portion of the study area which lies within the Town of Lakeshore is designated "Agricultural", with the exception of small areas designated "Service Commercial", "Lake St. Clair Floodprone Areas/Inland Floodplain Development Control Area" and some small wooded areas (Lakeshore, 2008).

The majority of the study area within the Town of Tecumseh is designated as "Low Density Residential", "Hamlet Development" and "Agricultural" (Tecumseh, 2008). Other land uses include "Business Park", "General Commercial" and some small areas designated "Recreational" (Tecumseh, 2008). McAuliffe Woods occurs within the study area and is designated as a "Natural Environment Area". The existing transmission line corridor is zoned "Ontario Hydro Right of Way", although sections of the corridor are actively farmed as it is standard Hydro One practice to lease ROW land to adjacent farmers for agricultural use. Portions of the existing utility corridor are used by a gas pipeline in addition to the existing transmission lines.

Land use within the City of Windsor portion of the study area consist of "Industrial", "Business Park", "Future Urban Area", "Future Employment Area" and "Mixed Use" designations (Windsor, 2004). The area adjacent to the existing transmission line corridor is designated "Open Space".

3.2.8 Future Development Plans

Within the Kingsville study area, Brookfield Renewable Power Inc. (Brookfield Power) has received approval to construct the Gosfield substation and wind turbines in the vicinity of

the Belle River Jct. x Kingsville TS transmission line in the Town of Kingsville. There are also wind turbines planned for the Comber Wind Project in the Town of Lakeshore and Municipality of Leamington which effect the Kingsville and Leamington study areas, although there is currently no power purchase agreement for this project to allow connection to the grid.

Other potential developments include projects by Wind Prospects and TransCanada, which consist of planned wind turbines in the Leamington study area. A new greenhouse was under construction in the summer of 2009 in the vicinity of Mersea Road 7 and the Leamington utility corridor, and one planned.

The City of Windsor designates defined geographical areas as "Special Policy Areas" and "Secondary Plans." The Lauzon study area does not overlay areas designated as Secondary Plans; however it does include one Special Policy Area. This area is designated as "Agricultural Transition Area." This area was annexed by City of Windsor (formerly part of the Town of Tecumseh) and is intended to accommodate development over the entire planning period (Windsor, 2007). Part of this area is intended to become urban area, while the rest will become employment area. There is also future planning for more housing on the west side of the existing subdivision in the Town of Tecumseh.

Since the proposed works within the Lauzon study area are contained within an existing transmission line ROW, future development for this area is under the jurisdiction of Hydro One as well as the Town. The Town of Tecumseh, in the Tecumseh Official Plan (2008) have proposed the construction of sewer lines and road linkages along the existing Hydro One ROW where it lies adjacent to the north side of McAuliffe Woods. Any such developments would require approval from Hydro One to ensure that any land uses to not interfere with the safe and reliable operation of the transmission lines.

4. Public and Government Consultation

4.1 Objectives of the Consultation Process

Consultation is an important part of the Class EA process. It gives the project team a better understanding of community interests and concerns.

The consultation program for the Supply to Essex County Transmission Reinforcement Project was designed to ensure potentially affected property owners, local officials, First Nations communities, stakeholders and the general public were kept informed about the project and had opportunities to provide their input throughout the decision-making process. One main goal of the communications and consultation program was to ensure that municipal and provincial elected officials, key municipal staff and representatives of LDCs were informed of project decisions before they were presented to the public.

For this particular Class EA, Hydro One and the Ontario Power Authority (OPA), decided that it was important to review and seek input from the public on two transmission system alternatives -- both technically feasible. As a result, the initial round of consultation and public information centres (PICs) focused on the need to reinforce the transmission system serving Essex County and the City of Windsor and sought feedback on the location and type of facilities that each transmission alternative would require, as described in earlier sections of this Draft ESR.

Once a preferred transmission alternative was selected, Hydro One then revised the scope of the undertaking and the project study area. Two rounds of PICs were subsequently held to discuss potential sites for a new TS in the Municipality of Leamington, and potential routes for a new 230 kV transmission line to connect the station to the exiting Chatham SS x Sandwich Jct. transmission line south of Hwy 401. At the second round of PICs, Hydro One's project team also presented and sought input on the second stage of the project which was the proposed construction of an additional 230 kV transmission line on an existing provincially-owned transmission corridor between Lauzon TS and Sandwich Jct. Further information on the PICs is provided in **Section 4.4**.

4.2 Government Notifications and Consultation

Prior to the commencement of the Class EA, Hydro One identified the key municipal officials, Members of Provincial Parliament (MPPs), government agencies and local interest groups or organizations that would have an interest in the Class EA. A list of provincial and federal government agencies was also updated throughout the project, and is attached as **Appendix B1**. A copy of the correspondence is found in **Appendix D.**

Details of the communications and consultation activities for this Class EA, and a summary of the input received during the consultation process are outlined in the sections below.

4.2.1 Municipal Officials and Local Distribution Companies

While the proposed project would benefit Windsor and all of Essex County, the following municipalities were identified as primary stakeholders because the transmission alternatives under consideration involved new and/or upgraded facilities within their municipal boundaries: The County of Essex; The Town of Kingsville; The Town of Lakeshore; The Municipality of Leamington; The Town of Tecumseh, and the City of Windsor.

Since the City of Windsor is separated from the County structure, Hydro One dealt separately with officials from the City. The councillors representing the wards near Lauzon TS, and the City's Chief Administrative Officer (CAO) were advised of the project prior to the public announcement and the first PICs, and were kept informed of subsequent project milestones. Hydro One also met with City Planning staff in July 2008, once it was established that the preferred alternative included a new transmission line into Lauzon TS.

In 2007, the OPA held a series of meetings with Hydro One and the municipally-owned LDCs that serve customers in Windsor and Essex County which include: Enwin Utilities; Essex Power; E.L.K. Energy; Chatham-Kent Energy. In addition to Hydro One's role as the owner-operator of 97% of Ontario's provincial transmission grid, Hydro One is also a local distributor in the project area, directly serving customers in rural parts of the County and on Pelee Island. The purpose of the OPA led meetings was to discuss forecast growth in electricity demand and transmission alternatives that could satisfy future electricity needs.

Hydro One considers the OPA and LDCs as key partners in this project, and their representatives were invited to participate in a pre-consultation meeting with the primary municipal stakeholders prior to the project being announced publicly, as described below.

Municipal and LDC Representatives Meeting #1

On March 4, 2008, Hydro One convened an initial meeting with key municipal stakeholders and LDC representatives at the Pelee Days Inn, in Leamington. This pre-public consultation session was attended by 15 elected, administrative and planning/engineering officials, including the Warden, Essex County (who is also the Mayor, Town of Kingsville), and the Mayors of the Town of Lakeshore and the Municipality of Leamington. Ten LDC representatives were also in attendance.

A representative from the OPA commenced the meeting by providing an overview of the electricity supply needs in the Windsor – Essex area and potential solutions that have been discussed with Hydro One and the LDCs to meet these needs. The OPA advised that while energy conservation initiatives and local generation can help, new transmission facilities would also have to be part of the solution.

Hydro One then outlined the scope of the proposed project, the Class EA and OEB approval processes, and the proposed public consultation activities, which would begin in early April 2008 with a project announcement advertised in the Windsor Star and local newspapers and a round of introductory PICs in mid-April. (See **Section 4.4.1** for details on the PICs.)

The municipal leaders generally supported the need for the project, commenting that investments in electricity infrastructure would facilitate future economic development in Windsor and Essex County, and could provide additional opportunities for distributed generation. The municipal leaders and LDC representatives also expressed their views on the transmission alternatives, noting that Alternative #2 (a new station in Leamington and transmission line connected to the electricity grid and an additional transmission line into Lauzon TS) seemed preferable to Alternative #1 (upgrading the existing 115 kV line to Kingsville TS and building a new TS in the Woodslee area).

The Municipality of Leamington officials felt their expanding greenhouse industry would welcome a new TS. They also noted that the Municipality owns a utility corridor (an abandoned rail bed) which connects with Hydro One's existing transmission lines near Hwy 401, and that they would be willing to discuss locating a new transmission line along that corridor, provided future plans for a recreational path system on the corridor would be compatible.

The Town of Kingsville's CAO also expressed a preference for Alternative #2, noting that there is little to no potential for future expansion of Kingsville TS because residential subdivisions are currently being developed in the surrounding area. The CAO also noted potential difficulty in bringing additional distribution feeders out of the Kingsville TS, especially if they were to be located along Road 2 East which the Town hopes to improve to an urban cross-section in the longer term. A letter from the Town of Kingville's Director of Municipal Services was subsequently received on May 14, 2008, stating the Town's preference for Transmission Alternative #2.

Hydro One committed to provide advance copies to municipal officials and staff and to the LDCs of any newspaper advertisements and notices to be delivered to area residents for this project. This would enable elected officials and staff to respond to any inquiries received at their offices and to refer the callers to Hydro One's community relations officer and the project website.

Municipal and LDC Representatives Meeting #2

A second meeting of the municipal elected officials from the project area and LDC representatives was held on June 23, 2008 at the Ciociaro Club in Oldcastle, Town of Tecumseh. The meeting was attended by the Warden of Essex County (also the Mayor, Town of Kingsville), the Mayors of the Municipality of Leamington and the Town of Lakeshore and the Deputy Mayor of the Town of Tecumseh, as well as the CAO's of the Municipality of Leamington, the Towns of Lakeshore and Kingsville. At this meeting, the OPA provided a review of the electricity needs in the Windsor – Essex area and the alternative solutions that had been proposed, including cost estimates for each.

Hydro One presented a summary of the attendance and comments received at the PICs held in Woodslee, Leamington and Tecumseh in mid-April. The group was advised that based on the public input, and environmental, socio-economic, technical and cost factors, Hydro One would be moving forward with Alternative #2 as its preferred transmission alternative. Hydro One then presented the proposed study area for a new TS in the Municipality of Leamington and two potential routes for a new transmission line to connect the station to the existing transmission grid (in the Municipality of Leamington and the Town of Lakeshore).

Hydro One also reiterated that Alternative #2 also would require the installation of an additional 230 kV line on the existing transmission corridor between Lauzon TS and Sandwich Jct. The Deputy Mayor, Town of Tecumseh expressed concern about the appearance of four transmission lines on the corridor through the residential area of his community west of Lesperance Road, and also about perceived health effects of the power lines. These concerns were reiterated to Hydro One following its presentation to the Town of Tecumseh Council on July 8, 2008, and Hydro One undertook some analysis on the potential to consolidate circuits on the transmission lines. This issue is further explained and Hydro One's response given in the Issues Table in **Section 4.5**.

The next steps in the process were discussed, including another round of PICs to be held in July 2008 in the Town of Tecumseh and the Municipality of Leamington. It was also decided that Hydro One and the OPA would make presentations to each municipal council in the project area prior to the second round of PICs to review with them the preferred transmission alternative, and the next steps in this project. Council presentations were delivered by the OPA and Hydro One to the Municipality of Leamington and the Town of Kingsville on July 7, 2008 and to the Town of Lakeshore and the Town of Tecumseh on July 8, 2008.

Hydro One made a subsequent presentation to the Municipality of Leamington Council on June 29, 2009 to review the location of TS site that Hydro One had identified as the preferred site for the Leamington TS and the company's preferred route to connect the

proposed station, following the Leamington utility corridor northward to the Village of Staples, where the route would divert to the west and continue northward between Lakeshore Road 243 and 245 in the Town of Lakeshore to connect with Hydro One's existing 230 kV transmission lines as shown in **Figure 4-1**. (NOTE: our preferred route has subsequently been altered due to public input and changes in proposed landuses in the area). Council was advised that Alternative Route A had been preferred by the majority of people who participated in the public consultation program. It is also consistent with the preference stated in the petition submitted to Councillor Herbert Enns and presented to Municipal Council on July 21, 2008.

The Municipality of Leamington sent a letter to Hydro One on June 11, 2009 stating that they prefer the use of single posts rather than the four legged towers if they were to be sited within the municipality's former railway corridor, and if these could not be used then consideration should be given to purchase the adjacent property. Hydro One met with the Municipality and presented a proposed ROW drawing showing the proposed centreline for the transmission line on the edge of the Leamington utility corridor, such that two of the four tower legs would be on municipal property with the other two on abutting private property. This alignment, Hydro One explained, would maintain acceptable clearances from the water main and union gas pipeline buried along the Leamington utility corridor, and would also allow for the development of a recreational pathway system on the corridor. This appeared to be acceptable to the Municipality. Hydro One noted that easements rights would need to be negotiated with property owners on both sides of the Leamington utility corridor, and explained how easement compensation is determined. Hydro One advised that the preferred site and route would be reviewed with the public at an upcoming PIC on July 16, 2009 at the Lebanese Club, Leamington.

In summary, municipal officials and their staff were consulted throughout the project by Hydro One and its environmental consultants to ensure they received and had the opportunity to provide information to the project team before the information was issued for public review. The relationship with officials has been cooperative and comments from municipal staff and elected officials have been key inputs to the decision making process for

this Class EA. All presentations referred to in this section are posted on Hydro One's project website at http://www.hydroone.com/Projects/Pages/Default.aspx.

4.2.2 Government Agencies (Federal and Provincial)

The Notice of Commencement letters regarding the proposed project were sent to government agencies on February 22, 2008. A copy of the notification letter is provided in **Appendix B2.** Invitations to all three PICs were also sent to these agencies on April 3rd, 2008; July 7th, 2008 and July 9th, 2009 respectively.

Most of the comments received from government 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.

During the Class EA process, MNR notified Hydro One that a species recorded in the Leamington study areas had recently been up-listed and was now classified as an Endangered Species under the *Endangered Species Act (2007)*. Hydro One has committed work with the MNR SAR biologists to develop mitigation measures to protect this species and its habitat.

4.2.3 Members of Provincial Parliament (MPPs)

The project area covers the following provincial electoral ridings: Essex (Bruce Crozier, MPP); Windsor – Tecumseh (Hon. Dwight Duncan, MPP, and the Minister of Finance); and Chatham-Kent – Essex (Pat Hoy, MPP). Hydro One established contact with the MPP's constituency offices prior to the initiation of the Class EA and kept the MPPs and their constituency staff informed in advance of project milestones. The main vehicle for communication with MPPs was via email and telephone contact. Members of the project team provided personal briefings to Mr. Crozier on April 18, 2008, to Mr. Hoy on July 7, 2008, and to Minister Duncan's constituency staff on July 9, 2008. Hydro One and the OPA also provided a briefing to Ministry of Energy and Infrastructure staff and Minister Duncan's staff at Queen's Park on June 8, 2008.

The MPPs and their staff expressed no concerns about the proposed project.

4.2.4 Companies with Infrastructure in the Project Area

At the initiation of the project, Hydro One was aware of infrastructure along the Leamington utility corridor, including a natural gas pipeline and planned wind turbines.

Hydro One met with representatives from Union Gas to ensure that the pipeline was compatible with the proposed 230 kV transmission line. A corrosion study was commissioned by Hydro One and with Union Gas' cooperation, mitigation measures were developed. Hydro One will continue to work with Union Gas when finalizing the preferred transmission line route.

Brookfield Power has received re-zoning, C of A and EA approvals to construct wind turbines in the area north of the Hamlet of Staples in the Town of Lakeshore. Brookfield Power was consulted early on in the project and it was deemed that any transmission lines to the west of Lakeshore Road 245 would interfere with planned wind turbines. After this area was suggested for two possible route refinements at the third-round PIC, Brookfield Power was contacted again. Brookfield Power had recently removed two of the originally proposed turbines from their plans and confirmed that one of the refinements identified at the third-round PIC was technically feasible and would not interfere with their turbine project.

Hydro One also consulted with Wind Prospects, TransCanada, and Talisman Energy early on in the Class EA process in order to determine whether the undertaking could potentially affect either proposed or existing infrastructure; no issues or concerns have been raised by these groups for the proposed project.

4.3 First Nations Notification and Consultation

The objective of First Nations consultation was to provide First Nations groups with an opportunity to have meaningful input into the project. The Ministry of Aboriginal Affairs (MAA) and the Indian and Northern Affairs Canada (INAC) were contacted and asked to identify any First Nation groups that could potentially be affected by the project. The project details and study areas were provided to these agencies. A copy of the letter is provided in **Appendix B3**. The following are the comments made by INAC and MAA:

- INAC confirmed in a letter dated March 10, 2008, that there are no comprehensive claims in Essex County, Ontario. INAC-Comprehensive Claims Branch did not have any specific interest in the project and requested to be taken off of the mailing list.
- INAC confirmed in the letter dated March 18, 2008 that the following First Nations have submitted specific claims in the study areas of the project:
    - Caldwell First Nation
    - Walpole Island First Nation
    - Chippewas of Kettle and Stony Point First Nation
    - Chippewas of the Thames First Nation
    - Oneida Nation of the Thames
    - Munsee-Delaware Nation
    - Moravian of the Thames First Nation
    - Aamjiwnaang First Nation
- MAA advised in the letter dated April 7, 2008, that "*this project appears not to be located in an area where First Nations may have existing or asserted rights that could be impacted by your project*". They also recommended we contact the following federal contacts regarding other possible claims in our study area:
    - Mr. Fred Hosking, Senior Claims Analyst Ontario Research Team – INAC, and
    - Mr. Kevin Clement, Al Director, Financial Issues and Cost-Sharing – INAC.
    - For federal information on litigation contact Jonathan Allen, Litigation Team Leader for Ontario.

First Nations groups were invited to all three rounds of PICs as well as the transmission line route workshop and were kept informed of the status of the project through phone calls, e-mails and written updates. Offers to meet with representatives from the communities were also extended on several occasions. Additional information on the project was sent when requested. Details of the correspondence is in **Appendix D**.

4.4 Public and Interest Group Notification and Consultation

The public was notified about the project through various means including mail outs, newspaper ads and on the project website. The following outlines the public notification activities (see **Table 2-1** for PIC Attendance).

Public Mail Outs

A Canada Post Unaddressed Ad Mail was distributed to all people within the study areas for each PIC, which usually included the newspaper ad or a flyer which was similar in content to the newspaper ads. This provided details about the proposed undertaking and a map of the study area. It also provided contact information for Hydro One, including a contact name, telephone number, email address, as well as a link to the Hydro One web site where more information about the project could be obtained. For PIC #2, personally addressed letters were sent to property owners living close to the proposed undertaking.

For the workshop held October 29, 2009, 50 invitations were sent to property owners by direct mail and stakeholders were notified by e-mail. The Municipality of Leamington and the Town of Lakeshore were also advised of the workshop and invited to attend. See **Appendix H1** for a copy of the notification which was emailed to the stakeholders.

Newspaper Advertisements

Advertisements notifying the public about the PICs were placed in local newspapers. For the first PIC twelve ads were placed in 9 local papers from April 8-16, 2008. One ad was run in the *Windsor Star* and the *Windsor Le Rempart*. A copy of the English and French ad is found in **Appendix E1** .

The second PIC was advertised 10 times and appeared in 8 local newspapers between July 15 and 23, 2008. It also ran once in *Windsor Star* and the *Windsor Le Rempart* (**Appendix F1**).

The third PIC was advertised 4 times and appeared in 4 local newspapers between July 8 - and 13, 2009. See **Appendix G1**.

The Notice of Completion was advertised in eleven newspapers between February 6 to February 11. **Table 4-1** provides a list of the newspapers and publication dates for each PIC and the Notice of Completion. The advertisement was published in both English and French Newspapers and are in **Appendix I1**.

Table 4-1: Newspaper Advertisements

First Round of PICs	
Newspaper	**Dates**
Belle River Lakeshore News	April 9 and April 16, 2008;
Essex Free Press	April 9, 2008;
Kingsville Reporter on	April 8 and 15, 2008;
Leamington Post	April 9 and April 16, 2008;
Tecumseh Shoreline Week	April 9 and April 16, 2008;
Tecumseh Tribune	April 10, 2008;
Tilbury Times	April 9, 2008;
Wheatley Journal	April 9, 2008;
Windsor Star	April 10, 2008;
Windsor Le Rempart	April 9, 2008

Second Round of PICs	
Newspaper	**Dates**
Kingsville Reporter	July 15, 2008
Wheatley Journal	July 16, 2008
Tibury Times	July 16, 2008
Lakeshore News on July 16	July 16, 2008
Essex Free Press on July 16	July 16, 2008
Leamington Post on July 16	July 16, 2008
Tecumseh Shoreline News on July 16	July 16, 2008
Windsor Le Rempart on July 16	July 16, 2008
Windsor Star on July 17	July 17, 2008
Tecumseh Tribune on July 17	July 17, 2008

Second Round of PICs	
Newspaper	**Dates**
Leamington Post on July 23	July 23, 2008
Tecumseh Shoreline News on July 23	July 23, 2008

Third Round PIC	
Newspaper	**Dates**
Leamington Post	July 8, 2009;
Leamington Shopper	July 10, 2009;
Leamington News	July 10, 2009
Windsor Star	July 13, 2009

Notice of Completion	
Newspaper	**Dates**
Lakeshore News	February 5, 2010
Shoreline Week, Tecumseh	February 5, 2010
Tecumseh Tribune	February 11, 2010
Tilbury Times	February 10, 2010
Windsor Star	February 9, 2010
Leamington Post	February 10, 2010
Essex Free Press	February 10, 2010
Wheatley Journal	February 10, 2010
Kingsville Reporter	February 9, 2010
Leamington Shopper	February 6, 2010
Windsor Le Rempart	February 10, 2010

4.4.1 Public Information Centres

Table 4-2: Summary of PIC Attendance

First Round of PICs				
PIC	**Date**	**Location**	**Attendees**	**Comment Forms Received**
Lakeshore	April 16, 2008	Millen Community Centre	30	7
Leamington	April 17, 2008	Royal Canadian Legion, Branch 84	33	20
Tecumseh	April 18, 2008	Tecumseh Arena	14	4
Total:	**Admail sent out:** ~8,500		**77**	**31**

Second Round of PICs				
PIC	**Date**	**Location**	**Attendees**	**Comment Forms Received**
Leamington	July 23, 2008	Royal Canadian Legion, Branch 84	59	20
Tecumseh	July 24, 2008	Tecumseh Arena	18	3
Total:	**Admail sent out:** ~6,300		**77**	**23**

Third Round PIC				
PIC	**Date**	**Location**	**Attendees**	**Comment Forms Received**
Leamington	July 16, 2009	Leamington Lebanese Club	63	10
Total:	**Admail sent out:** ~2,100		**63**	**10**

First Round of PICs

The majority who attended the Woodslee (Town of Lakeshore) PIC lived in or close to the study area for Alternative 1. In general, comments related to support for Alternative 2; disruption/destruction of the quality of life and community; finding alternative places for locating the TS; potential effects to wildlife; EMF issues; aesthetics; potential for depreciation of property values and stringent timeline concerns. Other comments were related to keeping participants informed of the project status. See **Appendix E2** for a copy of the display panels.

Comments received at the PIC in the Municipality of Leamington generally related to support for Alternative 2; utilizing existing infrastructure (i.e. railway corridor); co-generation (i.e. recommended that there is a large opportunity for co-generation in the Municipality of Leamington which should be considered as part of the planning process); concerns with the existing walking/biking use of the railway corridor; use of steel poles; maintenance of tower sites; and access to the provincial grid. Other comments were related to keeping participants informed of the project status.

Comments received at the PIC in the Town of Tecumseh related to EMF and keeping participants informed of the project status. A representative from a local business stated that increasing infrastructure was important.

Overall, the comments received from the first round of PICs seemed to express a preference for Alternative 2 versus Alternative 1. In particular, at the Municipality of Leamington PIC, the majority of attendees generally acknowledged the benefits associated with having infrastructure in Leamington (i.e. better reliability, closer to loads, more generation, etc.).

Second Round of PICs

The majority of participants at the Leamington PIC were residents from the study area. Issues raised included the need for the proposed facilities; occasional flooding in the study area; potential effects on irrigation systems; the possibility of radio/cellular interference; proximity of the alternative transmission line routes presented (A&B) to houses; and input on the transmission line route (including concerns regarding the use of the abandoned rail

bed and accompanying water/gas pipelines as a transmission corridor). For details on the routes see **Section 5**. A preference was shown for Alternative Route A on the basis that the abandoned rail bed had been purchased for use as a utility corridor. Some individuals expressed a preference for the Transmission Alternative 1 that had been presented to them during the first round of PICs. See **Appendix F2** for a copy of the display panels.

The majority of participants that attended the Tecumseh PIC were residents from the study area. In general, the comments related to EMF issues, safety issues, property values and general EA process inquires. Some attendees raised questions about tower locations. Again a representative from a local business stated that there was a need to increase infrastructure in Essex County.

Third Round PIC

Comments received were generally related to landowner compensation, property values, visual/noise effects of a new TS, weed invasion onto an organic farm and requests for engineering specifications of the towers that will be used. Several residents, greenhouse owners and representatives from a wind turbine company expressed support for the project. See **Appendix G2** for a copy of the display panels.

One group of landowners from the Town of Lakeshore asked Hydro One to consider alternative routes north of County Road 8 between Lakeshore Roads 243 and 245 that would follow existing property lines, if possible. Hydro One representatives advised that a route in this area had been investigated but was discounted because of land use conflicts with proposed wind turbines. Nevertheless, the company committed to reinvestigate, and committed to hold a workshop with potentially affected property owners and interested parties if a route alternative(s) were feasible in this area.

4.4.2 Workshop on Transmission Line Route Alternatives

Following PIC #3, Hydro One identified two alternative routing options, shown on **Figure 4-1**. Hydro One also met with Brookfield Power to ensure that the company's original turbine locations were still being planned. It was confirmed that a route located at mid-concession (the yellow line) would not be feasible; however, changes in Brookfield Power's

plans now allowed for the route shown in blue to be technically viable. This alternative route would also change the way properties between Leamington Concession 11 and County Road 8 are crossed.

Hydro One held a workshop on October 29, 2009, from 7-9 p.m. at the Comber Community Centre to discuss transmission line alternatives in the vicinity of the Hamlet of Staples, with potentially affected landowners and interested parties. Workshop invitations were sent to 50 potentially affected property owners within the defined study area, stakeholders, First Nation communities and government agencies. In total, 17 participants attended the workshop, of which 13 were potentially affected property owners. Two representatives of the Essex County Federation of Agriculture (ECFA), one representative from the Walpole Island First Nation, and a representative from Brookfield Power were also in attendance. The workshop was lead by an independent facilitator from LURA consulting. LURA's Workshop Report is attached as **Appendix H.**

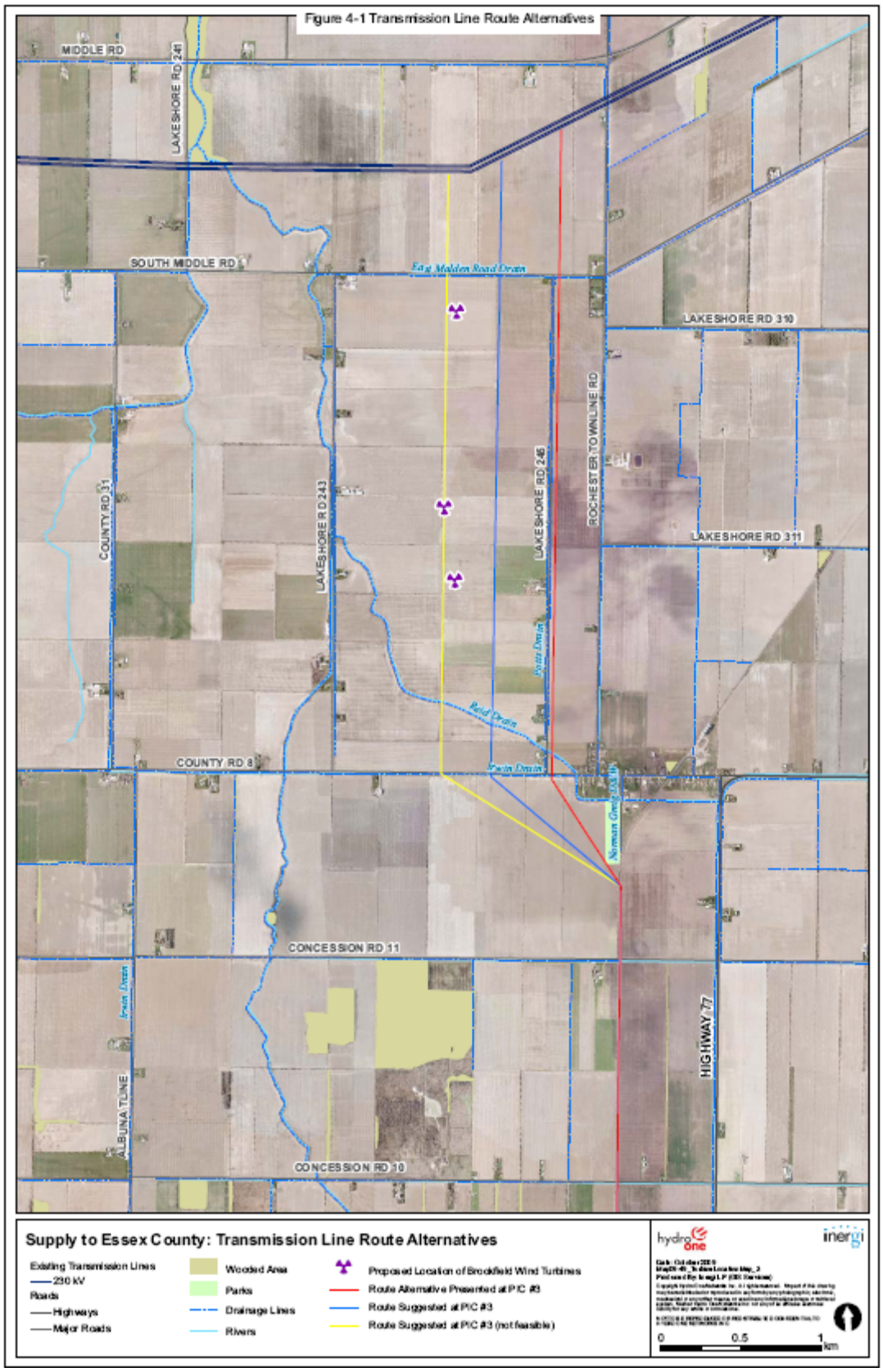


Figure 4-1 Transmission Line Route Alternatives

The purpose of the workshop was to discuss two potential transmission routes (the blue and red lines shown on **Figure 4-1**) under consideration with potentially-affected property owners in the immediate area (See **Appendix H1** for the Invitation Package. Specifically, the workshop objectives were to:

- Outline the Class EA process and the criteria Hydro One uses to evaluate alternative routes;
- Obtain feedback on the strengths and weaknesses of the alternatives presented;
- Confirm information on local environmental and physical features, such as drain locations, etc.;
- Develop a list of prioritized evaluation criteria used to assess the alternatives, and
- Review next steps in the route evaluation process leading to the identification of a preferred route.

The workshop began with presentations made by Hydro One staff. The presentations outlined the background of the project, the Class EA process, including the need to identify the preferred alternative transmission route. After the presentations, attendees formed smaller groups to discuss specific questions regarding the alternative transmission routes, led by a facilitator and guided by questions found within a workbook (see **Appendix H2** for a sample of the workbook).

The criteria that were identified as most important by landowners were:

- Landscape and Visual Effect;
- Proximity to Residential Dwellings, and
- Impacts on Health/Noise from Transmission Lines.

Based on the feedback provided by landowners regarding the evaluation criteria and the strengths and weaknesses of the two alternatives, it was concluded that the transmission line route on the west of Lakeshore Road 245 was preferred by landowners over the route that parallels Lakeshore Road 245 on the east.

Other issues which were discussed at the workshop included EMF, noise, tax implications, compensation, interference with water mains, visual effects, farming around tower bases with modern equipment and concerns over a possible future subdivision (see **Table 4-3** for details).

The LURA Workshop report can be found in **Appendix H3.**

4.4.3 Project Information and Communications

Project Web Site

At the commencement of the project, a website was developed to inform the public of the project, including information on the PICs and the Draft ESR. The web address is http://www.hydroone.com/Projects/SupplyEssex/Pages/EssexCounty.aspx. See **Appendix B4**.

Project Contact Information

The public was encouraged in mailings, ads and web-page to contact Hydro One for more information or input into the study. The contact was described as follows:

Carrie-Lynn Ognibene
Community Relations
Hydro One Networks Inc.
483 Bay Street, 8th Floor, South Tower
Toronto, ON M5G 2P5

Tel: 1-877-345-6799 or 416-345-6799
Fax: 416-345-6984
E-mail: Community.Relations@HydroOne.com

4.5 Summary of Key Issues expressed during the Public Consultation Process and Hydro One Responses

The following is a list of the main issues expressed to date during the stakeholder and public consultation for this project and Hydro One's response or proposed method to address or mitigate the issue.

Table 4-3 is organized into two sections:

a) Proposed Transmission Reinforcement Facilities; and
b) Issues of a general nature.

Table 4-3a: Main Issues Expressed From Stakeholder and Public: Proposed Transmission Reinforcement Facilities

Issue	Description	Hydro One Response
Benefit for generation or co-generation projects	Several individuals asked if the proposed facilities would make it easier for generators to connect to Hydro One's system.	The proposed facilities would provide an additional connection point for new generation. There is a significant amount of wind generation and co-generation within the greenhouse sector in the project area. However, facilitating new generation was not a primary need for this project, nor a major consideration in determining which transmission alternative and facilities could best serve the existing and future needs of Essex County. Notwithstanding the apparent benefits the new facilities will bring to generators wishing to connect to the grid, there may be some broader constraints which could limit the amount of new generation that can be accommodated on the transmission system in south-western Ontario.
Utilizing the municipal utility corridor for the proposed transmission line	The majority of individuals who commented on the two alternative transmission line routes (A and B) proposed by Hydro One to connect the new Leamington TS to the existing 230 kV lines south of Hwy 401, favoured following the municipal utility corridor to the extent possible. This utility corridor, owned by the Municipality of Leamington, is 50 feet wide, and is located along an abandoned rail bed. There are water and natural gas facilities buried on the utility corridor. There are Hydro One Inc. and Union Gas easements adjacent to the corridor. This view was also supported by the Essex County Federation of Agriculture (ECFA), in a letter dated Dec 4, 2008, stating that "preservation of farmland is a primary goal", and asking Hydro One to	Hydro One took these comments and suggestions into consideration in its evaluation of the alternative routes, and selected Alternative Route A, which would follow the municipal utility corridor from the proposed site of the Leamington TS at Mersea Road 6 north to just south of the Hamlet of Staples.

Issue	Description	Hydro One Response
	"seriously consider the unused railroad access to erect these hydro towers". The ECFA also suggested that "the impact on landowners be minimized by placing structures near property lines with access roads positioned with the least amount of farmland sacrificed". The Municipality of Leamington also forwarded a petition served to Councillor Herbert Enns which he presented to Leamington Council at its meeting on July 21, 2008. The petition was signed by 18 individuals who are opposed to the greenfield transmission line route (Alternative Route B) proposed by Hydro One and discussed at Public Information Centre #2 on July 23, 2008 at the Royal Canadian Legion, Br. 84, in Leamington. The petition read: "We the undersigned are property owners of Lots 8 in the Municipality of Leamington, formerly Mersea Twp, do hereby strongly object to the placement of the proposed high tension line upon our properties. As taxpayers, we paid for the municipality to purchase the old railway bed which was to be used for utilities. This property was purchased for this reason and should be utilized for this purpose."	
Burying the transmission line underground, Leamington /	Several individuals asked why Hydro One would not consider burying the transmission lines underground. In particular, some individuals suggested burying along the municipal utility corridor through the	A very small portion of Hydro One's 29,000 km high-voltage transmission network across Ontario is built underground. Since the operation, maintenance and development of the transmission system is funded by all electricity ratepayers in

Issue	Description	Hydro One Response
Lakeshore area	Municipality of Leamington, or as a minimum putting the transmission underground through the Hamlet of Staples.	Ontario, Hydro One's practice is to build overhead wherever technically feasible. Burying high-voltage power lines can be 5 – 7 times more expensive than building them above-ground. Faults on underground cables can also be more difficult to locate and repair. Trenching for underground facilities can be as disruptive to the environment and existing land uses as the installation of towers several hundred feet apart. Because there are water and gas lines within the 50 ft-wide municipal utility corridor and Hydro One and Union Gas adjacent, this poses a technical constraint to putting transmission cables underground. Hydro One did assess the cost of following the municipal utility corridor through the Hamlet of Staples, and locating the transmission line underground to avoid effecting residences and the Cargill facility north of County Road 8. The additional (incremental) cost of putting the transmission line underground for approximately one km through the Hamlet of Staples was over $10 million.
Tower types and locations on new ROW, Leamington / Lakeshore area	Potentially affected property owners in the Leamington / Lakeshore area inquired about the type of towers that will be installed and where they will be located. Major concerns expressed related to: the difficulty of farming around tower bases if they are not located along fence lines; and the difficulty of controlling weeds around tower bases. Several individuals indicated their preference for narrow-base towers to minimize the tower footprint if	Hydro One is proposing to use its standard lattice steel four-footed steel 230 kV tower for this project as there is sufficient space on the ROW. The base of the tower would be approximately 20' x 20', and the distance between towers along the transmission corridor would average 750 feet, with some flexibility either way. Hydro One does not undertake detailed ROW engineering and design until projects are approved, and therefore could not tell potentially affected property owners during the Class EA

Issue	Description	Hydro One Response
	it has to be located in a field.	consultations where exactly the towers would be located. Hydro One appreciates that towers in the middle of a field are difficult to farm around, and will attempt wherever possible and in consultation with the affected owners to locate towers on fence lines. For consistent appearance along the ROW, Hydro One prefers to install one type of tower, rather than alternate between different types. An exception is for angle towers, which must be heavier structures to bear the additional tension of a bend in the transmission line. Because narrow-base lattice structures are considerably more expensive to install than standard lattice towers, Hydro One is proposing to use the standard towers on this new ROW to connect Leamington TS to the existing transmission grid. However, the company will indicate in its filing to the Ontario Energy Board the cost of the transmission line using both narrow base towers and standard towers, and appreciates that potentially affected owners may intervene at the OEB hearing with a preference for narrow-base towers.
Construction effects on farm infrastructure and operations	A few individuals along the proposed new transmission route in the Leamington / Lakeshore area inquired about construction effects, and in particular potential damage which could occur to tiled fields. One property owner also cautioned that Hydro One construction practices must also take into	Hydro One will consult with affected property owners prior to the start of construction to identify underground infrastructure and to discuss the location of any construction access points that may be required along the ROW. Prior notification will be given for any pre-construction work, such as soil testing or archaeological surveys, etc. Hydro One will make best efforts to minimize effects of its

Issue	Description	Hydro One Response
	consideration soya bean cyst nematode (SCN). Soils should be tested for SCN, and if present, Hydro One would need to wash construction equipment carefully before moving to adjacent properties to avoid spreading the contamination.	construction activities on area residents, farm infrastructure and operations. Loss of farm income due to construction activities will be compensated as part of the property compensation package. Hydro One will also compensate farmers for damage to tile drains or other infrastructure where damages are attributed to Hydro One construction activities to allow for their repair. Any access roads necessary for construction will be removed after the transmission line is complete unless the property owner wishes to maintain the road. Access roads are constructed in a manner to minimize soil compaction. Disturbed areas around tower locations or along the ROW will also be restored as best as possible to pre-construction condition. Hydro One will also attempt to conduct as much work as possible during non-farming months. Standard best practices will be followed to ensure typical construction disturbances, such as dust and noise are controlled. The issue of SCN nematode has been duly noted and will be communicated to the environmental planners who will develop guidelines for the construction phase of the project. Hydro One will consult with the Ministry of Agriculture and Rural Affairs and the ECFA on testing and best construction practices when SCN is present.
Compatibility of trail system on a transmission corridor,	The Municipality of Leamington and several residents asked if a recreational pathway would still be possible if Hydro One's preferred route follows the	Recreational walking and bike pathways are compatible uses for transmission corridors, and exist in harmony in other parts of the province. Hydro One is proposing a route alignment

Issue	Description	Hydro One Response
Municipality of Leamington	municipal utility corridor.	which would see the tower footings shared between the municipal utility corridor and the adjacent private property owners. This would leave space on the municipal utility corridor for the development of the recreational trail.
Evaluation process for identification of a preferred TS site in Leamington	One property owner with land south of Mersea Road 5 on the east side of the municipal utility corridor questioned why his property was not considered as an alternative site for the proposed transformer station. At PIC #3 in Leamington, the individual indicated that mapping incorrectly showed active petroleum wells on his property. The individual also indicated this area is being developed as an industrial park and that a group of business owners are working to attract a generating plant to the area which could benefit from proximity to the new transmission line and transformer station. The individual offered to swap a parcel of land for the parcel Hydro One had identified as its preferred site on the north side of Leamington Concession 6, east of the municipal utility corridor.	Hydro One identified nine alternative sites for the Leamington TS, including two south of Mersea Road 5. Data gathered from maps, field visits and discussions with the relevant agencies were used as part of the site selection process. Data regarding natural environment, socio-economic environment, and cost and technical were analyzed, and the advantages and disadvantages of the alternative sites were studied in order to rank the sites in order of preference. These sites were reviewed with municipal planning staff, who did not indicate a preference for any particular site. Hydro One is satisfied with its alternative site evaluation process and with the preferred site for the proposed Leamington TS. Negotiations with the property owner were successfully concluded, leading to the acquisition of this site for the proposed TS. While Hydro One does site transformer stations in both commercial/industrial and agricultural areas, the identification of a preferred site varies for each specific project and takes into account the specific environmental and socio-economic features and potential effects of the alternative sites under consideration. Hydro One cannot speculate on the potential future location of

Issue	Description	Hydro One Response
		generation facilities nor is the connection of generation a key planning criteria in the siting of facilities intended to ensure an adequate and secure supply of electricity to meet existing and projected future needs in the area. Based on the factors described above, the individual's offer to swap property was rejected by Hydro One's project team.
Appearance of the upgraded transmission corridor in the Town of Tecumseh	The Deputy Mayor, Town of Tecumseh and a member of Council stated they would not like the appearance of an additional transmission line, making four in total, on the corridor between Lesperance Road and Lauzon TS. The Town indicated there are future plans for residential development along this section of the corridor, and asked if it would be possible for Hydro One to consolidate the two 115 kV tower lines currently on the corridor so that there would still only be three transmission lines on the corridor.	Additional land was acquired along the Sandwich Jct to Lauzon TS corridor several decades ago by the former Ontario Hydro for the purpose of installing an additional transmission line at some point in the future. This transmission corridor is the major supply route into the City of Windsor, with most cities of this size and industrial make-up having a similar corridor. Hydro One noted that Provincial policy supports the full utilization of existing corridors over development of new corridors. Given the corridor lands are provincially-owned, Hydro One explained that it will inevitably be expanded to its full potential, whether as part of this project or in the future. Hydro One subsequently investigated the potential to consolidate the existing two 115 kV lines (circuits K2Z and K6Z) west of Lesperance Road onto a single tower line so that the new 230 kV line could replace the 115 kV line currently in the centre of the ROW. This option was not considered feasible because: there would be insufficient physical separation between the new 230 kV line and the 115 kV line on the north side of the transmission corridor; additional real estate might be required near Lesperance Road to reconnect the circuits; and outages on these circuits would be difficult to obtain as they supply customers served from transformer

Issue	Description	Hydro One Response
		stations in Belle River, Kingsville and Tilbury. Finally, Hydro One is aware of the Town of Tecumseh's desire for secondary land uses on the corridor including installation of water/wastewater infrastructure and the naturalization/trail system on the corridor linking to McAuliffe Woods Conservation Area. Hydro One has committed to working with the Town to accommodate these uses to the extent possible.
Naturalization of transmission corridor in the Tecumseh / Windsor area	City of Windsor and Town of Tecumseh Planning Staff, and representatives of the Little River Enhancement Group expressed an interest in Hydro One's participation in a naturalization project along the Twin Oaks – McAuliffe Woods section of the transmission corridor.	Hydro One would be willing to work with interested municipalities and partners on a naturalization project along the transmission corridor, but this would best be done after the new 230 kV line is installed and the corridor is developed to its full potential.

Table 4-3b: Main Issues Expressed From Stakeholder and Public: Issues of a General Nature

Issue	Description	Hydro One Response
Property compensation	Potentially – affected individuals along the proposed transmission line route in the Leamington / Lakeshore area commented that Hydro One's property compensation principles are not as generous as those of wind power developers. They also stated that Hydro One should consider annual payments instead of a lump-sum payment.	Hydro One's preference is to acquire easement rights for transmission lines that cross private property, leaving ownership in private hands. Hydro One Acquisition strategy will consist of incentives, allowances, and one-time payment of fair market value calculated at a rate of 75% for the basic rights and applied to the total acreage encumbered by the easement. Fair market value is site specific, provided by appraisal performed by an accredited and independent appraisal firm. Hydro One attempts to apply its compensation principles fairly and consistently across the province. Hydro One is wholly owned by the Province of Ontario. The corporation's authority as an electricity transmitter and distributor is set out in the Electricity Act. Its rates and transmission expansion or refurbishment programs are subject to OEB approval. Once transmission facilities have been approved by the OEB as being in the public interest, Hydro One may apply to the OEB for approval to expropriate any required property rights which cannot be obtained through negotiation with individual property owners. Hydro One recognizes that proponents of private generating projects may offer more generous compensation for the purchase or lease of private lands. Because the cost of operating, maintaining and developing Ontario's transmission grid are borne by all electricity consumers across the province, Hydro One's property compensation principles attempt to strike a balance between fair and equitable compensation to

Issue	Description	Hydro One Response
		affected land owners and minimizing the effects of transmission projects on electricity rates. The project team has raised these concerns related to Hydro One's property compensation practices to Senior Management.
Property values	Several individuals along the proposed transmission line route in Leamington / Lakeshore were concerned that a transmission line could decrease the value and the re-sale potential of their properties, especially if the tower lines cut through the middle or diagonally across a farm.	Hydro One recognizes that creating a new transmission corridor is a major change to the landscape. For this reason the planning team attempts to identify a route that has the least effect on residences, on farm and business operations, and on community infrastructure or facilities. Wherever possible, the company attempts to locate new transmission lines with other linear infrastructure, and along property lines. Hydro One does compensate owners for the property rights and this compensation does take into account how the new facilities affect the use or potential future use of the remaining property (e.g. injurious affection). This compensation payment should cover any expected decrease in value at the time of re-sale.
There are two businesses with buildings within the proposed ROW	There are two businesses with buildings within the proposed 65 foot easement east of the municipal utility corridor and there is not enough space to continue the same ROW alignment through these areas. The owner at Mersea Road 8 feels that he does not need the structures any longer and would be interested in negotiating with Hydro if the project is approved.	Hydro One representatives met with the two property owners individually. The project and the planning process were explained to the owners along with the property process. Possible routes through the properties were discussed with the owners. The property owner at Concession Road 8 did not express concerns and was interested in working with Hydro One. At County Road 14, Hydro One has assessed various

Issue	Description	Hydro One Response
	At County Road 14 the business owner wants his building preserved, he did not want the route to the east of his building because it would go through his experimental plots and he pumps anhydrous ammonia behind his building. The business owner also is concerned about the automatic steering equipment for tractors that he runs from his building.	alignments. Union Gas has a new station on the south side of the road from which the ROW must maintain a setback. There is enough space to make a slight swing in the line around the building and be on the west side of the municipal utility corridor so the building can be preserved. Hydro One responded that if there are problems with his auto steer equipment caused by the transmission line, our Telecom department would work with him to resolve the issues.
Zoning and municipal property assessment and taxation	Some individuals wondered if the zoning of their properties or their property taxes would change as a result of the transmission line.	Because Hydro One is not subject to the provincial *Planning Act*, properties do not have to be rezoned to accommodate a transformer station or a transmission line. Where Hydro One acquires easement rights for a new transmission line, the property remains in private ownership and this will not affect the way municipal property taxes are calculated, based on current value assessments provided to municipalities by the Municipal Property Assessment Corporation (MPAC). Owners concerned about MPAC's current value assessment of their property, may at no charge submit a request for reconsideration to have it reviewed.
Hydro One payments in lieu of municipal property taxes	Some municipal officials asked how property taxation or payments in lieu work for Hydro facilities.	Hydro One pays taxes to municipalities, effective April 1, 1999, under the classification - taxable at full rate, shared as Payment in Lieu. This means the municipality keeps the school tax portion for itself, not shared with the province. Where the Ontario Realty Corporation (on behalf of the Province of Ontario) owns the transmission corridor, Hydro One is responsible for the property taxes. The transmission

Issue	Description	Hydro One Response
		corridors are taxed at a rate per acre, across 9 geographic zones or territories within the province. No taxes are paid where Hydro One has easement rights on the property occupied by a transmission ROW. Hydro One transmission & distribution stations are assessed at a statutory rate. The stations are also assessed a second property tax, called a proxy tax, which is the difference in value between the statutory rate and current market value. This amount is paid to the Ontario Electrical Finance Corporation, and is applied to the stranded debt of the former Ontario Hydro.
Electric and Magnetic Fields (EMFs)	A few individuals asked about potential health effects of transmission lines (e.g. exposure to EMFs).	Hydro One recognizes that some people have concerns about EMFs and we take seriously our responsibility to understand, appropriately address and communicate information on this subject. For more than 30 years, research studies have examined the possibility that exposure to EMFs might affect health. While national and international health agencies, including Health Canada and the World Health Organization, have concluded that the scientific research does not demonstrate that EMFs cause or contribute to adverse health effect, some questions remain the subject of on-going research. Hydro One defers to Health Canada's position on EMFs. The federal agency responsible for regulating and advising on health issues has stated that: "there is no compelling scientific evidence that EMFs in living and school environments, regardless of locations from power transmission lines, cause ill

Issue	Description	Hydro One Response
		health such as cancer. This position is consistent with the overall opinion from most national and international scientific bodies." A copy of a Health Canada's Fact Sheet *Electric and Magnetic Fields at extremely low frequencies* was provided at the PICs, and it contains links to Health Canada's website (www.hc-sc.gc.ca) and other useful publications. Information about EMF and links to other organizations is also available on Hydro One's website.
Potential interference with communications and electronic equipment and noise associated with transmission lines	Several individuals asked whether a transmission line could interfere with radio, television or cell phone reception or GPS systems in farm equipment.	Outside of the 130 foot wide transmission corridor, it is unlikely that the power lines would interfere with radio, television or cell phone reception, or communications systems in farm machinery. Cell phone or AM radio (particularly low frequencies on the AM dial) reception could be affected directly beneath the transmission line.
Local employment / supplier opportunities	Several municipal elected officials and visitors to the public information centres asked if the project would provide any jobs for local residents or opportunities for local businesses or suppliers.	The facilities will be constructed either by Hydro One construction staff and workers recruited through the hiring hall, or contracted to an experienced construction firm that will work under supervision of Hydro One. If the work is to be outsourced, a public tender will be issued to seek bids for qualified companies, and the public tender will be posted on Hydro One's website. Similarly, any requirement for equipment, services, or materials for the project will be tendered out for public bids. This could include construction and removal of access roads, surveying, excavation, specialized equipment rental and operation, landscaping/grading, etc.

4.6 Review of the Draft ESR and Comments Received

Hydro One indicated at PIC # 3 that a Draft ESR would be available for a 30-day public review and comment period. As described in **Table 4-1** Newspaper advertisements of the Notice of Completion of the Draft ESR were published in local newspapers to inform the public that the Draft ESR would be made available for review at several public locations and that the document could also be viewed or downloaded from Hydro One's project website. It provided information on how interested parties may submit their comments to Hydro One and the MOE (see **Appendix I2**). A direct mailing of the newspaper advertisement was sent to the public mailing list, potentially affected property owners, the people who were invited to the workshop and those that attended. The notice was also be sent to those on the agency mailing list and the municipal officials.

Public and stakeholder comments are welcomed and encouraged. Hydro One will consider all issues identified during the review period and will make best efforts to resolve these issues prior to filing the Final ESR with the MOE. All issues or concerns raised during the review period will be documented and summarized in the Final ESR.

5. Transmission System Alternative Selection

At the outset of the project, consideration was given to the system alternatives in Essex County and Windsor that could best be developed to ensure adequate supply of electricity to meet future needs in the eastern part of Essex County and improve overall security and reliability of power supply for Windsor and Essex County. As discussed in Section 1.2, there were two systems alternatives each with merit for resolving the need and without more detailed assessment, it was difficult to choose between the two without further evaluation of cost, technical, environmental or social factors. Therefore it was decided to study these alternatives as part of the Class EA process and receive stakeholder, government, First Nations and public feedback on the alternatives. As discussed in Section 3, study areas were defined around the system alternatives so that the social and environmental factors could be assessed. The results of these analyses were presented to local elected municipal officials, community stakeholders, regulators, First Nations communities and the general public for comments. It was recognized that once the system alternative was selected, an additional step would be required of selecting the location of the facilities within the study area.

5.1 Transmission System Alternative Description

As shown on **Figure 1-2** there were two system alternatives that would fulfill the need in the Windsor/Essex area. These alternatives are described as follows:

- Alternative 1: a new 230 kilovolt (kV) to 115 kV autotransformer station and associated 'tap' lines in the Woodslee area of the Town of Lakeshore would be required. The size of the property required for the autotransformer station would be approximately 10 hectares. The existing 115 kV transmission circuits would require upgrading between the proposed station and Hydro One's Kingsville Transformer Station. This would involve replacing the existing conductor (wires) with higher capacity conductor and replacing the wood pole structures on the existing transmission right-of-way. Upgrading of the existing distribution system out of Kingsville TS would also be required.

- Alternative 2: a new Dual Element Spot Network (DESN) in the Leamington area and associated "tap" line to connect it to the grid would be required along with an additional transmission line between Lauzon TS and Sandwich Jct. The property required for the DESN would be approximately 3.2 hectares, This alternative is discussed in more detail in **Section 8**.

5.2 Transmission System Alternative Evaluation Criteria

In order to compare the two system alternatives, evaluation criteria were developed taking into consideration the general characteristics of the study area. This section describes the environmental, socio-economic, technical and cost criteria used to evaluate and select the preferred system options. Evaluation criteria are described as follows:

Natural Environment and Socio-economic Criteria:

Where possible minimize locating new transmission routes and transformer station sites that could directly affect:

- residences (including seasonal);
- hospitals, nursing homes, churches, schools, day care centres and other sensitive noise receptors;
- wetlands and environmentally sensitive areas (including Areas of Natural and Scientific Interest, species at risk, significant ecological areas etc);
- significant heritage sites, traditional aboriginal use areas, archaeological or historic sites;
- mature woodlots and orchards;
- cold water fisheries habitat;
- federal lands (which could trigger Federal EA requirements) such as Federal Parks and First Nation Reserves;
- Class I and II agricultural lands and where applicable, and specialty crop areas;
- parks and recreational areas (i.e. for which the line/TS would be out of character) or areas with scenic qualities;
- lands potentially contaminated from historic industrial uses;

- flood plains;
- areas high in mineral aggregate potential.

Technical considerations

Where possible seek new transmission routes and transformer station sites that are

- in close proximity to existing transmission lines (and distribution lines, where appropriate);
- in close proximity to all weather roads;
- in close proximity to rail lines;
- well drained and flat, especially for transformer stations;
- easily accessed by road; and
- not in conflict with existing land uses (i.e. sites with buried facilities such as oil and gas pipelines).

Other technical considerations include:

- ability to meet the system's needs;
- availability of land; and
- Green Energy Act benefits.

Cost Considerations

- Lower cost of project.

5.3 Evaluation and Selection of the System Alternative

Data for each alternative was collected through a review of secondary sources, meetings and correspondence with stakeholders and government agencies and municipalities. Field visits were made and feedback from the public was taken into account. This information was used when evaluating and selecting the system alternative which would then be brought forward and assessed for the new transmission facility alternatives. **Table 5-1** shows the comparison between the alternatives.

Natural Environment Analysis

During the evaluation step, quantitative and qualitative information was assembled to identify and interpret the significance of potential effects on environmental resources encountered in the study areas. The similarities and differences between the alternatives were assessed and the key environmental effects associated with each alternative were analyzed and mitigation measures considered that could minimize potential effects.

The analysis of the environmental data showed that both alternatives were comparable when it came to sensitive areas, fisheries and SAR and that the sensitive areas could be avoided through planning or mitigation measures could be implemented.

Based on the natural environmental criteria the two alternatives are similar in potential effects.

Socio-economic Environment Analysis

Socio-economic effects are the changes that occur to people's way of life, cultural traditions and community as a result of transmission development. Criteria were developed to evaluate and compare the socio-economic effects of constructing a new TS. An assessment of the socio-economic effects was provided on a comparative basis with the relative merits of the alternatives highlighted.

There was a substantial difference in size of the proposed transmission station for each system alternative. Alternative 1 required an autotransformer station be built and the land requirement for the station was approximately 10 hectares. Alternative 2 requires a DESN type transformer station, which is much smaller and only needs approximately 3.2 hectares of land. Since the predominant land use in both study areas was agriculture (generally Class 2 with a small portion of Class 3) it was assumed that the station would be built in an agricultural area on Class 2 soil. Therefore more land would be removed from agriculture by Alternative 1. Although transmission towers do effect farming operations, existing corridors would be followed where possible. Existing poles would have to be replaced and additional tap lines constructed for Alternative 1. Alternative 2 would require new structures on the existing corridor between Lauzon TS x Sandwich Jct. and between the proposed Leamington Jct. and Leamington TS.

Alternative 1 would be disruptive to the community of Woodslee and that it would affect more residents than Alternative 2.

Based on the socio-economic criteria, Alternative 2 was preferred.

Cost Analysis

The costs were assessed on a higher level because detailed information had not been established such as length of lines and site locations. Based on known information such as the difference in typical station costs and estimates for lines and other facilities Alternative 2 would be lower cost and thus preferred.

Technical Analysis

Discussions were held with LDCs and Municipal governments. Alternative 2 could best ensure an adequate supply of electricity to meet the future needs in the eastern part of Essex County including the Town of Lakeshore and Municipality of Leamington. It will also improve overall security and reliability of power supply for Windsor and Essex County.

As an additional feature of Alternative 2, it would best facilitate the connection of future renewable energy projects resulting from the Green Energy initiative and *The Green Energy Act*.

Public and Government

At the PIC#1, many residents of North and South Woodslee attended and voiced their opinion that the proposed transformer station would have a negative effect on their community. They stated that it would be disruptive to the quality of life in their small community and no matter where the transformer station was sited, it would be close to many residents and therefore they overwhelmingly preferred Alternative 2. The Town of Kingsville also supported Alternative 2.

The Municipality of Leamington and generally the participants of PIC#1 in Leamington were supportive of a new TS and associated transmission line. They stated it would be good for reliability of power and enticing new industry to the area. Biogen was also considered advantageous for the area. There was a preference that a new line would follow the abandoned rail corridor that the Municipality had acquired with the purpose of locating infrastructure along it.

Few people attended PIC#1 in the Tecumseh (see **Section 4**) and some said that they came out to find out what was happening on the corridor. Others remarked that Ontario Hydro had purchased enough property for another transmission line, the project did not surprise them.

Table 5-1: Comparison of Transmission System Alternatives 1 and 2

Factors/Criteria	**ALTERNATIVE 1**	***ALTERNATIVE 2**
Natural Environment		
Potential Effects on SAR	P	P
Potential Effects on Wildlife	P	P
Potential Effects on Fisheries	P	P
Socio-economic Environment		
Community Disruption		P
Potential Effects on Agriculture (land use removal)		P
Proximity to Fewer Area Residents		P
Cost		
Lower Cost		P
Technical		
Better Meets Need		P
System Reliability		P
Availability of Land		P
Green Energy Act Benefits		P
Public and Government Consultation		
Public		P
Government		P
P is the preferred alternative based on the assessment of potential effects; if potential effects are similar both alternatives are shown as preferred		
*Alternative 2 is selected		

After evaluating the system alternatives, Alternative 2 was preferred based on the socio-economic factors, technical criteria, costs and public and government input.

6. Route and Site Selection within Alternative 2

There are two stages to Alternative 2. The first stage is the construction of the Leamington TS and an associated 230 kV transmission line to connect it to the electricity grid. The second stage is to build a transmission line on the government owned corridor, parallel the existing 230 kV transmission line between Lauzon TS and Sandwich Jct. There were no alternatives considered to building an additional transmission line in this location because it would parallel Hydro One's existing infrastructure on a government owned corridor and no other routes were logical in this area to satisfy the need. It was discussed with the public at PICs #1 and #2 in the Tecumseh area and therefore no further study of this transmission line was required.

Hydro One initiated a search for potential transmission line routes and TS sites within the Leamington . Aerial photographs and topographic maps of the study area were analyzed and site visits were made to identify areas where the proposed transmission line and TS could be located based on technical and environmental considerations.

6.1 Alternative Transmission Line Routes

Two route alternatives were identified that would be technically feasible and have a lower degree of effects on the natural environment and socio-economic factors in the area. These alternatives were identified after analysing biophysical and social constraint maps obtained from the MNR, ERCA, Municipality of Leamington and discussions with various agencies. A description of the two alternative transmission line routes through the Municipality of Leamington and the Town of Lakeshore is provided below (see **Figure 6-1**).

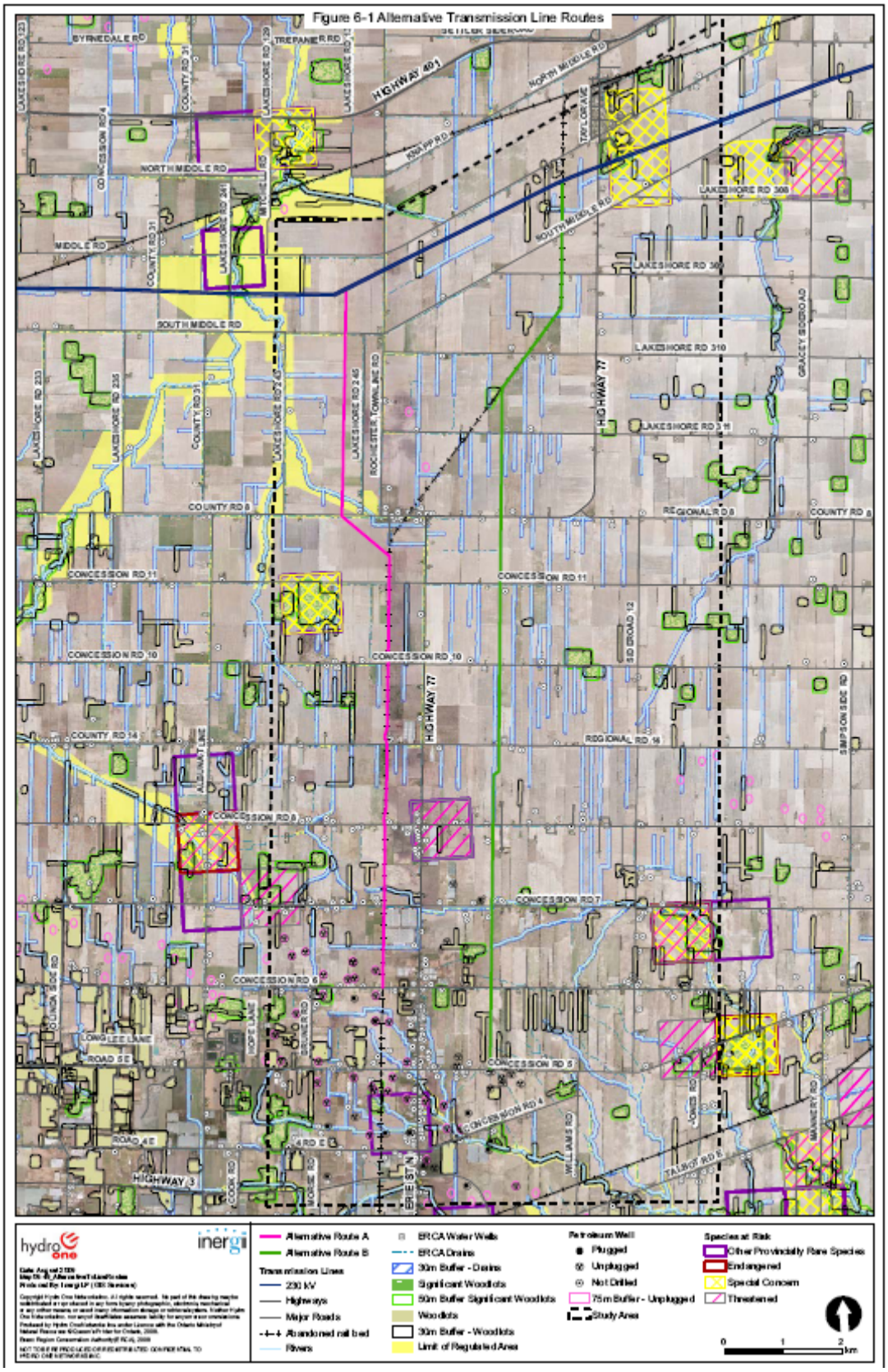


Figure 6-1 Alternative Transmission Line Routes

6.1.1 Description of the Alternative Routes

Alternative Route A would be situated along the Leamington utility corridor beginning at Mersea Road 6, in the Municipality of Leamington. This transmission route would follow the Leamington utility corridor north, then divert to the west of the Hamlet of Staples. Originally the line was routed so that it followed the east side of Lakeshore Road 245 (formerly Concession Road 8) to join up with the existing east-west transmission corridor south of Hwy 401 (in the Town of Lakeshore).

One group of landowners from the Town of Lakeshore asked Hydro One to consider alternative routes north of County Road 8 west of Lakeshore Road 245 that would follow existing property lines, if possible. Hydro One advised that a route in this area had been investigated but was discounted because of land use conflicts with proposed wind turbines. Nevertheless, the company committed to reinvestigate and to hold a workshop with potentially affected property owners and interested parties if a route alternative(s) were feasible in this area (see **Section 4**.). It was determined that one route was technically feasible in the area and a workshop was held. As a result of the workshop, it was decided to align the route to the west of Lakeshore Road 245. See **Figure 6-2.**

Alternative Route B would be located approximately one km east of Hwy 77 and would join up with the Leamington utility corridor north of County Road 8 to connect with the east-west transmission corridor south of Hwy 401.

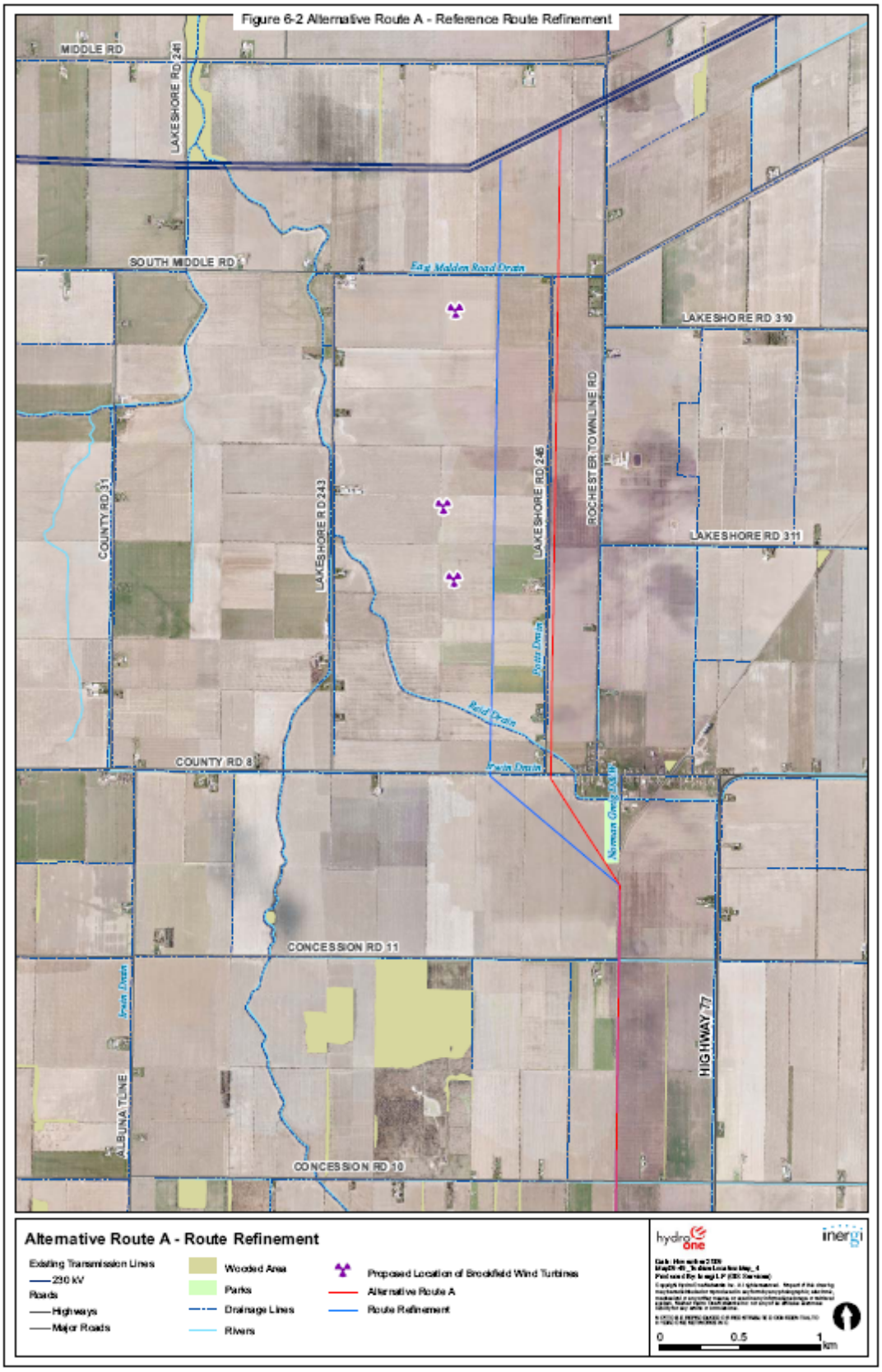


Figure 6-2 Alternative Route A – Reference Route Refinement

6.2 Route Evaluation Criteria

A set of technical, natural and social-economic environment criteria were used by the Hydro One Project Team to evaluate and compare the proposed transmission line routes. These were established using technical judgement and experience by the team and input from environmental agencies including the MOE and MNR, local conservation authorities, and municipal officials.

Natural Environment

Avoid to the extent possible:

- Areas of greater ecological diversity or sensitivity (e.g. ESAs);
- Areas with SAR;
- Areas considered to support biological habitats (e.g. fish or wildlife);
- Wetland areas;
- Mature woodlots and orchards;
- Conservation Authority regulated areas and other protected lands; and
- Federal lands such as Federal Parks.

Social-economic Environment

Avoid to the extent possible:

- Disruption to existing residences and buildings;
- Disruption of lands with approved and/or proposed plans for development;
- Disturbance to hospitals, nursing homes, churches, schools, day care centres;
- Disruption to parks and recreational areas or areas with scenic qualities;
- Significant heritage and historic sites; and
- First Nations reserves.

Technical

Preference is given to sites:

- Proximate to all weather roads
- Away from unplugged petroleum wells and drains; and
- With acceptable surface drainage conditions (risk of flooding).

6.2.1 Route Evaluation and Selection

The environmental and socio economic information was collected for the study area and the route evaluation and selection criteria were applied using data gathered from maps, field visits and discussions with the relevant agencies. Constraint maps of environmental, land use and social features were prepared and evaluated using GIS software. GIS shape files for various indicators were obtained from MNR, Municipality of Leamington and ERCA and analyzed. Possible routes in the study area were assessed and two were determined to be feasible. The alternative transmission line routes were plotted and approximate distances to local features were measured where applicable.

The selection of the preferred transmission route was made first and, subsequently, a selection of the preferred TS site adjacent to the preferred route was made.

Natural Environment Analysis

When the original analysis of the preferred routes where done, the two routes were deemed comparable when assessing the Natural Environment Criteria. Natural environment considerations and archaeological potential are similar for both alternative transmission line routes and thus these were not deemed to be deciding factors in the selection of Alternative A. Subsequently a species was up-listed to put it in the Endangered Species category under the *SARA*. Hydro One has committed to work with MNR to mitigate effects to the species and its habitat.

Socio-economic Environment

Alternative A will maximize the use of the abandoned rail corridor purchased by the Municipality of Leamington for infrastructure use and for a recreational trail. By following

the corridor, the transmission line would affect less agriculture land. Fewer residents would be directly affected by this alternative.

Cost

Alternative A would be a slightly lower cost that Alternative B.

Technical

From a technical perspective, Alternative A is preferred.

Public and Government Consultation

Through the consultation process Alternative A was preferred because the abandoned rail bed was bought by the Municipality as a utility right-of-way, it should be used instead of a green field route through Leamington.

A summary of the comparison of alternative transmission line routes is provided in **Table 6-1.**

Table 6-1: Comparison of Alternative Transmission Line Routes

Factors/Criteria	**Alternative Transmission Line Routes**	
	A*	**B**
Natural Environment		
Potential Effects on Wildlife	P	P
Potential Effects on Fisheries	P	P
Potential Effects on SAR	P**	P
Social- economic Environment		
Potential Effects on Agriculture (land use removal)	P	
Proximity to Fewer Area Residents	P	
Conformance to PPS (Potential to Parallel Existing Infrastructure)	P	
Archaeological Potential	P	P
Cost		
Cost	P	
Technical		
Technical (inc. constructability & maintenance considerations)	P	
Public and Government Consultation		
Public	P	
Government	P	

P is the preferred alternative based on the assessment of potential effects; if potential effects are similar both alternatives are shown as preferred. Alternative A* is the preferred route

** subsequent to the comparison and the publication of the chosen alternative, a species was up-listed by MOE.

7. Alternative TS Sites

Once the preferred alternative route (Alternative Route A) was identified, Hydro One initiated a search for potential properties for the new TS. Environmental, socio-economic technical and cost criteria were developed for comparing the TS sites. A preliminary noise evaluation was done and is found in **Appendix J**.

7.1 Description of Alternative TS Sites

The study area for the transformer station is flat and primarily agricultural. Only 3.2 ha of land was required for the site and therefore there were many locations that would prove suitable. A description of the nine alternative TS sites identified for Alternative Route A is given below and can be seen in **Figure 7-1**:

Site A1

Site A1 is located approximately 20 m north of Concession Road 4, on the east of the proposed transmission corridor. A watercourse lies to the north of the lot at a distance of approximately 120 m from the MNR regulated setback of 30 m. The site is located 480 m away from a significant woodlot, which MNR regulates a 50 m setback for development. There are also two unplugged petroleum wells at the north of the site at an approximate distance of 185 m from the MNR regulated 75 m setback. The site is located in a SAR area, to which MNR applies a 50 m setback. Homes are located at a distance of approximately 130 m from the site. Mount Carmel Blytheswood Public School is located approximately 1175 m north of the site and there are also green houses located south of the proposed site. The land use designation for this site is business park.

Site A2

Site A2 is located approximately 20 m south of Concession Road 5, on the east side of the proposed transmission corridor. A significant woodlot lies just south of the site at a distance of approximately 6 m. There is also a watercourse approximately 40 m south from the site. Unplugged petroleum wells are located approximately 47 m. The nearest home is located at a distance of approximately 60 m. Mount Carmel Blytheswood Public School is located

approximately 415 m east of the site. The land use designation for this site is agriculture open space recreation.

Site A3

The site is located approximately 460 m north of Concession Road 5, on the east side of the proposed transmission corridor. The nearest watercourse is located at a distance of approximately 72 m. A significant woodlot is roughly 650 m away from Site A3. A petroleum well is located north of the site approximately 120m, while the nearest home is located approximately 250 m from the site. The land use designation for this site is agriculture and open space recreation.

Site A4

The site is located approximately 200 m south of Concession Road 6, on the east side of the proposed transmission corridor. The nearest watercourse is located at a distance of approximately 1 m from the MNR regulated 30 m setback. A significant woodlot is approximately 690 m away from the site. A petroleum well is located north of the site approximately 110 m, while the nearest home is located approximately 135 m from the site. There is a school located approximately 275 m east of the site. The land use designation for this site is agriculture open space recreation.

Site A5

Site A5 is located approximately 220 m north of Concession Road 6, on the east side of the proposed transmission corridor. The nearest significant woodlot is 725 m away and the closest watercourse is approximately 290 m from the site. Unplugged petroleum wells are located at a rough distance of 105 m away. The site is close to an existing greenhouse operation, while the closest home is approximately 185 m from the site. There is a church located approximately 320 m east of the site, and greenhouses are located to the east and north of the site. The land use designation for this site is agriculture open space recreation.

Site A6

Site A6 is located approximately 430 m north of Concession Road 6, on the east side of the proposed transmission corridor. The nearest home is located at a distance of approximately

400 m from the site. The closest watercourse and significant woodlot can be found approximately 80 m and 800 m away from the site respectively. Unplugged petroleum wells are located at a rough distance of 65 m. There is a church located approximately 610 m southeast of the site. There is also one greenhouse located southeast of the site and three greenhouses located north of the site. The land use designation for this site is agriculture and open space recreation.

Site A7

This site is located approximately 520 m south of Concession Road 7, on the west side of the proposed transmission corridor. The nearest significant woodlot is located approximately 990 m away, while the closest watercourse can be found at a distance of approximately 1 m from the MNR setback. The nearest home is located roughly 480 m from the site. Unplugged petroleum wells are located at an approximate distance of 355 m away. There is a church located approximately 610 m southeast of the site. There is also one greenhouse located southeast of the site and three greenhouses located north of the site. The land use designation for this site is agriculture and open space recreation.

Site A8

Site A8 is located approximately 20 m north of Concession Road 7, on the east side of the proposed transmission corridor. A watercourse is present approximately 35 m, north of the site. The nearest significant woodlot is roughly 1135 m away. Unplugged petroleum wells can be found about 950 m away from the site, with the nearest home at a distance of approximately 135m. Site A8 is just north of three large greenhouses. The land use designation for this site is agriculture and open space recreation.

Site A9

Site A9 is located approximately 20 m north of Concession Road 6, on the east side of the proposed transmission corridor. The site contains two fields, there is a house on the property and a former industrial operation in the shop behind the house.

The nearest small watercourse is located approximately 360 m away from the site. The closest significant woodlot is located at a distance of approximately 556 m, and the nearest

home is located approximately 110 m away from the site. Unplugged petroleum wells are located approximately 94 m from the site. There is a church located approximately 260 m east of the site, as well as, greenhouses are located to the north of the site. The land use designation for this site is residential, agriculture and open space recreation.

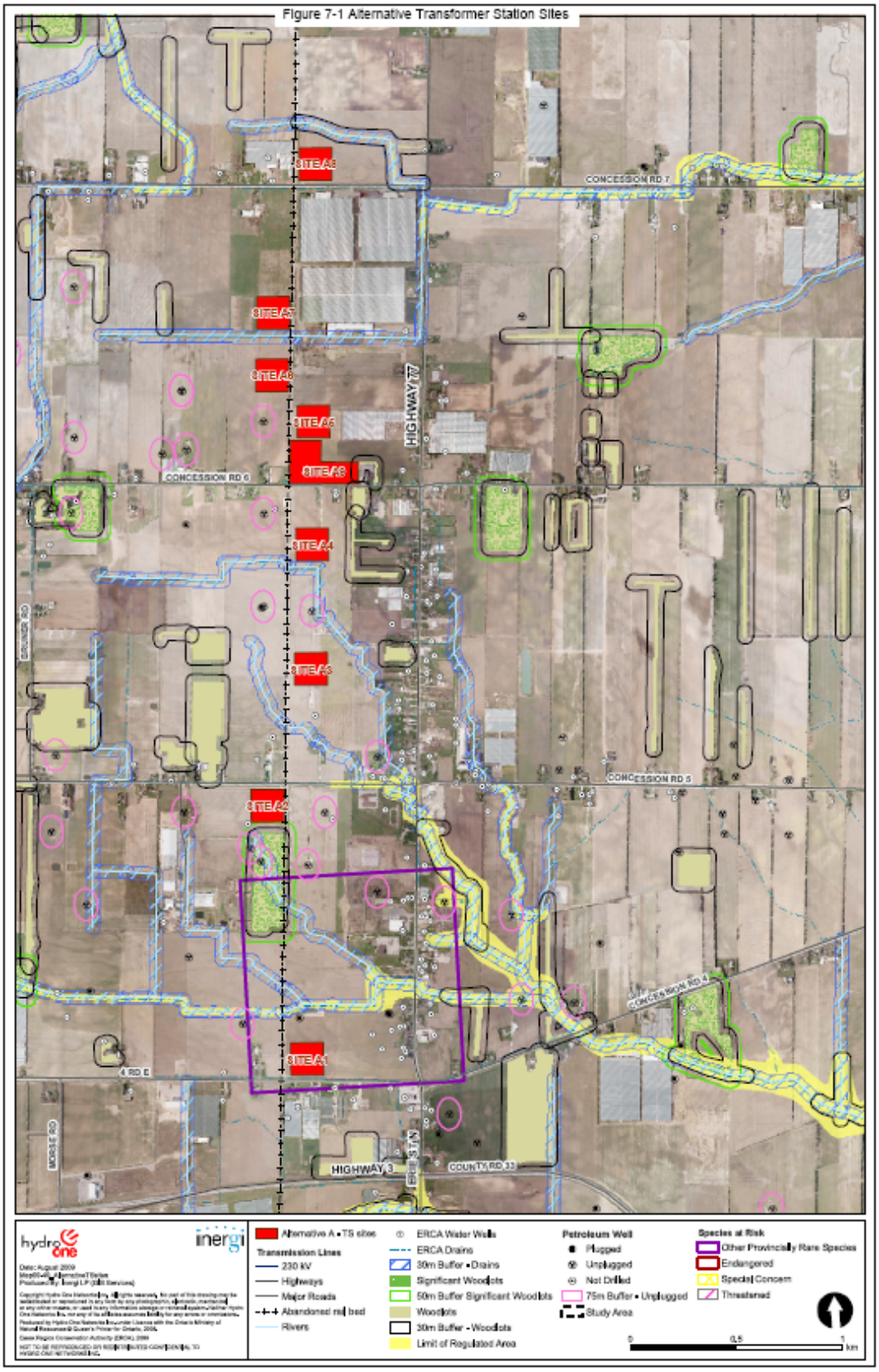


Figure 7-1 Alternative Transformer Station Sites

7.2 Criteria for the Evaluation of Sites

Although some of the criteria for the selection of the transmission route are the same as the criteria for the selection of the site, some are different. Therefore the criteria used for the evaluation of the line were assessed to see if they were appropriate for the evaluation of the TS site and the additional criteria were added that were applicable only to TS sites.

Natural Environment

Avoid to the extent possible:

- Areas of greater ecological diversity or sensitivity (e.g. ESAs);
- Areas with SAR;
- Areas considered to support biological habitats (e.g. fish or wildlife);
- Wetland areas;
- Mature woodlots and orchards;
- Conservation Authority regulated areas and other protected lands; and
- Federal lands such as Federal Parks.

Social-economic Environment

Avoid to the extent possible:

- Disruption to existing residences, buildings;
- Disruption of lands with approved and/or proposed plans for development;
- Disturbance to hospitals, nursing homes, churches, schools, day care centres;
- Disruption to parks and recreational areas or areas with scenic qualities;
- Significant heritage and historic sites; and
- First Nations reserves.

Technical

Preference is given to sites:

- Proximity to the load centre (where the need of electricity is greatest);
- Proximity to the existing transmission line;
- Proximity to all weather roads;

- Away from unplugged petroleum wells and drains;
- With acceptable surface drainage conditions (risk of flooding); and
- Availability of land (willing seller).

Cost

- Lower cost

7.3 TS Sites Evaluation and Selection

There were an abundance of suitable sites for a TS within the Municipality of Leamington. **Figure 7-2** illustrates the potential TS sites that were analysed. Based on the evaluation, Site A9 was deemed preferred over the other potential TS sites. Site A9 affords the most cost effective location and minimizes the need for additional towers and lines relative to the more southern TS site options. The Site A9 property also had the additional advantage of a willing seller. It is emphasized that any TS site will typically require a landscape program to minimize the visual effects of the proposed TS. A landscape plan will be developed for the proposed Leamington TS in consultation with the Municipality of Leamington.

Site A9 is the preferred TS site on the basis of the preservation of agricultural lands, proximity to wildlife, aquatic features and SAR, and the minimization of disruption to communities. Site A9 also has a lower overall cost and technical advantages. It balances the proximity to the load centre with the distance from the existing transmission lines. A summary of the comparison of alternative TS sites is provided in **Table 7-1.** Archaeological potential for all TS sites is common and thus was not a deciding factor.

A summary of the evaluation of Alternative TS sites is provided in **Table 7-1**.

Table 7-1: Evaluation of Alternative TS Sites

Factors	**Potential Transformer Station Sites**								
	A1	**A2**	**A3**	**A4**	**A5**	**A6**	**A7**	**A8**	**A9***
Natural Environment									
Potential Effects on Wildlife	P		P	P	P	P	P	P	P
Potential Effects on Fisheries	P				P				P
Potential Effects on SAR		P	P	P	P	P	P	P	P
Social Environment									
Proximity to Fewer Area Residents						P	P		P
Potential Effects on Agriculture (land use removal)	P	P	P	P	P	P	P	P	P
Potential Effects on Archaeological Sites	P	P	P	P	P	P	P	P	P
Cost/Technical									
Cost								P	P
Technical/Constructability/Maintenance Considerations	P	P						P	P
P is the preferred alternative based on the assessment of potential effects; if potential effects are similar both alternatives are shown as preferred									
*A9 is the preferred site									

Figure 7-2 illustrates the preferred transmission line route along with the preferred TS site. **Figure 7-3** is a comparison of the existing condition and post development simulation viewing from three camera positions. **Figure 7-3A**- is the photo showing the camera position, **B** is the comparison of the view from camera 1, **C** is the comparison from camera 2, **D** is the comparison from camera 3, and **E** is the comparison from the Station entrance.

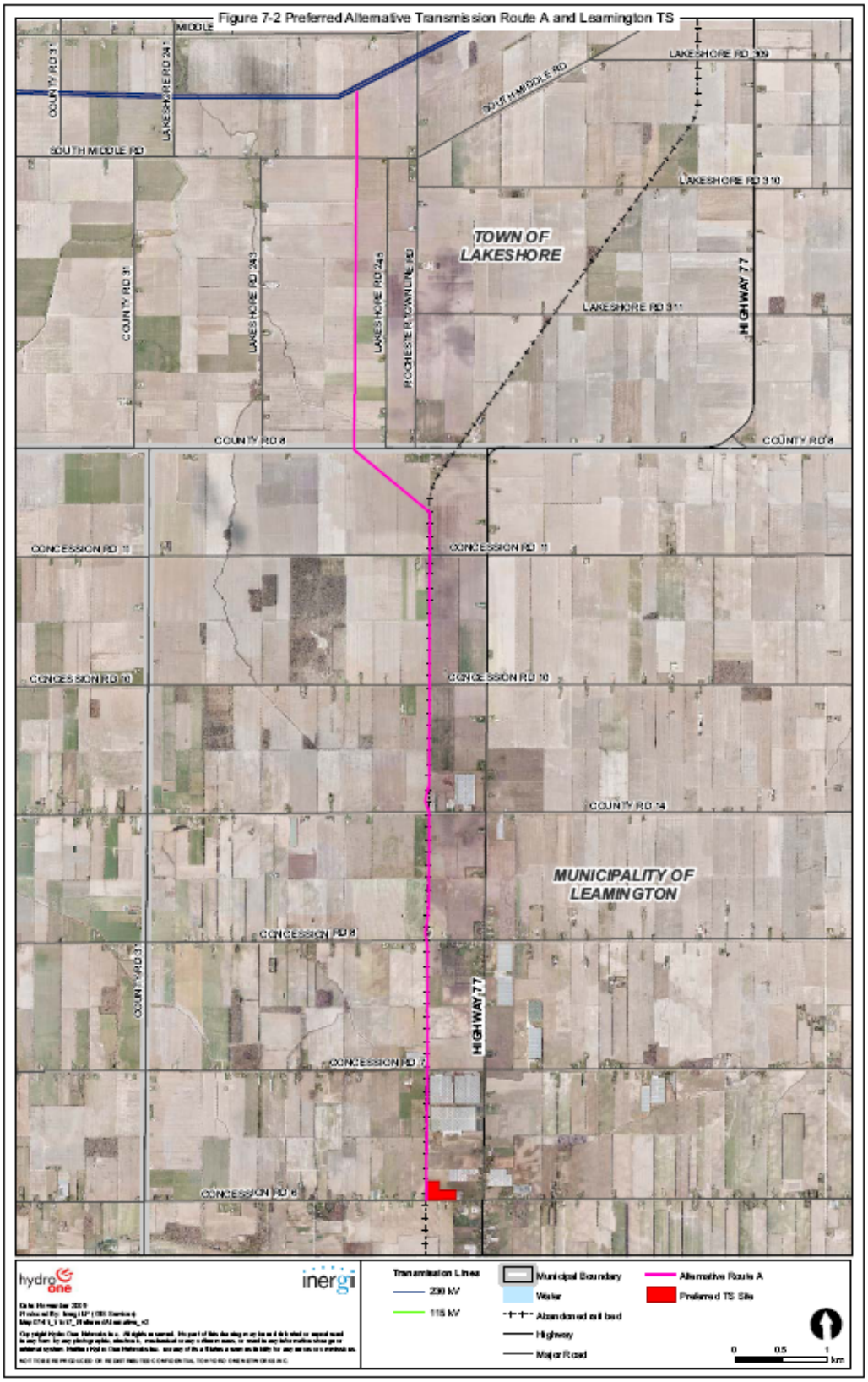


Figure 7-2 Preferred Alternative Transmission Route A and Leamington TS

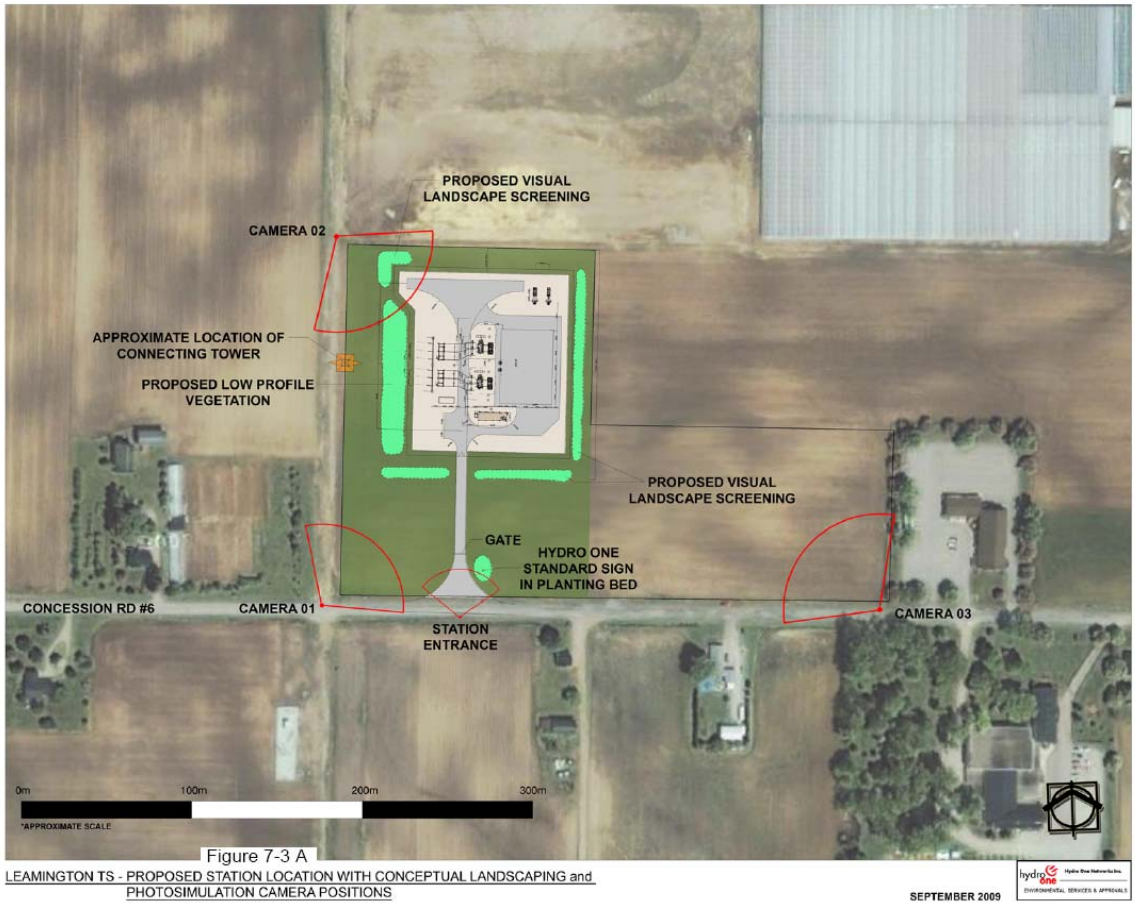


Figure 7-3 Comparison of the Existing Condition and Post-development (without landscaping) Simulation, Viewing from Three Camera Positions

A. Ortho Views from Three Camera Positions of Leamington TS

B. Comparison of Existing Conditions and Post-development Simulation (without landscaping), Viewing from Camera 1 Position

EXISTING CONDITION

CONCEPTUAL STATION AND LANDSCAPE SIMULATION

LEAMINGTON TS PHOTOSIMULATION - VIEW LOOKING SOUTHEAST across TRANSMISSION LINE (CAMERA 02)

SEPTEMBER 2009

C. Comparison of Existing Conditions and Post-development Simulation (without landscaping), Viewing from Camera 2 Position

EXISTING CONDITION

CONCEPTUAL STATION AND LANDSCAPE SIMULATION

LEAMINGTON TS PHOTOSIMULATION - VIEW LOOKING WEST towards PROPOSED STATION (CAMERA 03)

SEPTEMBER 2009

hydro one Hydro One Networks Inc.
ENVIRONMENTAL SERVICES & APPROVALS

D. Comparison of Existing Conditions and Post-development Simulation (without landscaping), Viewing from Camera 3 Position

EXISTING CONDITION

CONCEPTUAL STATION AND LANDSCAPE SIMULATION

LEAMINGTON TS PHOTOSIMULATION
- VIEW LOOKING NORTH from STATION ENTRANCE

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ENVIRONMENTAL SERVICES & APPROVALS

SEPTEMBER 2009

E. Comparison of Existing Conditions and Post-development Simulation (without landscaping), Viewing from Station Entrance

8. Project Description

The proposed project will be undertaken in two stages. The first stage is to construct the proposed Leamington TS and associated transmission line and the second stage will be the construction of a new transmission line between Lauzon TS and Sandwich Jct.

Stage 1: Leamington TS and Associated Transmission Line

Hydro One is proposing to construct a new TS in Leamington and a new transmission line which will connect the station to the 230 kV network. The station will occupy an area of land of approximately 150 m by 150 m plus an additional area for future expansion if required. The TS will be located north of Mersea Road 6 on the east side of the proposed transmission line. A preliminary layout of the station is shown below in **Figures 8-1**. The scope of the first phase will include the following major components for the station and line:

Leamington TS

- An outdoor 230 kV switchyard with two incoming overhead circuits and two transformer disconnect switches;
- Two 75/125 mega volt-ampere (MVA), 230/27.6-27.6 kV transformers;
- An outdoor 27.6 kV switchyard with breakers, disconnect switches, capacitor bank and outgoing feeders;
- A fenced gravel yard of approximately 100 m x 110 m;
- Landscaping and drainage around the perimeter of the fenced area (approximately 30 m);
- Eleven 72 kV SF6 dead tank circuit breakers;
- AC Station Services outdoor load centre; and
- Protection and Control and Telecom trailer housing DC station services.

Figure 8-2 illustrates the conceptual layout of the Leamington TS on the preferred site. The figure also indicates a potential future second station on the site should the need arise.

Leamington Jct. x Leamington TS transmission line

- Constructing a new double circuit 230 kV transmission line to connect the station to the existing 230 kV network. In most locations the standard X9S towers will be used and the towers will be approximately 750 feet apart and the footings will be approximately 20 feet apart depending on the geotechnical information;
- Removal of the Hydro One distribution line on the easement between Mersea Road 6 and County Road 14.

Figure 8-3 illustrates the proposed ROW of the transmission line located north of Staples .

Figure 8-4 illustrates a typical cross section of the Leamington utility corridor, the existing union gas pipeline, the new transmission line tower and the future municipal trail path.

Stage 2: Lauzon TS x Sandwich Jct.

The second phase will consist of the construction of a new double circuit 230 kV transmission line on the existing Hydro One transmission corridor between Lauzon TS on the Lauzon Parkway to Sandwich Jct near Maidstone.

Figure 8-5 illustrates the new transmission line route and cross section view locations for Lauzon TS x Sandwich Jct.

Figures 8-6, **8-7** and **8-8** are the three proposed cross sections of the Hydro One transmission corridor on the Lauzon TS x Sandwich Jct. transmission line.

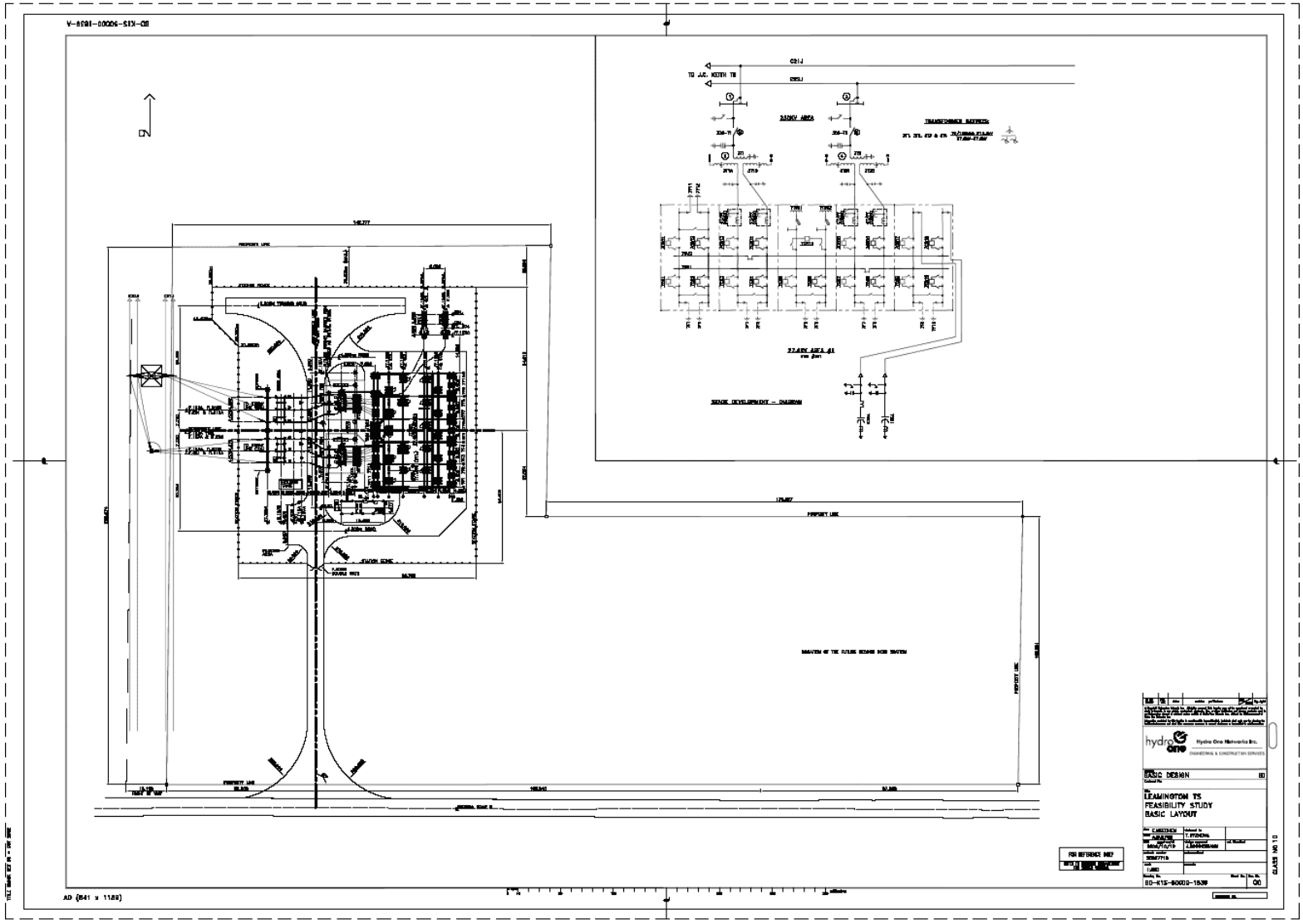


Figure 8-1 Typical Transformer Station Layout for the Leamington Area

Figure 8-2 Leamington TS – Preferred Site Location and Conceptual Layout

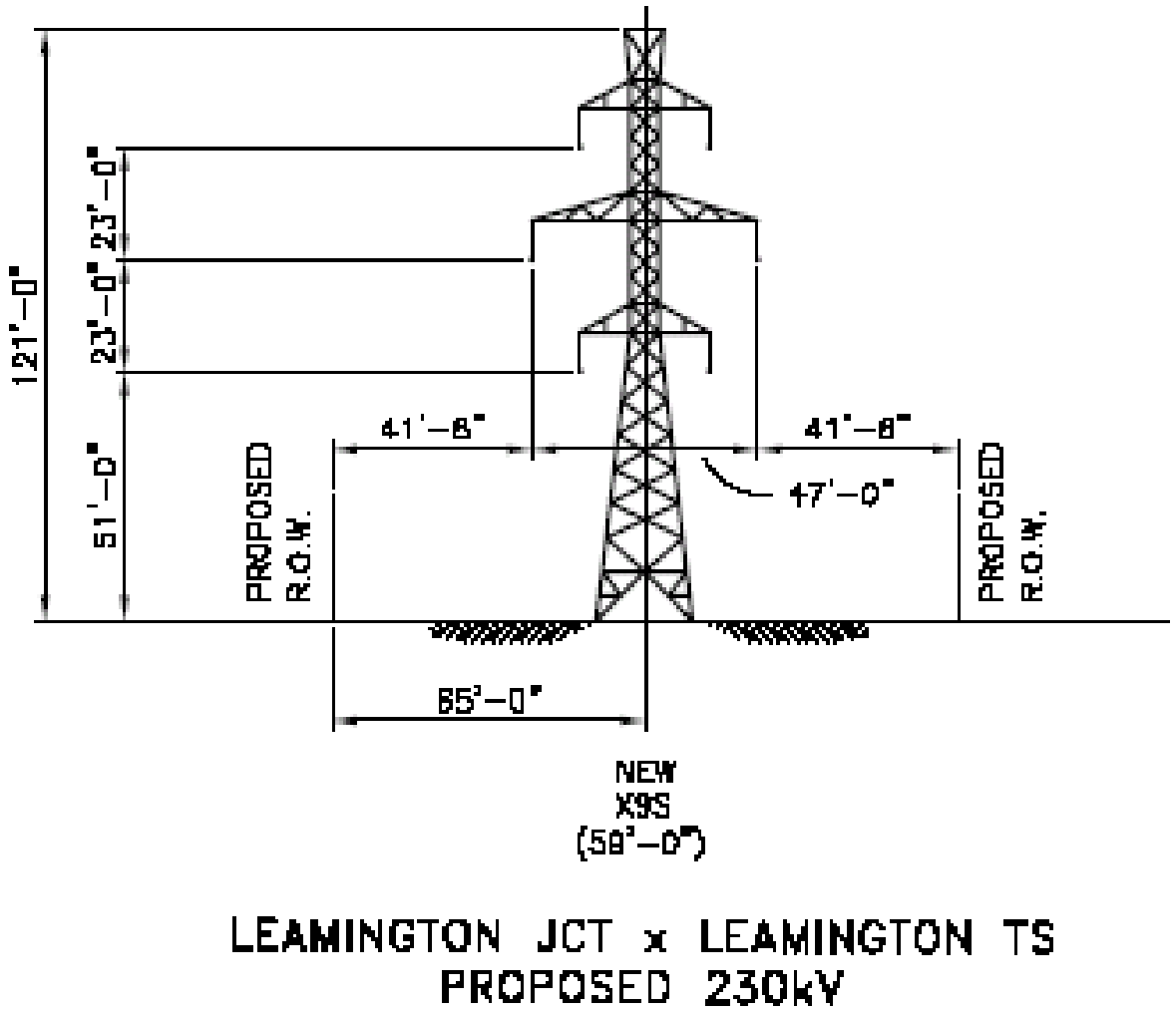


Figure 8-3 Proposed 230 kV Double-Circuit Leamington ROW north of the Leamington Utility Corridor

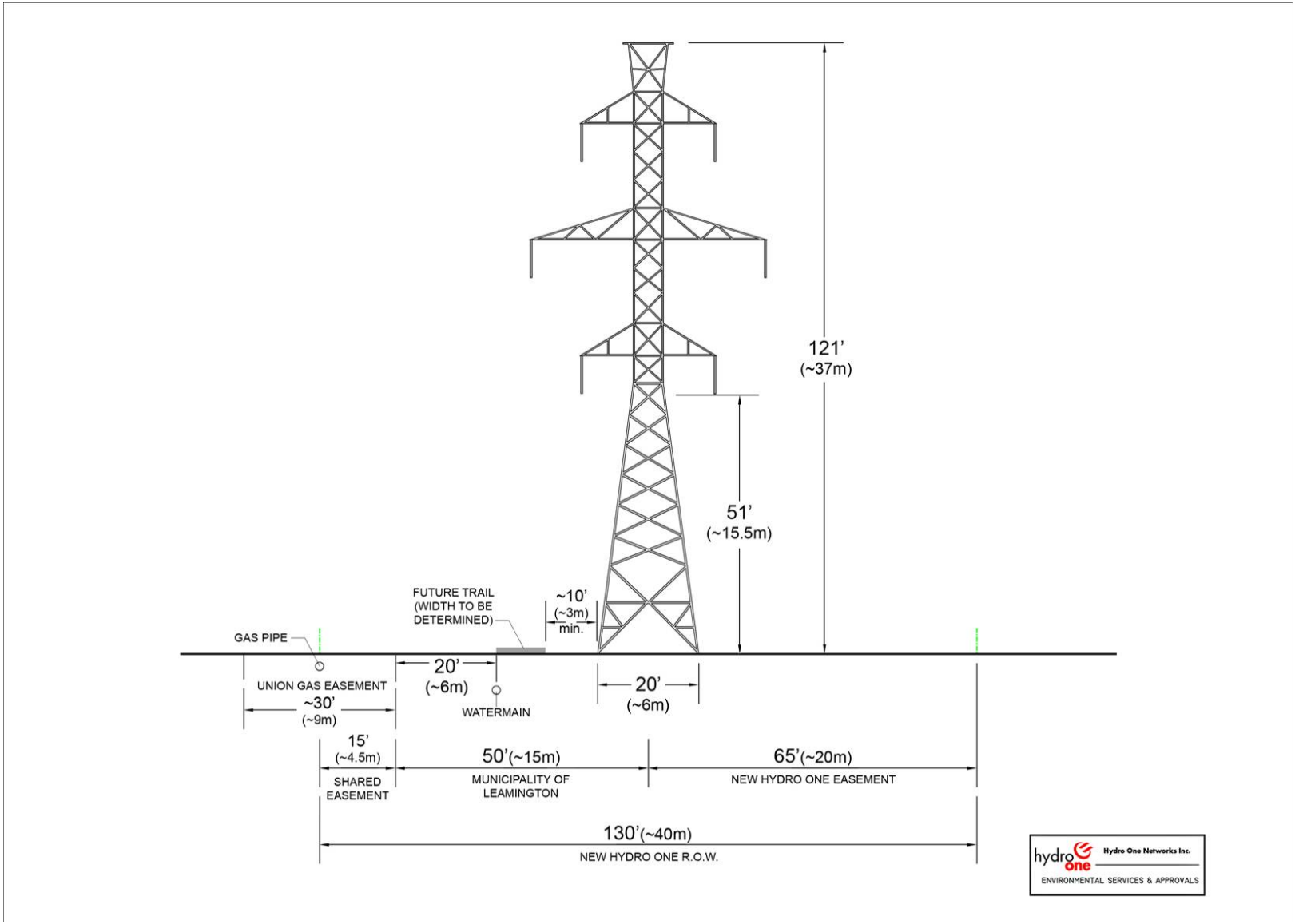


Figure 8-4 Typical Cross Section – Municipal Utility Corridor with new Hydro One 230 kV Transmission Line

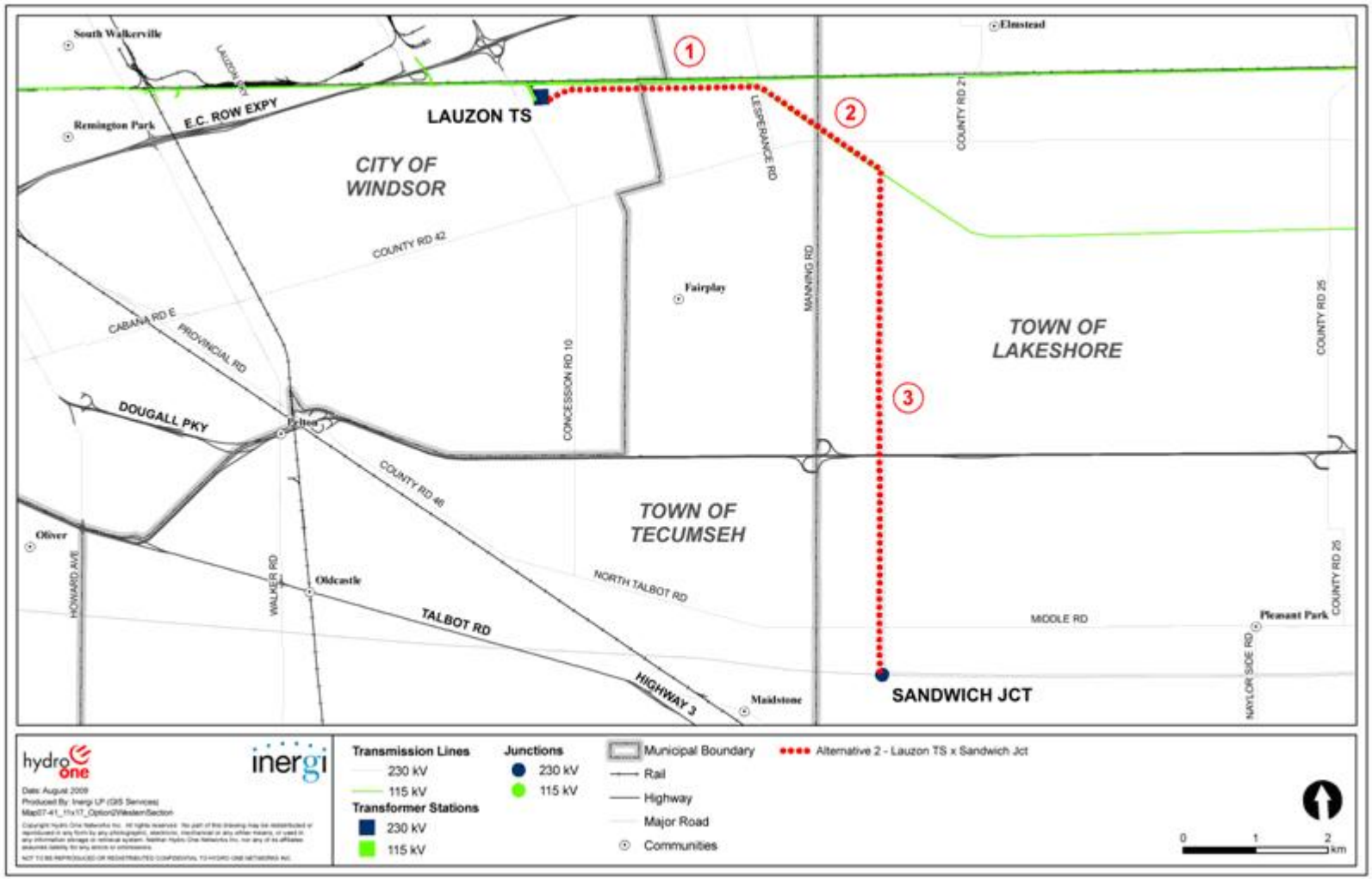
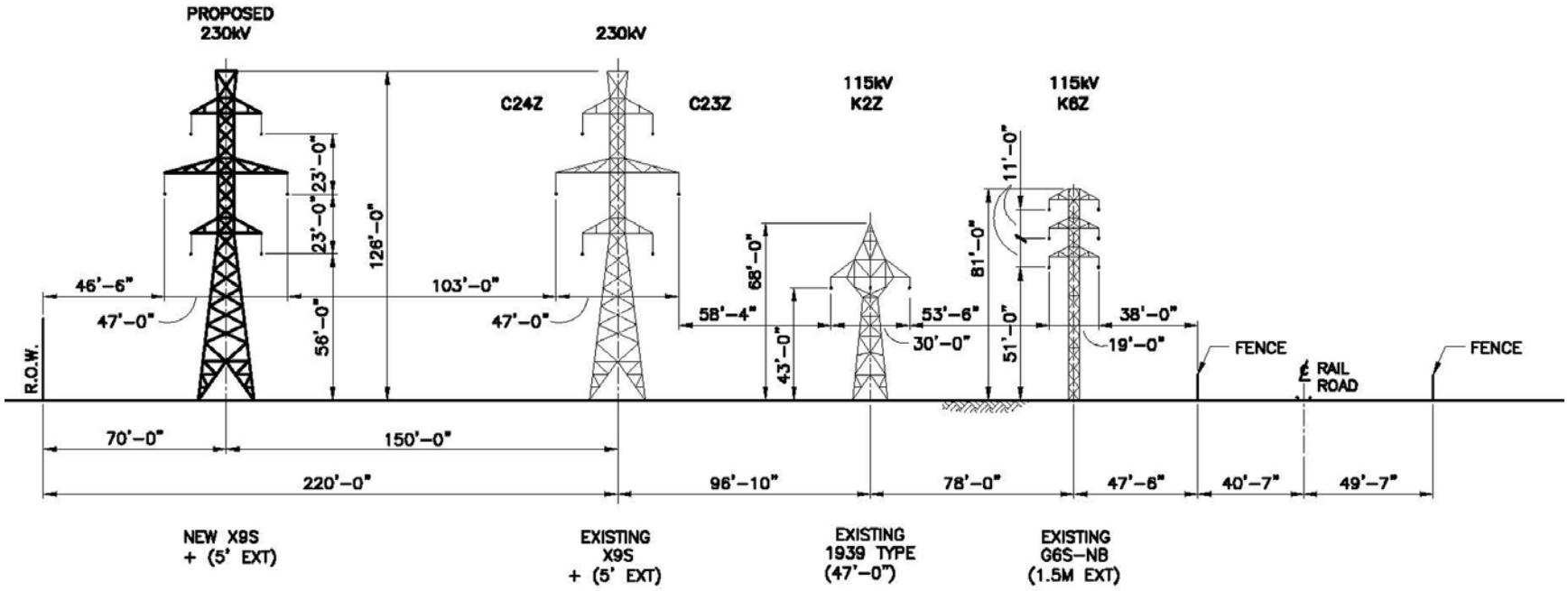


Figure 8-5 New 230 kV Transmission Line Route and Cross Section Locations



LAUZON TS x SANDWICH JCT
PROPOSED 230kV

Figure 8-6 Proposed Right of Way Cross Section # 1

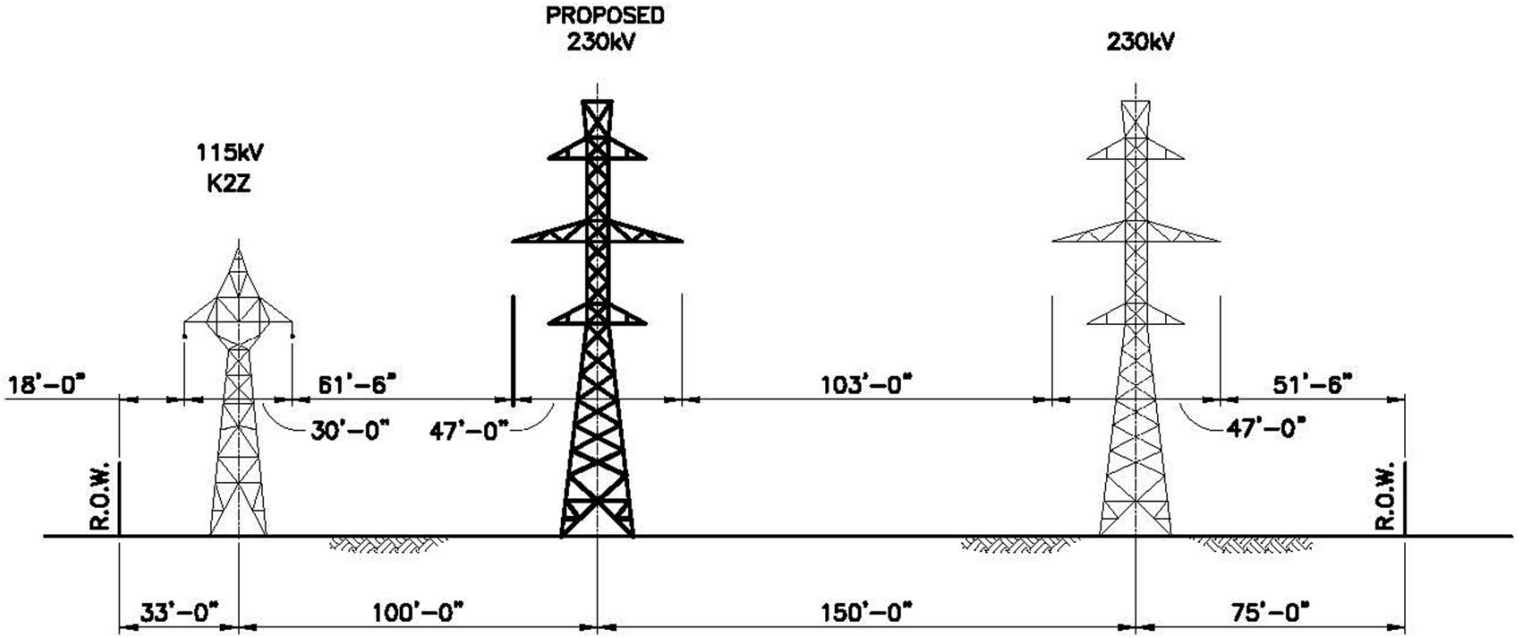


Figure 8-7 Proposed Right of Way Cross Section # 2

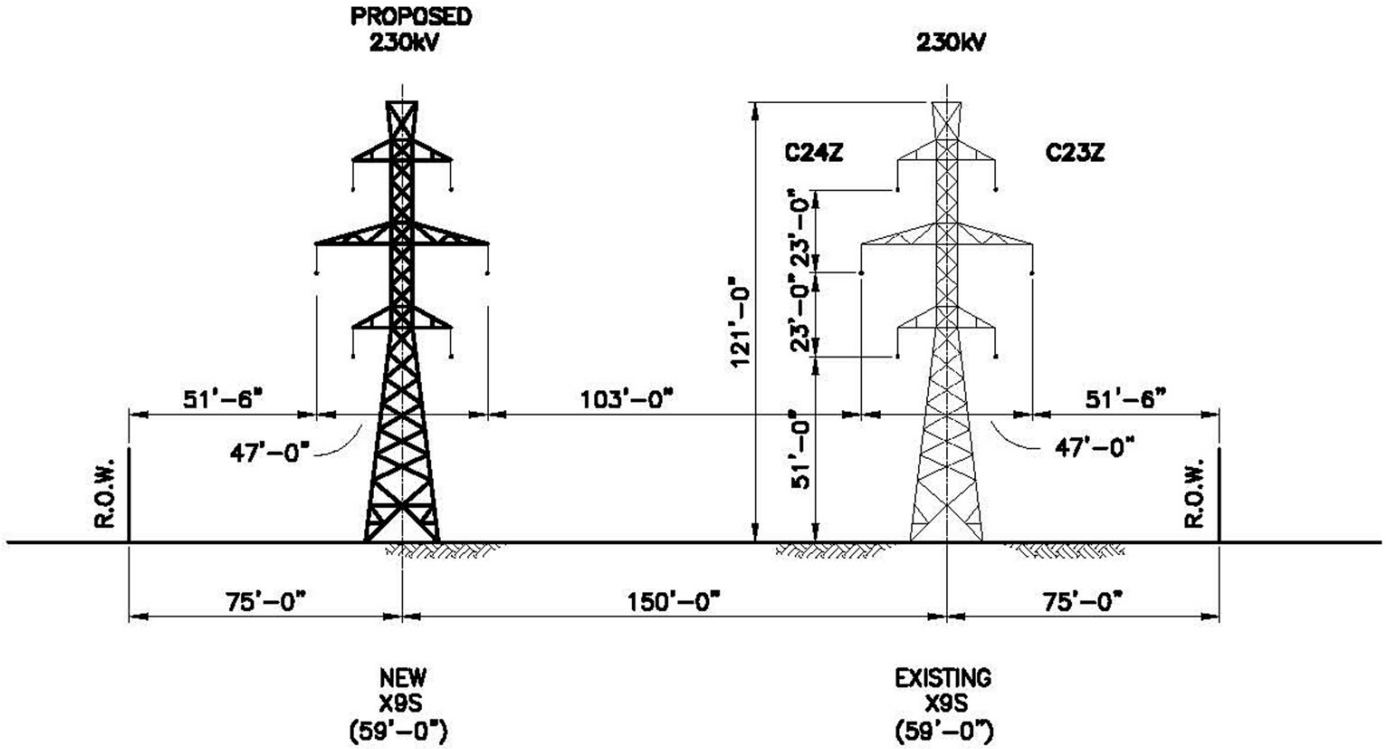


Figure 8-8 Proposed Right of Way Cross Section # 3

8.1 Design Phase

Hydro One will begin detailed design and engineering upon filing the Final ESR with the MOE and receiving OEB Section 92.

For the Leamington TS x Leamington Jct. acquisition of easement rights will be required for a ROW of 40 m (130 feet) in width. There will be an overlap south of Staples with the Union Gas easement (4.5m), the Municipality owned utility/trail corridor (15m) and south of County Road 14, the existing Hydro One easement (10.6m). The standard X9S tower is proposed for the ROW where the tower footings are approximately 20 feet apart, and the towers will be placed approximately 750 feet apart. Where turns are required in the line, heavier towers are required.

The Lauzon TS x Leamington Jct. corridor is owned by the Ontario Government except one small property, where land rights will have to be negotiated. The X9S tower is also planned for this ROW and the new towers will be placed as much as possible beside the existing towers.

The detailed engineering plans will be based on land and a geotechnical survey information, as well as consultation with provincial ministries, municipal officials and those holding easements. These plans will identify the final design and location of structures, access roads and staging areas.

The design plans will also include a project-specific Environmental Specification document. This document will provide specific instructions to construction personnel for the mitigation of potential environmental effects. It will be prepared following the filing of the final ESR to the MOE. It will summarize all commitments made in this ESR as well as any legislated requirements, terms and conditions of approval and environmental construction practices appropriate to this undertaking.

A licensed archaeologist will be retained to conduct a Stage 2 Archaeological Assessment and any further studies, as needed. These studies will be carried out consistent with current

Ontario Ministry of Culture guidelines. These standards and guidelines are to be followed by licensed consultant archaeologists operating in Ontario when conducting and reporting on archaeological fieldwork. The Ministry of Culture and any potentially interested First Nation groups will be notified upon discovery of any significant archaeological finds.

Following completion of the Class EA process, further permits or approvals may be required under federal and other provincial legislation (e.g. C of A for noise and drainage works and spill containment systems). Application for approval will be made to the relevant agencies by Hydro One. The Project is exempt from the *Planning Act (per s62)*; however, Hydro One is committed to work with the local municipal governments on the final design and landscaping of the TS, and location of structures, access roads and recreational trails.

8.2 Construction Phase

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

The Environmental Specifications document prepared in the Design Phase will be used to guide construction and maintenance activities in the Construction Phase. This document provides general information about the types of construction and maintenance activities needed for the proposed undertaking. It also includes a summary of potential environmental effects, mitigation, and restoration and compensation measures.

Throughout the Construction Phase, an Environmental Specialist will provide briefings to construction crews to inform them of the potential environmental effects and mitigation requirements. The specialist will monitor activities to ensure that they are in conformance with the requirements set out in the Environmental Specifications document. A monitoring

report will be written describing environmental effects and the effectiveness of mitigation measures. 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.

8.2.1 Transmission Line Construction

Construction of the transmission lines typically involves the following activities:

- Mobilization and setting up of construction yard;
- Construction of access roads and working pads for foundations, installation and stringing. This will include new entrances off the existing roads and new gates in existing fences. In agricultural areas roads will be temporary. In recreation areas Hydro One will work with the local government to leave the roads for use as paths;
- Delivering pre-fabricated rebar cages for foundation to each tower site;
- Augering foundations, drop rebar cages and pour concrete;
- Delivering bundled tower steel to each tower site;
- Assembling lattice towers in sections;
- Erecting towers;
- Installing rider poles at road crossings;
- Mobilizing stringing equipment;
- Pulling in conductor , sagging and clamping in conductor;
- Providing connections at line terminations;
- Energizing new circuit;
- Removing of temporary access roads; and
- ROW restoration.

8.2.2 Transformer Station Construction

Construction of Leamington TS typically involves the following activities:

- Establishment of construction access route;
- Site preparation including clearing and grading;
- Installation of station fencing and security systems;

- Delivery and installation of transformer and switching equipment;
- Delivery and installation of equipment for protection, control and telecommunications;
- Installation of station underground services and drainage facilities;
- Installation of steel support structures;
- Installation of foundations;
- Installation of building(s) for station protection, control, telecommunications, and station services;
- Installation of overhead rigid bus, insulators, and associated electrical connectors;
- Installation of ground grid and lightning protection masts;
- Construction of station roads;
- Clean-up and restoration; and
- Implementation of a Landscape Plan.

8.3 Maintenance and Operation Phase

The proposed TS will be operated remotely from Hydro One's provincial grid control centre. Whenever preventive or emergency maintenance is required, a crew will be dispatched to the site. The Leamington TS will be fully equipped with spill containment and oil-water separation facilities. In the event of equipment failures, oil will not escape from the site. An Emergency Preparedness and Response Plan will govern spill response. Spill clean-up and response equipment will be located on site.

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

Within the ROWs, scheduled vegetation maintenance will be conducted on 5-7 year cycles to remove vegetation that may interfere with the safe operation of the line.

8.4 Project Schedule

The expected schedule for stage one of the proposed project is provided below in **Table 8-1**. This schedule shows key steps remaining in the Class EA process and subsequent anticipated timing for the start of construction and commissioning of the proposed facilities. Construction of the proposed Leamington TS is expected to start in 2011 and construction activities are expected to continue until 2013. The TS and new transmission lines are scheduled to be placed in service in 2013.

Table 8-1: Estimated Project Schedule for Leamington Jct. x Leamington TS

Activity	Period
Public Review of Draft ESR	February 11- March 12, 2010
Anticipated EA Approval	March 2010
Anticipated filing of OEB Approval	Late 2010
Anticipated OEB Approval	Spring 2010
Start of Detailed Engineering, Design and Construction Phase of Leamington TS and the associated transmission line facilities	Summer of 2011
Planned Project In-Service Date	2013

The Lauzon TS x Sandwich Jct. has been deferred until the economic conditions and demand for electricity in the Windsor area is forecast to return to the same level as in 2007 or about 1060 MW. Hydro One will seek OEB approval for this section of the project about two years prior to the forecast of these conditions.

9. Potential Environmental Effects and Mitigation Measures

Construction, maintenance and operation activities have the potential to affect the natural and social environments within or adjacent to the ROW of the project. Construction activities, although short in duration, may have potential environmental effects. Routine maintenance activities generally have no or very minor effects.

This section describes the environmental features that occur within the study area, the potential effects that may occur due to the construction, operation and maintenance associated with the proposed transmission lines and TS. It also provides recommended mitigation measures for each potential effect that will be applied to minimize the effects and address public concerns. The mitigation measures are consistent with the requirements of Hydro One's *Environmental Guidelines for the Construction and Maintenance of Transmission Facilities* (Hydro One, 2009). Construction activities, although short in duration, may have potential environmental effects. Routine maintenance activities generally have no or very minor effects.

Tables 9-1 and 9-2 describe potential short term and long term effects of construction, operation and maintenance activities and the associated mitigation measures associated with the proposed Leamington TS. The potential short term and long term effects and mitigation measures specific for the proposed transmission line from Leamington Jct. x Leamington TS. are found in **Tables 9-3 and 9-4. Tables 9-5 and 9-6** are specific for Lauzon TS x Sandwich Jct. These tables provide a summary of the potential effects, the proposed mitigation and the residual net effects.

9.1 Natural Environmental Effects

9.1.1 Surficial Soils

During the construction of a transmission line, it is necessary to use heavy equipment. Over the years, Hydro One has assessed its work methods and has found that construction of temporary roads and tower staging areas has decreased soil compaction and rutting and serves to protect drainage tiles. The temporary roads are constructed by laying geotextile

material and covering it with crushed rock. This is easily removed in agricultural areas after construction.

At certain times of the year wind, erosion can be an issue because vegetation may be removed for construction. Vegetation may be planted or areas may be stabilized using erosion control methods in order to minimize erosion.

9.1.2 Surface Hydrology

Due to the flat topography and heavy soils of the region, artificial drainage is used extensively to improve agricultural output. Drains and ditches throughout the County of Essex are deep and farm fields are often extensively tiled. There are few natural creeks and rivers in the area. In the Leamington study area, the new proposed transmission line will cross two watercourses with permanent warm water and seven drains which do not convey permanent water. In the Lauzon study area, the proposed transmission line will cross Little River and Pike Creek as does the existing ROW. These are permanent cold water creeks, which provides habitat for diverse species of fish and other wildlife. The ROW also crosses five watercourses which convey water only during rain events, snowmelt and spring runoff. Such watercourses provide migration corridors and access to food and spawning habitats for many species of fish, amphibians and waterfowl.

Tower and access lay-outs are not done until EA and Section 92 approvals have been obtained. The following are examples of measures that are taken to minimize the effect of construction and maintenance:

- All watercourse crossing will be avoided, where possible;
- Shrubby bank vegetation will be retained where they are compatible with the transmission line;
- If it is necessary to cross a river, creek or drain, all necessary permits and approvals will be obtained prior to the construction of the crossing and the terms and conditions will be adhered to;

- Construction of access roads will occur during low water flow conditions wherever possible and clean rock will be used in the vicinity of creeks;
- Material will be stored or stockpiled and equipment will be refueled away from watercourses;
- If vegetation on the banks of watercourses is disturbed, the area will be restored to the pre-disturbed state or better; and
- Because of the importance of the municipal drains in the area, Hydro One will work with the municipalities to ensure minimum disturbance to the drains.

The site of Leamington TS is flat and the nearest surface water body is Hillman Creek which is located approximately 2 km to the south of the site and Lake Ontario is 7 km south. Based on the local topography, shallow groundwater in the vicinity of the site, drainage is inferred to flow in a southerly direction towards the creek and Lake Ontario. The site is fully serviced with municipal potable water from Lake Erie.

No surface water bodies or watercourses are located on the TS site. An open drainage swale including catch basins is located south of the site within the north road allowance of Mersea Road 6. The existing parking lot will be removed and the station yard will not be paved. It is not anticipated that the run-off will change significantly. A spill containment system will be installed on the site to ensure the water quality of any potential run-off. The drainage and containment system will be designed so that there is no significant change in the drainage flow. Hydro One will work with the Municipality of Leamington if discharge from the station is required into the ditch controlled by the Municipality. During the station design phase, a C of A will be obtained under Section 53 of the *Ontario Water Resources Ac*t.

9.1.3 Species at Risk

MNR recently notified Hydro One that there is one endangered reptile species in the vicinity of the proposed Leamington Jct. x Leamington TS transmission line. The transmission ROW will not change the current habitat in this area and Hydro One will work with MNR for the protection of this species and its' habitat in the area.

9.1.4 Vegetation, Environmentally Significant Areas and Wildlife

In the Lauzon study area, the corridor will have to be widened which will require tree removal on three woodlots. Some trees will have to be taken out along the north edge of McAuliffe Woods and along the edge of two private woodlots.

McAuliffe Woods was identified as the only ESA on/or adjacent to the proposed ROW. A potential effect includes an increase of edge habitat. Hydro One was approached by the Little River Enhancement Group and MNR with a request that when the corridor was being developed with a transmission line that Hydro One consider assisting in the development of a tall grass prairie natural linkage between Little River and McAuliffe Woods. This area is currently a mix of agricultural uses and naturalized fields. Hydro One discussed the prairie plans with the City of Windsor and Town of Tecumseh, and they were very supportive of the Little River Enhancement Group's request.

9.1.5 Fisheries Resources

Potential effects on fish and fish habitat include loss of habitat due to soil erosion and sedimentation. Based on NHIC (2009), there are no aquatic species of concern within the study areas.

There is a species which has a conservation status of S2S3 (imperilled to vulnerable) but is not considered as a Species of Concern (SC) Provincially or Nationally.

Transmission towers are not constructed in or near waterbodies. Effects on fish and fish habitat are not expected. If stream crossings are necessary, ERCA will be contacted and stream crossing permits obtained.

Where appropriate, Hydro One will:

- Retain shrubby bank vegetation near watercourses;
- Implement sedimentation and erosion control measures; and
- Implementing controls to minimize use of fuels or chemicals in close proximity to water bodies.

9.2 Socio-Economic Environment

9.2.1 Air Quality and Noise

Effects on air quality and noise will be temporary and limited to the construction period. Emissions which are associated with construction activities are primarily dust and typical combustion emissions from construction equipment. As with any construction site, these emissions will be of relatively short duration and are unlikely to have any effect on the surrounding airshed.

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 the Cheminfo (2005) document *"Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities"*, prepared in conjunction with the Construction and Demolition Multi-Stakeholder Working Group for Environment Canada, will be followed. It is anticipated that the net effects on the local air quality during construction would be negligible and thus no other mitigative measures are required.

All work is expected to be completed using conventional construction methods. The noise associated with the construction of the proposed TS and transmission lines 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 18-24 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, etc.). Other construction activities, such as those related to the placement of the facility components (e.g., transformer), are expected to generate less noise.

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 local Municipal By-Law. This stipulates specific sound emission standards. This By-Law includes a restriction on the operation of any equipment in connection with construction from 19:00 h one day to 07:00 h the next day, and all day Sunday and statutory holidays. Although Hydro One will confine construction activities to these time periods, there is a

possibility that activities may be extended to facilitate their completion. Hydro One will inform local residents prior to such an occurrence.

During the construction phase, Hydro One may use implosive connectors to fuse sections of the conductors together. These devices produce a brief but high volume noise (similar to a firearm discharge). Hydro One will follow local noise bylaws and obtain permits, and will notify municipal officials, fire, police and emergency services and nearby residents and businesses prior to use.

The transformers will produce a humming sound during operation. In accordance with the *EPA*, the construction of a new TS requires a C of A for noise from MOE. Since some of the receptors (i.e. residences, schools, churches, etc.) are less than 500 m away from the proposed site, a detailed acoustic assessment has been done to predict potential sound levels at the receptors. The results indicate that the station-wide steady state sound levels estimated at the selected worst-case points of reception (PORs) comply with the minimum MOE sound level limits, which include the addition of a 5 dBA tonal penalty. The acoustic assessment is found in **Appendix K**. The study indicates that no additional noise control measures are required to mitigate sound levels from the station. However, because the noise level estimates are close to required sound limits, space will be provided for a sound barrier. The final determination will be made during detailed design of the station. Design details will be included in the C of A application.

9.2.2 Agriculture

The proposed Leamington TS site is located on land that is partially being used for agriculture, the other portion has a house and small business. The TS will take 1.7 ha out of agriculture, but the 1.5 ha field outside of the station fence can continue to be farmed. The house and business will be removed.

The dominant land use on the proposed transmission lines is agriculture. Having construction equipment cross through farms may be disruptive to farm operations. Temporary crop loss will occur during the construction period where access roads are required and construction areas are needed around tower locations. Minor losses of existing

crop land will occur due to the footprint of the towers. On the Leamington Jct. x Leamington TS line there will be less than 0.5 ha of agricultural land affected by the transmission towers. Less than 0.5 ha of land that is currently in agriculture will be affected by the transmission towers on Lauzon TS x Sandwich Jct..

The mitigation measures that will be put in place to minimize potential effects of the transmission line on agriculture and soils are as follows:

- Temporary access roads will be built using geotextile and crushed rock and will be removed in agricultural lands after construction is complete;
- Compensation will be paid to the property owner for damages to crops, tile drainage, farm equipment and livestock.
- Tower location and access road lay-out will be discussed with property owner prior to location finalization to minimize disruption and damage;
- Contact will be maintained with land owners/tenants regarding work schedule, fencing, gates, noise, tiles and remediation measures;
- Hydro One is proposing to align new towers parallel to existing towers on Lauzon TS x Sandwich Jct. to make it easier for farmers to manipulate their equipment around multiple towers;
- Along the utility corridor, footings will be placed along the fence line where possible to minimize tower footprints.

9.2.3 Public Safety

Any construction site poses a potential safety hazard if not properly controlled. The public could be potentially exposed to hazards in the vicinity of construction areas. To minimize the effect of construction on public safety, the location of the construction lay-down and access areas will be carefully selected.

The effects on public safety services such as police, fire and ambulance should be minimal. There are no significant disruptions to traffic predicted except during transformer and tower delivery. The proposed TS area will be fully secured to protect the public from hazards associated with construction and operation. Station fencing and security systems will be installed and maintained. Warning signs will also be posted.

The TS design will minimize the potential for fires and ensure that any fires will be contained on site. The construction schedule will be discussed with the planning staff of the local Municipality and Towns and also provided to local emergency services. Construction of the transmission lines may involve a short-term disruption in traffic in a specific road area. Most of the construction work will proceed without any public disruption.

All work will be governed by the Hydro One Health, Safety and Environmental Management System policies and procedures. An Emergency Preparedness and Response Plan will be prepared for station and transmission line construction and operation.

Delivery of equipment and materials to the site can cause short term disruption of traffic on Concession Road 6 for station construction and other roads to a lesser degree due to tower construction. A traffic plan will be developed in consultation with municipal officials in affected areas. Efforts will be made to minimize effects on the school, church and local residents.

9.2.4 Aesthetic Effects

The proposed Leamington TS will be visible to local residents in the community and to passengers in vehicles travelling along Concession Road 6. The TS will be set back approximately 88 m from the road. A Landscape Plan will be developed staffing consultation with the municipality. A 10-15 m landscaping buffer will be installed around the proposed Leamington TS to minimize the visibility of the proposed TS to local residents and users of the Municipality's trail. The landscape treatment will reflect the existing character of this rural setting through the use of predominantly coniferous hedgerows and shelterbelts. Landscape plans are a component of the municipal site plan development process.

A workshop was held with the local property owners, north of the Town of Staples, and they expressed their preference to the transmission line to be located behind their houses instead of in the front (i.e. in between Lakeshore Road 243 and 245). See **Appendix H** for more details.

9.2.5 Resource Use

According to the Petroleum Resources Centre, MNR, petroleum wells can be categorized as "unplugged" or "plugged." Only the former category is of concern and associated with setbacks requirements. According to Section 10.2 (1) of the *Oil, Gas and Salt Resources Act,* "No person shall erect, locate or construct a building or structure of a type prescribed by the regulations within 75 m of a well or facility unless the well or facility has been decommissioned in accordance with the *Oil, Gas and Salt Resources Act* and the regulations." Unplugged wells will not be affected by this project.

9.2.6 Archaeological and Heritage Resources

There are no cultural heritage resource buildings located on the Leamington TS property site or transmission line lands.

A Stage 1 Archaeological Assessment was commissioned by Hydro One. Hydro One will undertake a Stage 2 archaeological survey to confirm prior to the construction of the transmission lines or station. This work will be carried out by licensed archaeologists in compliance with Ministry of Culture guidelines to ensure recovery, protection and documentation of any heritage resources that may be present on the project site. If potentially significant resources are found during the Stage 2 field survey, then Stage 3 and 4 assessments, where appropriate, will be carried out to determine their extent and significance. If significance is found to be high following the Stage 3 work, then mitigative measures (either site avoidance and preservation or excavation) will be implemented in consultation with the Ministry of Culture. First Nations will be notified if Aboriginal burial sites are encountered.

9.2.7 Recreational Resources

The existing Leamington utility corridor is also being used as a recreational trail. Hydro One will work with the Municipality of Leamington to expand the trail. In constructing the transmission line, Hydro One will have to build temporary access roads into the proposed towers, and when doing so, will take the opportunity to work with the Municipality on the alignment of the path. Further discussions between the Municipality and Hydro One will be necessary to determine Hydro One's role.

In the Lauzon study area, Hydro One will work with the Town of Tecumseh and the City of Windsor to establish a recreational trail. Representatives of the Little River Enhancement Group expressed their interest in establishing a naturalized linkage (prairie grasses) between Twin Oaks and the McAuliffe Conservation area to promote habitat and biodiversity. In July 2009, Hydro One communicated to the Little River Enhancement Group their continued interest in partnering with other parties in the development of the prairie.

9.2.8 Electric and Magnetic Fields (EMFs)

Concerns have been raised about exposure to electric and magnetic fields (EMF) from the transmission facilities.

The Health Canada website provides a valuable source of information regarding EMF at: http://www.hc-sc.gc.ca/iyh-vsv/environ/magnet_e.html. Health Canada has stated the following:

- There is no conclusive evidence of any harm caused by exposures at levels found in Canadian homes and schools, including those located just outside the boundaries of power line corridors;
- "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's Fact Sheet that addresses issues related to EMFs can be found in **Appendix L**.

Health Canada and the Federal Provincial Territorial Radiation Protection Committee (FPTRPC) have also examined this issue and have produced several documents on the subject. Quotes from recent documents indicate: "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."[1] 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."[2]

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 Health Canada's and the FPTRPC's positions. Hydro One relies on the recommendations of national and international bodies and not the work or claims of individuals.

[1] The Canadian Federal-Provincial-Territorial Radiation Protection Committee, "Position Statement for the General Public on the Health Effects of Power-Frequency (60 Hz) Electric and Magnetic Fields," January 20, 2005 http://www.bccdc.org/downloads/pdf/rps/reports/ELF%20position%20statement%20E-050120.pdf.

[2] Response Statement to Public Concerns Regarding Electric and Magnetic Fields (EMFs) from Electrical Power Transmission and Distribution Lines " - Canadian Federal-Provincial-Territorial Radiation Protection Committee, November 2008.
http://www.bccdc.org/downloads/pdf/rps/reports/FPTRPC%20Response%20statement%20power%20line%20EMF%20(final)%20%2008Nov08.pdf

Table 9-1: Mitigation Measures for the Proposed Transformer Station for the Leamington TS (Short Term Effects)

Factors/Criteria	Potential Effects	Proposed Mitigation	Residual (Net) Effects
Natural Environment			
Soils, Hydrology, SAR, Vegetation, ESAs and Wildlife	• The TS is located away from aquatic resources and wildlife habitat. It is the site of a former business, residence and farm fields. No significant short term effects are expected.	• Mitigation measures for minimizing any potential effects will be similar to that described for the transmission line in Table 9-3.	No significant residual effects are predicted.
Socio-Economic Environment			
Air Quality and Noise	• Effects of dust and noise will be temporary.	• Work will be limited to daylight hours. • Municipal noise by-laws will be followed. • Construction equipment will be kept in good repair. • Dust suppression techniques, such as on-site watering and street cleaning will be used if dust and dirt is a problem during construction. • Adherance to Cheminfo (2005) best practices. • Locate access routes and lay down areas away	Since construction is scheduled to be completed within a two year time frame, no significant residual effects are predicted on air and noise quality.

Factors/Criteria	Potential Effects	Proposed Mitigation	Residual (Net) Effects
		from residences to the extent possible.	
Aesthetic Effects, Agriculture, Resource Use, EMF	• Potential short term effects on agriculture, aggregate resources, heritage resources, and public safety will be similar to those identified for the transmission line.	• Mitigation measures for minimizing potential effects on agriculture, aggregate and heritage resources, public safety, appearance and air/noise quality will be similar to those defined for the transmission line.	No significant residual effects are predicted.
Recreation Resources	• A trail is located adjacent to the TS.	• A set back from the property line and landscaping around the TS will mitigate effects on the trail.	No significant residual effects are predicted.
Public Safety	• Public could be potentially exposed to hazards in the vicinity of the construction areas.	• Construction areas will be signed, fenced and locked where necessary. • The location of the construction lay-down and access areas will be carefully selected to minimize any potential effect on public safety. • The construction schedule will be discussed with the municipality/town planning staff and provided to the local emergency services	No significant residual effects on public safety are predicted.

Factors/Criteria	Potential Effects	Proposed Mitigation	Residual (Net) Effects
Archaeological & Heritage Resources	• During construction archaeological resources or lands of traditional value to First Nations may inadvertently be destroyed.	• Prior to construction, a Stage 2 archaeological survey will be undertaken to confirm the presence or absence of significant archaeological resources. • If potentially significant resources are found during the Stage 2 field survey, then a Stage 3 assessment will be required to determine their extent and significance. • If significance is found to be high following the Stage 3 work, then mitigative measures (either site avoidance and preservation or excavation) will be implemented in consultation with the Ministry of Culture. • First Nations will be notified if Aboriginal burial sites are encountered.	No significant residual effects on archaeological/heritage resources are predicted.
Traffic Controls	• Delivery of equipment and materials to the site can cause a short term disruption of traffic on	• A traffic plan will be developed in consultation with the Municipality of Leamington. Efforts will be made to keep delays to a minimum.	No residual effects are predicted.

Factors/Criteria	Potential Effects	Proposed Mitigation	Residual (Net) Effects
	Mersea Road 6 and Highway 77.		

Table 9-2: Mitigation Measures for the Proposed Transformer Station for the Proposed TS (Long Term Effects)

Factors	Potential Effects	Proposed Mitigation	Residual (Net) Effects
Natural Environment			
Soils, Hydrology, SAR, Vegetation, ESAs and Wildlife	• The TS is located away from aquatic resources and wildlife habitat. It is the site of a former business, resident and farm fields. No significant short term effects are expected.	• Mitigation measures for minimizing any potential effects will be similar to that described for the transmission line in Table 8-3.	No significant residual effects are predicted.
Surface Drainage	• Increased run-off is not anticipated. • Potential releases from TS site.	• Spill containment and drainage system will be designed and installed in accordance with C of A approval. • If the station drainage outfall is to a Municipal ditch, the Municipality will be consulted. • An emergency preparedness plan will be developed for the station and implemented	No significant residual effects are predicted.
Socio-economic Environment			
Air Quality and Noise	• Effects transformer noise	• Acoustic studies have been completed and the results indicate that no additional noise control	No significant residual effects are predicted.

Factors	Potential Effects	Proposed Mitigation	Residual (Net) Effects
		measures are required to mitigate sound levels from the station. However, because the noise level estimates are close to required sound limits, space will be provided for a sound barrier. The final determination will be made during detailed design of the station. Design details will be included in the C of A application.	
Aesthetics Effects	• Leamington TS will be visible to adjacent residents.	• Hydro One has committed to work with the Municipality of Leamington to enhance the landscape. • The TS is set back 88 m from the road, and 10-15 m from property lines to allow for landscaping. • The church property to the east has a windrow of trees blocking the view.	No significant residual effects are predicted.
Electric and Magnetic Fields	• Increased exposure to EMF off the station property is not expected.	• No mitigation required. Health Canada has concluded that typical exposures in the vicinity of transformer stations or transmission lines do not present a health risk.	No significant residual effects are predicted.

Table 9-3: Mitigation Measures for the Proposed Leamington Jct. x Leamington TS (Short Term Effects)

Factors	Potential Effects	Proposed Mitigation	Residual (Net) Effects
Biological and Natural Environment			
Soils	• Compaction and rutting • Wind erosion	• Temporary access roads are built using geotextile to separate crushed rock and soils. This allows for easy removal of road and prevents rutting and minimizes compaction of soils. • If wind erosion becomes an issue erosion control measures will be used such as planting or wetting down the area.	No significant residual effects on soils are predicted.
Surface Hydrology	• Sedimentation of creeks or drains • Contamination due to accidental spills	• It is anticipated that most major water crossings will be avoided. If it is necessary to cross creeks or drains, all necessary permits and approvals will be obtained and conditions adhered to. • If crossings are necessary clean rock material will be used. • Equipment operation on slopes adjacent to streams will be minimized. • Emergency Preparedness Plans are developed	No significant residual effects are predicted.

Factors	Potential Effects	Proposed Mitigation	Residual (Net) Effects
		for each construction and maintenance project. • Activities such as refuelling and equipment washing will be carried out away from water courses to avoid accidental spills.	
Fish and Fish Habitat	• Loss of habitat and effects on spawning beds due to soil erosion and sedimentation.	• In most cases, water crossings can be avoided by access roads. If water crossing are required a mitigation plan will be prepared in consultation with ERCA. • Retaining shrubby bank vegetation near water courses.	No significant residual effects are predicted on aquatic life.
SAR	• Damage to endangered species or their habitat.	• Hydro One will work closely with MNR to prevent damage to the endangered species or their habitat.	No significant residual effects on SAR are predicted.
Vegetation, ESAs and Wildlife	• Vegetation removal may be required to maintain a conductor clearances, compatibility and safe operation.	• All compatible vegetation will be retained. • Trees will not be removed during bird nesting season, or bird nesting studies prior to clearing trees.	No significant residual effects are predicted on vegetation, ESAs and wildlife.

Factors	Potential Effects	Proposed Mitigation	Residual (Net) Effects
Socio-economic Environment			
Air Quality and Noise	• Effects of dust and noise will be temporary.	• Work will be limited to daylight hours. • Municipal noise by-laws will be followed. • Construction equipment will be kept in good repair. • Dust suppression techniques, such as on-site watering and street cleaning will be used if dust and dirt is a problem during construction. • Adherance to Cheminfo (2005) best practices. • Locate access routes and lay down areas away from residences to the extent possible.	Since construction is scheduled to be completed within a two year time frame, no significant residual effects are predicted on air and noise quality.
Agriculture	• Disturbance to farm operations • Crop loss and damage to soil, field tiles, equipment, fencing and injury to livestock.	• Tower location and access road lay-out will be discussed with property owner prior to location finalization to minimize disruption and damage. • Contact is maintained with landowner/ tenant regarding work schedule, fencing, gates, noise and remediation measures • Disruption to farm operations is taken into	No significant residual effects on agriculture are predicted.

Factors	Potential Effects	Proposed Mitigation	Residual (Net) Effects
		account when compensation is paid. • Compensation will be paid where damages occur • Temporary access roads are constructed using geo-textile and removed after construction. These roads also help protect tiles.	
Public Safety	• Public could be potentially exposed to hazards in the vicinity of the construction areas.	• Construction areas will be signed, fenced and locked where necessary. • The location of the construction lay-down and access areas will be carefully selected to minimize any potential effect on public safety. • The construction schedule will be discussed with the municipality/town planning staff and provided to the local emergency services • Traffic control will be discussed with the municipality/town for the construction phase of the proposed project. • Significant lane closures and other restrictions are not anticipated. Hydro One will make best efforts to keep delays to a minimum	No significant residual effects on public safety are predicted.

Factors	Potential Effects	Proposed Mitigation	Residual (Net) Effects
Archaeological & Heritage Resources	• During construction archaeological resources or lands of traditional value to First Nations may inadvertently be destroyed.	• Prior to construction, a Stage 2 archaeological survey will be undertaken to confirm the presence or absence of significant archaeological resources. • If potentially significant resources are found during the Stage 2 field survey, then a Stage 3 assessment will be required to determine their extent and significance. • If significance is found to be high following the Stage 3 work, then mitigative measures (either site avoidance and preservation or excavation) will be implemented in consultation with the Ministry of Culture. • First Nations will be notified if Aboriginal burial sites are encountered.	No significant residual effects on archaeological/heritage resources are predicted.
Recreational Resources	• The potential effects include visual effects on scenic vistas and some restrictions in use of the park facilities during the construction	• Fencing and warning signs around work areas, where necessary. • Work with the Municipality of Leamington to upgrade the trail/bike path on the ROW to be used by community members for recreational	No significant residual effects on recreational resources are predicted.

Factors	Potential Effects	Proposed Mitigation	Residual (Net) Effects
	phase.	purposes.	

Table 9-4: Mitigation Measures for the Proposed Transformer Station for the Proposed Leamington Jct. x Leamington TS (Long Term Effects)

Factors	Potential Effects	Proposed Mitigation	Residual (Net) Effects
Biological and Natural Environment			
SAR	• Damage to endangered species or their habitat.	• There will not be a long term modification to habitat by the transmission ROW	No significant residual effects on agricultural resources are predicted
Socio-economic Environment			
Aesthetics Effects	• Change in appearance due to the transmission line.	• Hydro One has committed to work with the Municipality of Leamington, in recreation areas to enhance the landscape. • Route was moved away from Lakeshore Road 245 and put through the fields so it was not visible from the front of the property.	No significant residual effects on aesthetics are predicted
Agriculture	• Farmers will have to work around towers	• Wherever possible, towers will be located on lot lines and locations will be finalized after discussion with property owners.	No significant residual effects on agricultural resources are predicted
Electric and Magnetic Fields	• Exposure to EMF	• Health Canada has concluded that typical exposures in the vicinity of transformer stations or transmission lines do not present a health risk.	No anticipated health effects.

Table 9-5: Mitigation Measures for the Proposed Lauzon TS x Sandwich Jct. (Short Term Effects)

Factors	Potential Effects	Proposed Mitigation	Residual (Net) Effects
Biological and Natural Environment			
Soils	• Compaction and rutting • Wind erosion	• Temporary access roads are built using geotextile to separate crushed rock and soils. This allows for easy removal of road and prevents rutting and minimizes compaction of soils. • If wind erosion becomes an issue erosion control measures will be used such as planting or wetting down the area.	No significant residual effects on soils are predicted.
Surface Hydrology	• Sedimentation of creeks or drains • Contamination due to accidental spills	• It is anticipated that most major water crossings will be avoided. If it is necessary to cross creeks or drains, all necessary permits and approvals will be obtained and conditions adhered to. • If crossings are necessary clean rock material will be used. • Equipment operation on slopes adjacent to streams will be minimized. • Emergency Preparedness Plans are developed	No significant residual effects are predicted.

Factors	Potential Effects	Proposed Mitigation	Residual (Net) Effects
		for each construction and maintenance project. • Activities such as refuelling and equipment washing will be carried out away from water courses to avoid accidental spills.	
Fish and Fish Habitat	• Loss of habitat and effects on spawning beds due to soil erosion and sedimentation.	• In most cases, water crossings can be avoided by access roads. If water crossing are required a mitigation plan will be prepared in consultation with ERCA. • Retaining shrubby bank vegetation near water courses.	No significant residual effects are predicted on aquatic life.
Vegetation, ESAs, SAR and Wildlife	• Vegetation removal may be required to maintain a conductor clearances, compatibility and safe operation.	• All compatible vegetation will be retained. • Hydro One will not remove trees during bird - breeding or nesting season, or will conduct bird nesting studies prior to clearing trees. • Hydro One will work with Little River Enhancement group, the City of Windsor, the Town of Tecumseh and MNR to develop Tall Grass Prairie species habitat between Little River and McAuliffe Woods.	No significant residual effects are predicted on vegetation, ESAs or wildlife.

Factors	Potential Effects	Proposed Mitigation	Residual (Net) Effects
Socio-economic Environment			
Air Quality and Noise	• Effects of dust and noise will be temporary.	• Work will be limited to daylight hours. • Municipal noise by-laws will be followed. • Construction equipment will be kept in good repair. • Dust suppression techniques, such as on-site watering and street cleaning will be used if dust and dirt is a problem during construction. • Adherance to Cheminfo (2005) best practices. • Locate access routes and lay down areas away from residences to the extent possible.	Residual effects are not predicted on air quality and noise.
Agriculture	• Disturbance to farm operations • Crop loss and damage to soil, field tiles, equipment, fencing and injury to livestock.	• Tower location and access road lay-out will be discussed with tenants prior to location finalization to minimize disruption and damage. • Contact is maintained with tenant regarding work schedule, fencing, gates, noise and remediation measures • Temporary access roads are constructed using geo-textile and removed after construction. These roads also help protect tiles.	No significant residual effects on agriculture are predicted.

Factors	Potential Effects	Proposed Mitigation	Residual (Net) Effects
Public Safety	• Public could be potentially exposed to hazards in the vicinity of the construction areas.	• Construction areas will be signed, fenced and locked where necessary. • The location of the construction lay-down and access areas will be carefully selected to minimize any potential effect on public safety. • The construction schedule will be discussed with the municipality/town planning staff and provided to the local emergency services • Traffic control will be discussed with the towns and City of Windsor for the construction phase of the proposed project. • Significant lane closures and other restrictions are not anticipated. Hydro One will make best efforts to keep delays to a minimum	No significant residual effects on public safety are predicted.
Archaeological & Heritage Resources	• During construction archaeological resources or lands of traditional value to First Nations may inadvertently be destroyed.	• Prior to construction, a Stage 2 archaeological survey will be undertaken to confirm the presence or absence of significant archaeological resources. • If potentially significant resources are found during the Stage 2 field survey, then a Stage 3	No significant residual effects on archaeological/ heritage resources are predicted.

Factors	Potential Effects	Proposed Mitigation	Residual (Net) Effects
		assessment will be required to determine their extent and significance. • If significance is found to be high following the Stage 3 work, then mitigative measures (either site avoidance and preservation or excavation) will be implemented in consultation with the Ministry of Culture. • First Nations will be notified if Aboriginal burial sites are encountered.	
Recreational Resources	• The potential effects include visual effects on scenic vistas and some restrictions in use unofficial trails during the construction phase.	• Fencing and warning signs around work areas, where necessary. • Work with the City of Windsor and Town of Tecumseh to create a trail on the ROW to be used by community members for recreational purposes between Lauzon TS and McAuliffe woods.	No significant residual effects on recreational resources are predicted.

Table 9-6: Mitigation Measures for the Proposed Transformer Station for the Proposed Lauzon TS x Sandwich Jct. (Long Term Effects)

Factors	**Potential Effects**	**Proposed Mitigation**	**Residual (Net) Effects**
Aesthetics Effects	• Change in appearance due to the transmission line. The transmission line and Leamington TS will be visible to adjacent residents.	• Hydro One has committed to work with the Town of Tecumseh and City of Windsor in recreation areas to enhance the landscape.	No significant residual effects are predicted
Agriculture	• Farmers will have to work around towers	• On the existing transmission corridor, the new towers will be aligned with the existing towers.	No significant residual effects on agricultural resources are predicted
Electric and Magnetic Fields	• Exposure to EMF	• Health Canada has concluded that typical exposures in the vicinity of transformer stations or transmission lines do not present a health risk.	No anticipated health effects.

10. Environmental Monitoring Program

Monitoring helps to confirm that predictions of effects as described in the ESR are accurate and that mitigation measures are effective. Monitoring during the construction phase of the project ensures compliance with requirements set out in environmental legislation (e.g. the *Environmental Protection Act*) are met. Monitoring may also be carried out to assess the accuracy of Environmental Specification predictions and effectiveness of proposed mitigation. This can extend beyond construction where warranted.

An Environment Specialist will be assigned to the project for the duration of construction to monitor construction activities and provide guidance on needed field changes. As previously noted in **Section 7**, a project-specific Environmental Specification will be prepared to guide construction activities. The specification will be based on the commitments, conditions of approval (as necessary), and good environmental construction practices as set out in Hydro One's *Environmental Guidelines for Construction and Maintenance of Transmission Facilities* (Hydro One, 1993) and *Standard for Environmental Monitoring* (Hydro One, 2009).

Some issues monitored during construction will include:

- Effectiveness of mitigation measures as identified in the Environmental Specification;
- Effects on Environmentally Sensitive Areas and watercourses;
- Noise and air quality;
- Site drainage, runoff, spills and situation controls;
- Storm water management measures at the construction site;
- Protection of archaeological, cultural and heritage features;
- Effects on agricultural resources (e.g. minimizing soil compaction and damage to drainage tiles);
- Effectiveness of visual mitigation and landscape aesthetics.

When required, a post-construction monitoring program will include inspection of areas that have been restored, including any newly planted trees and other vegetation, ditch crossings

and potential erosion areas identified during construction. The effects of the project, the effectiveness of the mitigation approaches, and the need for remedial action will be assessed during this program.

Monitoring reports are often a condition of approval under the *Environmental Assessment Act* and/or the *OEB Act* Section 92 and will be submitted as required following the completion of the project.

11. Conclusions

Hydro One Networks Inc (Hydro One) is planning to reinforce the electricity transmission system that supplies Essex County and Windsor. There are two stages to this project.

- The first stage will reinforce the supply for the eastern part of Essex County by the construction of a new 230 kV to 27.6 kV TS to be located in the northern part of Leamington and new double circuit 230 kilovolt (kV) transmission line to tie the TS into the provincial grid.
- The second stage will be to construct a new 230 kV transmission line within the existing transmission corridor between Lauzon TS located on the Lauzon Parkway south of the E.C. Row Expressway in the City of Windsor and Sandwich Jct. near Maidstone.

Contingent upon the successful completion of the EA process and the OEB approval process, the expected schedule of stage one for the detailed engineering is summer of 2011. Construction of the proposed Leamington TS is expected to start in 2011 and construction activities are expected to continue until 2013. The TS and new transmission lines are scheduled to be placed in service by 2013.

In the OEB submission, Hydro One will indicate its intent to proceed first with construction of stage one of the proposed project. These facilities are needed in the near-term to provide adequate supply, reliability and transmission capacity to consumers in the eastern part of Essex County. However, Hydro One will advise the OEB that it will defer construction of the Lauzon TS x Sandwich Jct. transmission line until the economic conditions and demand for electricity in the Windsor area is forecast to return to the same level as in 2007 or about 1060 MW. Hydro One will seek OEB approval for this section of the project about two years prior to the forecast of these conditions.

Although the need for the project is driven by local requirements, the proposed facilities will also facilitate the connection of future renewable energy projects resulting from the Green Energy initiative and *The Green Energy Act.*

The proposed facilities fall within the definition of projects covered by the *Class Environmental Assessment for Minor Transmission Facilities* (Class EA*)* which is approved under the *Ontario Environmental Assessment Act (EA Act).* The transmission lines are also subject to "Leave to Construct" approval from the Ontario Energy Board (OEB) under Section 92 of the *Ontario Energy Board Act (OEB Act).*

This Draft Environmental Study Report (ESR) has been prepared in compliance with the requirements of the *EA Act.* It describes the analysis undertaken for this project to meet the requirements of the Class EA process.

Environmental, socio-economic and technical criteria were established to identify and evaluate alternative transmission line routes in the Municipality of Leamington and the Town of Lakeshore and TS sites in the Municipality of Leamington. Based on the analysis undertaken, Alternative Route A was selected as the preferred transmission line route and Site A9 (known as the Leamington TS) was selected as the preferred TS site. Alternative Transmission Route A was strongly preferred as it makes use of the maximum length of existing infrastructure (i.e. Leamington utility corridor), directly affects fewer area residents and has technical/cost advantages. The Leamington TS is preferred over the other sites as it has good access and better constructability and maintenance considerations over the other potential sites. The Leamington TS site also had the additional advantage of a willing seller. Both the preferred transmission route and TS site were selected based on sound technical, cost and environmental factors.

The proposed transmission line is approximately 13 km, of which approximately 8 km is along the Leamington utility corridor. This transmission route would follow the Leamington utility corridor north, then divert west of the community of Staples on the west side of Lakeshore Road 245 to join up with the existing east-west transmission corridor south of Hwy 401. Leamington TS is situated on the east side of the proposed transmission line, and on the north side of Mersea Road 6.

Potential short term and long term environmental effects were identified and corresponding mitigation measures were developed for the preferred transmission lines and TS site.

Hydro One has conducted extensive public and government agency consultations since February 2008 to inform stakeholders about the project and to identify issues and concerns and to resolve or propose appropriate measures to mitigate concerns. Provincial ministries, agencies, local municipal/town and county officials, Conservation Authorities and the property owners were consulted by way of meetings, telephone conversations and mailing of project information.

Three PICs were held for this project in April and July 2008 and July 2009. The local community and key interest groups were notified about the project and the PICs by way of newspaper advertisements, direct mail outs and Canada Post Unaddressed Admail. A dedicated project contact was made available and a project web page was also created on Hydro One's corporate website. A toll-free inquiry line also provided the public with the ability to speak with a Hydro One representative at any time to provide comments or obtain further information on the project.

This Draft ESR is being made available for public and government agency review and comment from February 11 to March 12, 2010. During the review period, comments and issues received regarding the proposed project will be reviewed and addressed. The issues raised and Hydro One responses will be documented in the Final ESR. Any request to elevate or "bump-up" this Class EA to an Individual EA will also be included in the Final ESR. After the review period, the Final ESR will be finalized and filed with the MOE for a decision. At this time, the project would be considered acceptable and would proceed as outlined in the ESR.

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13. Acronyms

AMOMW	Andrew Murray O'Neal Memorial Woods
ANSI	Area of Natural and Scientific Interest
Brookfield	Brookfield Renewable Power Inc.
CAO	Chief Administrative Officer
CLI	Canada Land Inventory
C of A	Certificate of Approval
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
COSSARO	Committee on the Status of Species at Risk in Ontario
DA	Dissemination Area
DS	Distribution Station
EA Act	*Ontario Environmental Assessment Act*
EA Guide	MOE *Guide to Environmental Assessment Requirements for Electricity Projects*
EAAB	MOE Environmental Assessment and Approvals Branch
ECFA	Essex County Federation of Agriculture
EMF	Electric and Magnetic Fields
END	Endangered (Federal ranking)
ERCA	Essex Region Conservation Authority
ESA	Environmentally Sensitive Area
ESR	Environmental Study Report
et al.	And others (et alii)
FPTRPC	Federal Provincial Territorial Radiation Protection Committee
GIS	Geographic Information Systems
Hydro One	Hydro One Networks Inc.
INAC	Indian and Northern Affairs Canada
Jct	Junction
LDC	Local Distribution Companies
LTVCA	Lower Thames Valley Conservation Authority
MAA	Ontario Ministry of Aboriginal Affairs
MNR	Ontario Ministry of Natural Resources

MOE	Ontario Ministry of the Environment
MPCA	Municipal Property Assessment Corporation
MPP	Member of Provincial Parliament
MTO	Ontario Ministry of Transportation
NHIC	Natural Heritage Information Centre
OMAFRA	Ontario Ministry of Agriculture, Food and Rural Affairs
OEB Act	*Ontario Energy Board Act*
OEB	Ontario Energy Board
OP	Official Plan
OWRA	*Ontario Water Resources Act*
OPA	Ontario Power Authority
PIC	Public Information Centre
POR	Point of Reception
PPS	Provincial Policy Statement
PSW	Provincially Significant Wetland
ROW	Right-of-way
S1	NHIC Provincial Rank: Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.
S2	NHIC Provincial Rank: Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.
S3	NHIC Provincial Rank: Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4	NHIC Provincial Rank: Apparently secure; Uncommon but not rare. Some cause for long-term concern due to declines or other factors.

S5	NHIC Provincial Rank: Secure; common, widespread, and abundant in the nation or state/province.
SAR	Species at Risk
SARA	*Species at Risk Act*
SARO	Species at Risk in Ontario
SC	Special Concern
SCN	Soya Bean Nematode
TS	Transformer station

14. Measurement Units

ha	hectare
hz	hertz
km	kilometre
km^2	square kilometre
kV	kilovolt
m	metre
MVA	Mega Volt-Ampere
%	percent
^0C	degree Celsius

Appendix A -