

**Supply to Essex County Transmission Reinforcement
Class Environmental Assessment –
Environmental Baseline Report**

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1.0 INTRODUCTION

The *Environmental Assessment Act (EA Act)* requires a description of the environment that may be affected or reasonably expected to be affected, directly or indirectly, by a proposed undertaking. The following Baseline Report describes the environment and addresses all components of the environment (natural, social, economic, cultural, built) as it is defined in the *EA Act*. This Environmental Baseline provides the basis for the prediction of potential effects (positive or negative, direct or indirect, short- or long-term) of the undertaking on the environmental components.

1.1 PROJECT DESCRIPTION

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 install a new double circuit 230 kilovolt (kV) transmission line and a new transformer station (TS) to address growing electricity need in the Leamington area. The second stage is to construct another double circuit 230 kV transmission line on an existing transmission corridor on the west side of Essex County and into the City of Windsor.

The proposed Leamington TS will accommodate the anticipated electricity load growth and will improve the reliability of the electricity supply in the Leamington area.

1.2 DESCRIPTION OF THE STUDY AREAS

In this environmental and socio-economic baseline description, reference will be made to regional and local study areas. These study areas are defined as follows.

1.2.1 Regional Study Area

The regional setting is defined as Essex County and extending slightly into the City of Windsor to provide for the baseline description of climate, geology, physiography and socio-economics.

1.2.2 Local Study Areas

The study areas are shown in **Figure 1-1**. Since the proposed facilities are so far apart, each has its own study area. These are the Kingsville study area, Leamington study area and Lauzon study area.

The study areas for the two system alternatives are described below:

System Alternative 1 – Kingsville

- The **Kingsville 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 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. Tap lines would be required to join the 230 kV line and the 115 kV line to the station. This project would also require an upgrade of the 115 kV transmission line between the proposed TS and Kingsville TS and therefore the study area for the transmission line upgrade extends 500 m from both sides of the existing transmission line, following south to the Kingsville TS area.

System Alternative 2 – Leamington

- The **Leamington 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 which result in improved reliability, reduced losses and an overall optimization of 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 Leamington community between Hwy 3 and just north of Mersea Road 7; on the east boundary is approximately 4 km from Hwy 77 and on the west boundary approximately 2 km from Hwy 77. The transmission line study area overlaps the TS study area and extends north to the existing 230 kV lines between Chatham SS x Sandwich Jct.

- The **Lauzon study area** lies within the Towns of Lakeshore and Tecumseh and a small portion extends into the City of Windsor. An additional 230 kV transmission line is required to increase the security of the transmission supply in the Windsor/Essex area. The study area for the transmission line upgrade were based on a 500 m distance from the centre of the existing government-owned transmission corridor between Lauzon TS x Sandwich Jct.

Soils, vegetation, environmentally significant areas, wildlife, fisheries, Species at Risk (SAR) and land use are described for each of the study areas in the environmental baseline.

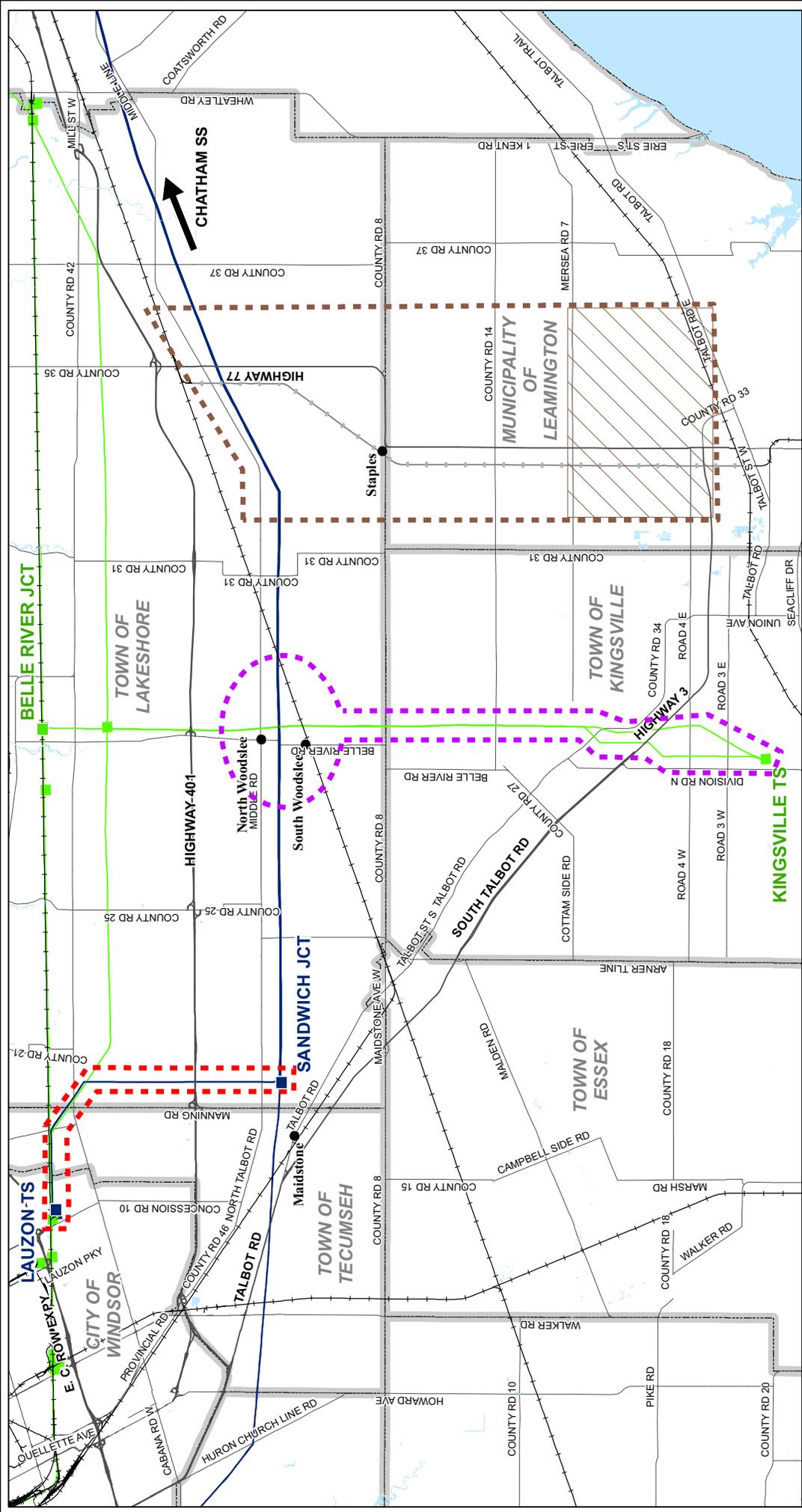


Figure 1-1 Project Study Areas

- Kingsville Study Area
 - Lauzon Study Area
 - Leamington Study Area
 - Leamington TS Study Area
-
- Municipal Boundary
 - Water
 - Rail
 - Abandoned Railway
 - Highway
 - Major Road
-
- Transmission Lines 230 kV
 - Transmission Lines 115 kV
 - Transformer Stations 230 kV
 - Transformer Stations 115 kV



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1.3 STUDY APPROACH

This environmental and socio-economic baseline was prepared based on data compiled from published literature and maps, discussions with various agencies, and information gathered during field visits and surveys. This information was augmented and updated by data from the Essex Region Conservation Authority (ERCA), Lower Thames Valley Conservation Authority (LTVCA), Ontario Ministry of Natural Resources (MNR) Natural Heritage Information Centre (NHIC), Census Canada, the Municipality of Leamington and the Town of Lakeshore. In addition, a Stage 1 Archaeological Assessment was completed for each of the study areas.

This environmental baseline report was prepared as a supporting document to the Hydro One Supply to Essex County Transmission Reinforcement Project – Draft Environmental Study Report.

2.0 ENVIRONMENTAL AND SOCIO-ECONOMIC SETTING

2.1 NATURAL ENVIRONMENT

The following section describes the study areas in detail with regards to natural features. The natural environment features illustrated in **Figures 2-1, 2-2, 2-3 and 2-4** are described below.

2.1.1 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.

Southern Ontario is located within one of the major storm tracks of the continent. The passage of cyclones and anti-cyclones over the area produces wide variations in day-to-day weather, especially in winter. Changes in air masses can be expected to occur every two to five days throughout the year. Usually, periods of severe cold or excessively warm weather are not prolonged. Winter severity varies from year to year, depending on the duration and number of episodes of domination of the region by Arctic air masses. During the summer, the Bermuda High often becomes the controlling weather feature, extending its influence over most of southern Ontario. The potential for stagnant air masses is greatest during mid- to late-summer. The intensity of migrating storms usually peaks in the autumn (November) and early spring (March).

Essex County is located in the Moderate Temperate Ecoclimatic region as classified by the Ecological Land Classification (Ecoregions Working Group 1989). More specifically, Essex County is located in Humid High Moderate Temperate Ecoclimatic Region (HMTh).

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 impacts the type of vegetation, wildlife and agriculture which are common to the area.

2.1.2 Air Quality

In southern Ontario, poor air quality is most often the result of high levels of ground level ozone (O₃) and airborne particulate matter (PM_{2.5}). Ground level O₃ is the primary component of smog with a contribution by fine PM. O₃ results from chemical reactions between volatile organic compounds (VOCs) and nitrogen oxides (NO_x) in the presence of heat and sunlight.

The air pollutant life cycle is largely influenced by synoptic (i.e., large-scale) weather systems (Ministry of the Environment, 1999). Ground-level O₃, its precursors and fine PM can travel via these large-scale weather systems up to thousands of kilometres from their source. It is because of the long-range transport of airborne pollutants that transboundary flow from the United States plays a significant role in air quality considerations throughout southern Ontario.

The Ontario Ministry of Environment (MOE) collects continuous ambient air quality data at almost 40 monitoring sites across the province to determine the state of air quality. Monitoring stations record concentration levels of some or all of the six most common air pollutants: sulphur dioxide (SO₂), O₃, nitrogen dioxide (NO₂), total reduced sulphur compounds (TRS), carbon monoxide (CO), and PM_{2.5}.

Based upon the MOE's Air Quality Index Summary (2006), air quality within the local airshed is generally good during the winter months and moderate during the summer months.

2.1.3 Environmental Noise

Environmental noise levels will vary according to a number of factors: intensity, type and number of noise sources; proximity to the noise sources; topography; presence of barriers and absorbers such as vegetation; and meteorological conditions.

A variety of land and water uses in the study area contribute to environmental noise levels. The major sources of environmental noise within the study areas are regional highways and roads, Hwy 401 and agricultural operations.

2.1.4 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 Michigan Basin, a roughly circular intracratonic basin approximately 650 km in diameter, is centered on the southern peninsula of Michigan (Johnson *et al*, 1992). The Paleozoic bedrock dips gently to the southwest, towards the center of the Michigan Basin. The Algonquin-Findlay Arch forms a structural high in the Precambrian basement and trends northeasterly from southern Michigan through Essex County and on towards southern Georgian Bay. The Paleozoic strata tend to be thinner in the vicinity of the Arch than to either side. A minor fault, the Electric Fault, lies on the northeast shore of Lake St. Clair and trends east-west (Brigham, 1971). Other minor structural features include Silurian pinnacle and biothermal reefs, as well as local collapse of overlying strata due to the leaching of salt members from the Salina Formation.

The southern portion of Essex County is underlain by the Detroit River Group of limestones and dolostones (Hewitt 1972; Telford and Russell, 1981). 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. The

Salina Formation consists of limestones, shale, gypsum, anhydrite and salt. The salt and anhydrite deposits in this formation are actively mined in Windsor.

Essex County lies in a zone of mild seismic potential (ACNBC, 1980). Seismic activity in the study area is related to slippage along ancient fault lines located within the North American continental plate. Earthquake prediction in the study area is difficult, as few ancient faults have been identified. Fractures, however, are common in most of the Paleozoic strata (Sanford and McFall, 1984). These fractures serve as pathways for the migration and accumulation of hydrocarbon deposits, which are extracted from this area.

2.1.5 Physiography

During the Quaternary period the Laurentide Ice Sheet dominated much of Canada, including southern Ontario and Essex County. A series of glacial advances and retreats were initiated approximately 190,000 B.P. and lasted to the beginning of the Holocene (10,000 B.P.). The two main stages of glaciation, the Illinoian and Wisconsinan, were divided by the Sangamonian Interglacial stage between 135,000 and 115,000 B.P. The Labrador Sector of the Laurentide Ice Sheet had the most effect on the study area (Barnett, 1992).

Deglaciation of the area occurred roughly 13,000 B.P. (Sly and Lewis, 1972). Glacial Lake Iroquois formed as the ice retreated from the area and lasted from roughly 12,600 to 12,000 B.P. This lake was followed by a series of short-lived proglacial lakes which occupied successively lower levels.

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. Considerable amounts of meltwater from glaciers also deposited outwash glaciofluvial and glaciolacustrine sediments. The other main surficial deposits are post-glacial Holocene sediments, mainly alluvium deposited by rivers. Other minor recent sediments include those created by wind deposition, as well as organic and peat deposits in wetlands (Chapman and Putnam, 1984). The study area lies within the West St. Lawrence Lowland Physiographic District, which is a gradual southwestward-sloping plain having little or no surface relief (Bostock, 1970). The physiography of the region is controlled by the presence of thick clay tills deposited during the Wisconsinan glaciation and subsequently modified by a series of pro-glacial and ice-controlled lakes.

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 km². 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.

Glacial Lake Whittlesey, and the subsequent Lake Warren, failed to leave stratified beds of sediment on the underlying clay till. Most of Essex County is a till plain smoothed by shallow deposits of lacustrine clay, which settled in depressions while knolls were being lowered by wave action.

Glacial lakes had a very profound effect on the materials that compose the soils of Essex County. Although the glaciers deposited some unsorted stony materials in this area, ice melting while the ice-front retreated resulted in deep glacial lakes covering most of the area for extended periods. During this time, the wave action smoothed out ridges and considerable amounts of sediment and outwash material accumulated (Richards, et al., 1989).

2.1.6 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 (Hoffman *et al*, 1964). 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 (Richards *et al*, 1949).

The Brookston Association is dominated by clays and clay loams. These are dark-surfaced Humic Gleysols which developed under forested swamp conditions. The Brookston soils are poorly drained, high in organic matter, low in stone content and slightly acidic to slightly alkaline (Richards *et al*, 1949). They are characterized by dark humic-rich clays overlying mottled clay which further overlies blue-grey compact clay. They cover about 120,000 ha or about two thirds of the county, occurring throughout the northern and central portions.

The Berrien Association consists primarily of sandy loam and sand soils with minor loams and clays. This Association occurs in the southeast and northwest portions of the area, just north of Point Pelee and south of Windsor respectively. The sandy loams are imperfectly drained, moderately acidic and stone-free (Richards *et al*, 1949). They are characterized by brown sandy loams over yellow and mottled sands, with clay at 1-2 m. They exhibit characteristics of the Grey Brown Podsollic soil.

The Haldiman Association is dominated by clays and clay loams of the Perth and Caistor Soil Series. The soils have dark-to-medium grey-brown clay overlying grey and brown clays. The Caistor Series is moderately acidic with few to no stones. The Perth Series is slightly alkaline to slightly acidic and is commonly stony.

Due to the level topography of the area, erosion is generally not a problem (Richards, et al., 1989). Soil maps of the local study areas are presented in **Figures 2-5, 2-6 and 2-7**.

2.1.7 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 found within the study areas 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 2-1 below summarizes the various watercourses present within the study areas.

Table 2-1 Summary of Watercourses Located Within the Study Areas

| Study Areas | 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 Wige 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 (ERCA, 2009). Both of these watersheds drain north into Lake St. Clair. There are 19 watercourses for this area, 18 of which are Class F, while only one is Class E.

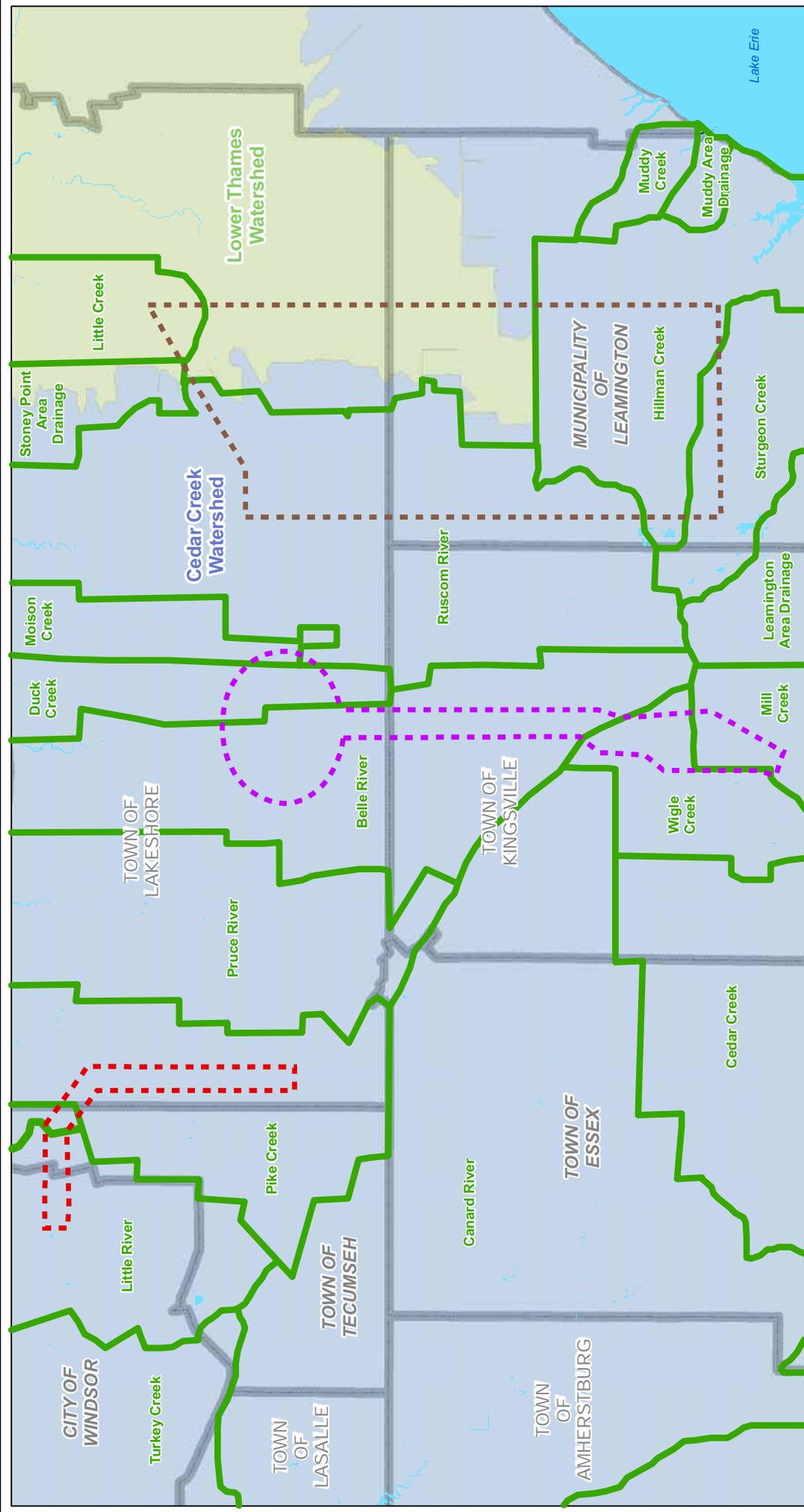
The Leamington study area overlaps the Sturgeon Creek, Hillman Creek, Little Creek and Ruscom River sub-watersheds, and on the east extends into the Lower Thames watershed (ERCA, 2009). The Ruscom River watershed covers the northern half of the study area and drains into Lake St. Clair. The Sturgeon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

Groundwater resources are concentrated in four aquifer systems in the general area. These are the water table aquifer, overburden aquifer, contact aquifer and bedrock aquifer. The largest and most important of these is the contact aquifer. Groundwater is not generally used as a public water supply in Essex County, and is not used in any of the study areas. Instead public water supply within the region typically comes from filtration of surface water from Lake St. Clair and Lake Erie (MOE 2008) Residents within the Leamington study area receive their water supply from municipal water mains (Leamington 2008).

Figure 2-1 below presents the watershed boundaries in the area.





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hydro one

 Municipal Boundary
 Watershed Boundary
 Cedar Creek
 Lower Thames
 Subwatershed Boundary
 Lauzon Study Area
 Leamington Study Area
 Kingsville Study Area

Figure 2-1 Watershed Boundaries within Essex County




2.1.8 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 (*Vitis 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 (*Quercus 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 imperiled) 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).

Table 2-2 lists the tree and shrub species that were observed in the study areas in the spring of 2008.

Table 2-2 Tree and Shrub Species Observed Within the Study Areas

| Scientific Name | Common Name | Species Status | | | Study Areas | | |
|--------------------------------|--------------------------|----------------------|----------------------|-------------------|-------------|------------|--------|
| | | COSEWIC ^a | COSSARO ^a | NHIC ^b | Kingsville | Leamington | Lauzon |
| PINOPHYTA | | | | | | | |
| CLASS PINOPSIDA | | | | | | | |
| ORDER PINALES | | | | | | | |
| CUPRESSACEAE Cypress | | | | | | | |
| <i>Juniperus virginiana</i> | Eastern Red-cedar | - | - | S5 | √ | √ | √ |
| <i>Thuja occidentalis</i> | Northern White Cedar | - | - | S5 | √ | √ | √ |
| PINACEAE Pine | | | | | | | |
| <i>Abies balsamea</i> | Balsam Fir | - | - | S5 | √ | √ | √ |
| <i>Larix laricina</i> | American Larch, Tamarack | - | - | S5 | √ | √ | √ |
| <i>Pinus strobus</i> | Eastern White Pine | - | - | S5 | √ | √ | √ |
| ANGIOSPERMAE | | | | | | | |
| EUDICOTS | | | | | | | |
| ORDER PROTEALES | | | | | | | |
| PLATANACEAE Plane Tree | | | | | | | |
| <i>Platanus occidentalis</i> | Sycamore | - | - | S4 | √ | √ | √ |
| CORE EUDICOTS | | | | | | | |
| ORDER SAXIFRAGALES | | | | | | | |
| GROSSULARIACEAE Currant | | | | | | | |
| <i>Ribes americanum</i> | Wild Black Currant | - | - | S5 | √ | √ | √ |
| ASTERIDS | | | | | | | |
| ORDER CORNALES | | | | | | | |
| CORNACEAE Dogwood | | | | | | | |
| <i>Cornus florida</i> | Flowering Dogwood | END | - | S2 | √ | √ | √ |
| <i>Cornus sericea</i> | Red-osier Dogwood | - | - | S5 | √ | √ | √ |
| LAMIIDS | | | | | | | |
| ORDER LAMIALES | | | | | | | |

| Scientific Name | Common Name | Species Status | | | Study Areas | | |
|------------------------------------|----------------------|----------------------|----------------------|-------------------|-------------|------------|--------|
| | | COSEWIC ^a | COSSARO ^a | NHIC ^b | Kingsville | Leamington | Lauzon |
| OLEACEAE | Olives | | | | | | |
| <i>Fraxinus americana</i> | White Ash | - | - | S5 | ✓ | ✓ | ✓ |
| <i>Fraxinus profunda</i> | Pumpkin Ash | - | - | S2 | | ✓ | |
| <i>Syringa vulgaris</i> | Common Lilac | - | - | SE5 | ✓ | ✓ | ✓ |
| <u>CAMPANULIDS</u> | | | | | | | |
| <u>ORDER APIALES</u> | | | | | | | |
| ARALIACEAE | Ivy | | | | | | |
| <i>Aralia nudicaulis</i> | Wild Sarsaparilla | - | - | S5 | ✓ | ✓ | ✓ |
| <u>ORDER AQUIFOLIALES</u> | | | | | | | |
| AQUIFOLIACEAE | Holly | | | | | | |
| <i>Nemopanthus mucronatus</i> | Mountain Holly | - | - | S5 | ✓ | ✓ | ✓ |
| <u>ORDER DIPSACALES</u> | | | | | | | |
| CAPRIFOLIACEAE | Honeysuckle | | | | | | |
| <i>Lonicera dioica</i> | Mountain Honeysuckle | - | - | S5 | | ✓ | |
| <i>Sambucus racemosa</i> | Red Elderberry | - | - | S5 | ✓ | ✓ | |
| <i>Viburnum lentago</i> | Nannyberry | - | - | S5 | | | ✓ |
| <u>ROSIDS</u> | | | | | | | |
| <u>ORDER VITALES</u> | | | | | | | |
| VITACEAE | Grape | | | | | | |
| <i>Vitis aestivalis</i> | Summer Grape | - | - | S4 | | ✓ | |
| <i>Parthenocissus quinquefolia</i> | Virginia Creeper | - | - | S4? | ✓ | ✓ | ✓ |
| <u>FABIDS</u> | | | | | | | |
| <u>ORDER FABALES</u> | | | | | | | |
| FABACEAE | Pea | | | | | | |
| <i>Gleditsia triacanthos</i> | Honey-locust | - | - | S2 | ✓ | ✓ | ✓ |
| <u>ORDER FAGALES</u> | | | | | | | |
| BETULACEAE | Birch | | | | | | |

| Scientific Name | Common Name | Species Status | | | Study Areas | | |
|---|------------------------------|----------------------|----------------------|-------------------|-------------|------------|--------|
| | | COSEWIC ^a | COSSARO ^a | NHIC ^b | Kingsville | Leamington | Lauzon |
| <i>Alnus incana</i> ssp. <i>rugosa</i> | Speckled Alder | - | - | S5 | √ | √ | √ |
| <i>Alnus viridis</i> ssp. <i>crispa</i> | Green Alder | - | - | S5 | √ | √ | √ |
| <i>Corylus cornuta</i> | Beaked Hazel | - | - | S5 | √ | √ | √ |
| <i>Betula papyrifera</i> | Paper Birch | - | - | S5 | √ | √ | √ |
| <i>Ostrya virginiana</i> | Hop-Hornbeam, Iron Wood | - | - | S5 | √ | √ | √ |
| FAGACEAE | | | | | | | |
| <i>Fagus grandifolia</i> | American Beech | - | - | S4 | √ | √ | √ |
| <i>Quercus ellipsoidalis</i> | Northern Pin Oak | - | - | S3 | ? | ? | ? |
| <i>Quercus muhlenbergii</i> | Chinquapin Oak | - | - | S4 | ? | ? | ? |
| <i>Quercus palustris</i> | Pin Oak | - | - | S3 | ? | ? | ? |
| <i>Quercus rubra</i> | Northern Red Oak | - | - | S5 | √ | √ | √ |
| <i>Quercus shumardii</i> | Shumard Oak | SC | SC | S3 | √? | √? | √? |
| <u>ORDER MALPHIGIALES</u> | | | | | | | |
| SALICACEAE | | | | | | | |
| Willow | | | | | | | |
| <i>Populus balsamifera</i> | Balsam Poplar | - | - | S5 | √ | √ | √ |
| <i>Populus deltoides</i> | Eastern Cottonwood | - | - | SU | √ | √ | √ |
| <i>Populus grandidentata</i> | Large-tooth Aspen | - | - | S5 | √ | √ | √ |
| <i>Populus tremuloides</i> | Quaking Aspen | - | - | S5 | √ | √ | √ |
| <i>Salix</i> spp. | Willows | na | na | na | √ | √ | √ |
| <i>Salix petiolaris</i> | Slender Willow | - | - | S5 | √ | √ | √ |
| <u>ORDER ROSALES</u> | | | | | | | |
| ROSACEAE | | | | | | | |
| Rose | | | | | | | |
| <i>Amelanchier laevis</i> | Allegheny Serviceberry | - | - | S5 | √ | √ | √ |
| <i>Crataegus</i> sp. | Hawthorn sp. | na | na | S2-S5 | √ | √ | √ |
| <i>Prunus virginiana</i> | Choke Cherry | - | - | S5 | √ | √ | √ |
| <i>Spiraea alba</i> | Narrowleaf White Meadowsweet | - | - | S5 | √ | √ | √ |
| ULMACEAE | | | | | | | |
| <i>Ulmus americana</i> | American Elm | - | - | S5 | √ | √ | √ |

| Scientific Name | Common Name | Species Status | | | Study Areas | | |
|-------------------------------|---------------------------|----------------------|----------------------|-------------------|-------------|------------|--------|
| | | COSEWIC ^a | COSSARO ^a | NHIC ^b | Kingsville | Leamington | Lauzon |
| MORACEAE | Mulberry | | | | | | |
| <i>Morus rubra</i> | Red Mulberry | END | END-R | S2 | | ✓ | |
| MALVIDS | | | | | | | |
| ORDER MALVALES | | | | | | | |
| MALVACEAE | Mallow | | | | | | |
| <i>Tilia americana</i> | American Basswood | - | - | S5 | ✓ | ✓ | ✓ |
| ORDER SAPINDALES | | | | | | | |
| ACERACEAE | Maple | | | | | | |
| <i>Acer negundo</i> | Manitoba Maple, Box Elder | - | - | S5 | ✓ | ✓ | ✓ |
| <i>Acer rubrum</i> | Red Maple | - | - | S5 | | ✓ | |
| <i>Acer saccharinum</i> | Silver Maple | - | - | S5 | ✓ | ✓ | ✓ |
| <i>Acer saccharum</i> | Sugar Maple | - | - | S5 | ✓ | ✓ | ✓ |
| ANACARDIACEAE | Sumac | | | | | | |
| <i>Rhus typhina</i> | Staghorn Sumac | - | - | S5 | ✓ | ✓ | ✓ |
| <i>Toxicodendron radicans</i> | Eastern Poison-ivy | - | - | S5 | ✓ | ✓ | ✓ |

a, Federal COSEWIC (2007)/Provincial COSSARO (2007): END = endangered; END-R = regulated under Endangered Species Act; THR = threatened; VUL =

vulnerable; SC = special concern; EXP = extirpated; EXT = extinct; NIAC = not in any category; NAR = not at risk; IND = indeterminate; DD = data deficient.
b, Provincial ranks used by NHIC (2008): SX, presumed extirpated; SH, possibly extirpated, (historical); S1, critically imperiled; S2 = imperiled; S3 = vulnerable; S4 = apparently secure; S5 = secure; SNR = unranked; SU = unrankable; SNA, not applicable; S#S#, range rank. Additional older S ranks being replaced in 2006: C, captive/cultivated; S?, not ranked yet; SA, accidental; SAB, breeding accidental; SAN, non-breeding accidental; SE, exotic; SR, reported for Ontario; SRF, reported falsely from Ontario; SX, apparently extirpated from Ontario; SZ, not of practical conservation concern; SZB, breeding migrants/vagrants; SZN, non-breeding migrants/vagrants.

Those species that are checked with a ? indicate that the identification of the species is not certain due to the early season.

2.1.9 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 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 2-3 presents a list of the ESAs for the study areas.

Table 2-3 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 |

2.1.10 Wildlife

The wildlife composition in Essex County is representative of the Deciduous Forest Region. A search of the NHIC database and Ontario Breeding Bird Atlas (OBBA) (BSC, 2005) resulted in the identification of a large number of sensitive species within Essex County. These species are listed in the following sections.

Mammals

Many different species of mammals are found in Essex County. According to Eder (2002) a total of 34 mammal species have ranges including Essex County and may overlap the study areas. **Table 2-4** lists the mammal species which have been recorded in Essex County.

Table 2-4 Mammal Species Likely Present Within Essex County¹

| Common Name | Scientific Name | Provincial Rank² |
|--------------------------|---------------------------------|------------------------------------|
| White-tailed Deer | <i>Odocoileus virginianus</i> | S5 |
| Striped Skunk | <i>Mephitis mephitis</i> | S5 |
| Short-tailed Weasel | <i>Mustela erminea</i> | S5 |
| Long-tailed Weasel | <i>Mustela frenata</i> | S4 |
| Mink | <i>Mustela vison</i> | S4 |
| Raccoon | <i>Procyon lotor</i> | S5 |
| Coyote | <i>Canis latrans</i> | S5 |
| Red Fox | <i>Vulpes vulpes</i> | S5 |
| Gray Fox | <i>Urocyon cinereoargenteus</i> | SNA |
| Meadow Jumping Mouse | <i>Zapus hudsonius</i> | S5 |
| Norway Rat | <i>Rattus norvegicus</i> | SNA |
| House Mouse | <i>Mus musculus</i> | SNA |
| Deer Mouse | <i>Peromyscus maniculatus</i> | S5 |
| White-footed Mouse | <i>Peromyscus leucopus</i> | S5 |
| Meadow Vole | <i>Microtus pennsylvanicus</i> | S5 |
| Muskrat | <i>Ondatra zibethicus</i> | S5 |
| Eastern Chipmunk | <i>Tamias striatus</i> | S5 |
| Woodchuck | <i>Marmota monax</i> | S5 |
| Red Squirrel | <i>Tamiasciurus hudsonicus</i> | S5 |
| Eastern Gray Squirrel | <i>Sciurus carolinensis</i> | S5 |
| Southern Flying Squirrel | <i>Glaucomys volans</i> | S4 |
| European Hare | <i>Lepus europaeus</i> | SNA |
| Eastern Cottontail | <i>Sylvilagus floridanus</i> | S5 |
| Little Brown Bat | <i>Myotis lucifugus</i> | S5 |
| Eastern Red Bat | <i>Lasiurus borealis</i> | S4 |

| Common Name | Scientific Name | Provincial Rank ² |
|-----------------------------|----------------------------------|------------------------------|
| Hoary Bat | <i>Lasiurus cinereus</i> | S4 |
| Silver-haired Bat | <i>Lasionycteris noctivagans</i> | S4 |
| Big Brown Bat | <i>Eptesicus fuscus</i> | S5 |
| Eastern Pipistrelle | <i>Pipistrellus subflavus</i> | S3? |
| Virginia Opossum | <i>Didelphis virginiana</i> | S4 |
| Hairy-tailed Mole | <i>Parascalops breweri</i> | S4 |
| Eastern Mole | <i>Scalopus aquaticus</i> | S2 |
| Masked Shrew | <i>Sorex cinereus</i> | S5 |
| Northern Short-tailed Shrew | <i>Blarina brevicauda</i> | S5 |

¹Source: Eder 2002

²NHIC (2008) Provincial Ranks: S5 = secure; S4 = apparently secure ; S3 = rare to uncommon in Ontario and vulnerable; S2 = imperiled; SNA = not a suitable target for conservation activities.

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 within the Leamington study area is the Eastern Mole, which was recorded recently in 1997. This species is considered Special Concern (SC) both provincially and federally and imperiled (S2) by NHIC (2009). No rare mammal species were recorded in the Kingsville study area, according to NHIC. A summary of the Species at Risk (SAR) found within the study areas is presented in **Section 2.1.12**.

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, and many of the ESAs listed in Section 2.1.8 are known to be seasonally inhabited by numerous bird species. 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.

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.

Table 2-5 lists the bird species that are likely to be present within Essex County according to Bezener (2000) the Ontario Breeding Bird Atlas (OBBA) (Bird Studies Canada 2005). The OBBA is a key resource for identifying bird species present in the vicinity of a given area. The current atlas maps species occurrences recorded within a 10 x 10 km². According to this resource, a total of 132 of the 176 bird species in **Table 2-5** have been recorded as either “confirmed,” “probable” or “possible” within Essex County.

Table 2-5 Bird Species Likely Present Within Essex County¹

| Common Name | Scientific Name | Provincial Status² | Recorded By OBBA | Season |
|---------------------------|------------------------------|--------------------------------------|-------------------------|---------------|
| Pied-billed Grebe | <i>Podilymbus podiceps</i> | S4B,S4N | Confirmed | Summer |
| Double-crested Cormorant | <i>Phalacrocorax auritus</i> | S5B | Possible | Summer |
| American Bittern | <i>Botaurus lentiginosus</i> | S4B | Possible | Summer |
| Least Bittern | <i>Ixobrychus exilis</i> | S4B | Confirmed | Summer |
| Great Blue Heron | <i>Ardea herodias</i> | S5 | Possible | Year round |
| Great Egret | <i>Ardea alba</i> | S2B | Possible | Summer |
| Green Heron | <i>Butorides virescens</i> | S4B | Confirmed | Summer |
| Black-crowned Night Heron | <i>Nycticorax nycticorax</i> | S3B,S3N | Confirmed | Summer |
| Turkey Vulture | <i>Cathartes aura</i> | S5B | Confirmed | Summer |
| Canada Goose | <i>Branta canadensis</i> | S5 | Confirmed | Year round |
| Mute Swan | <i>Cygnus olor</i> | SNA | Confirmed | Year round |
| Tundra Swan | <i>Cygnus columbianus</i> | S4 | - | Winter |
| Wood Duck | <i>Aix sponsa</i> | S5 | Confirmed | Summer |
| Gadwall | <i>Anas strepera</i> | S4 | Possible | Summer |
| American Wigeon | <i>Anas americana</i> | S4 | Confirmed | Summer |
| American Black Duck | <i>Anas rubripes</i> | S4 | Confirmed | Year round |
| Mallard | <i>Anas platyrhynchos</i> | S5 | Confirmed | Year round |
| Blue-winged Teal | <i>Anas discors</i> | S4 | Confirmed | Summer |
| Northern Shoveler | <i>Anas clypeata</i> | S4 | Probable | Summer |
| Northern Pintail | <i>Anas acuta</i> | S5 | Probable | Summer |
| Green-winged Teal | <i>Anas crecca</i> | S4 | Probable | Summer |
| Canvasback | <i>Aythya valisineria</i> | S1B,S4N | - | Winter |
| Redhead | <i>Aythya americana</i> | S2B,S4N | Possible | Summer |
| Greater Scaup | <i>Aythya marila</i> | S4 | - | Winter |
| Lesser Scaup | <i>Aythya affinis</i> | S4 | - | Winter |
| White-winged Scoter | <i>Melanitta fusca</i> | S4B,S4N | - | Winter |
| Black Scoter | <i>Melanitta nigra</i> | S4B,S4N | - | Winter |
| Long-tailed Duck | <i>Clangula hyemalis</i> | S3B | - | Winter |
| Bufflehead | <i>Bucephala albeola</i> | S4 | - | Winter |
| Common Goldeneye | <i>Bucephala clangula</i> | S5 | - | Winter |
| Common Merganser | <i>Mergus merganser</i> | S5B,S5N | - | Winter |
| Red-breasted Merganser | <i>Mergus serrator</i> | S4B,S5N | - | Winter |

| Common Name | Scientific Name | Provincial Status ² | Recorded By OBBA | Season |
|-------------------------|---------------------------------|--------------------------------|------------------|------------|
| Ruddy Duck | <i>Oxyura jamaicensis</i> | S4B,S4N | Probable | Summer |
| Bald Eagle | <i>Haliaeetus leucocephalus</i> | S1S2N, S4B | Confirmed | Year round |
| Northern Harrier | <i>Circus cyaneus</i> | S4B | Confirmed | Year round |
| Sharp-shinned Hawk | <i>Accipiter striatus</i> | S5 | Possible | Year round |
| Copper's Hawk | <i>Accipiter cooperii</i> | S4 | Confirmed | Year round |
| Northern Goshawk | <i>Accipiter gentilis</i> | S4 | - | Winter |
| Red-shouldered Hawk | <i>Buteo lineatus</i> | S4B | - | Winter |
| Broad-winged Hawk | <i>Buteo platypterus</i> | S5B | Possible | Summer |
| Red-tailed Hawk | <i>Buteo jamaicensis</i> | S5 | Confirmed | Year round |
| Rough-legged Hawk | <i>Buteo lagopus</i> | S1B,S4N | - | Winter |
| American Kestrel | <i>Falco sparverius</i> | S5B | Confirmed | Year round |
| Merlin | <i>Falco columbarius</i> | S5B | Probable | Winter |
| Gyrfalcon | <i>Falco rusticolus</i> | SNA | - | Winter |
| Ring-necked Pheasant | <i>Phasianus colchicus</i> | SNA | Confirmed | Year round |
| Ruffed Grouse | <i>Bonasa umbellus</i> | S5 | - | Year round |
| Northern Bobwhite | <i>Colinus virginianus</i> | S1 | Possible | Year round |
| King Rail | <i>Rallus elegans</i> | S2B | Possible | Summer |
| Virginia Rail | <i>Rallus limicola</i> | S5B | Confirmed | Summer |
| Sora | <i>Porzana carolina</i> | S4B | Confirmed | Summer |
| Common Moorhen | <i>Gallinula chloropus</i> | S4B | Confirmed | Summer |
| American Coot | <i>Fulica americana</i> | S4B | Confirmed | Summer |
| Killdeer | <i>Charadrius vociferous</i> | S5B,S5N | Confirmed | Summer |
| Spotted Sandpiper | <i>Actitis macularia</i> | S5 | Confirmed | Summer |
| Upland Sandpiper | <i>Bartramia longicauda</i> | S4B | - | Summer |
| Common Snipe | <i>Gallinago gallinago</i> | - | Confirmed | Summer |
| American Woodcock | <i>Scolopax minor</i> | S4B | Confirmed | Summer |
| Wilson's Phalarope | <i>Phalaropus tricolor</i> | S3B | Probable | Summer |
| Ring-billed Gull | <i>Larus delawarensis</i> | S5B,S4N | Confirmed | Summer |
| Herring Gull | <i>Larus argentatus</i> | S5B,S5N | Confirmed | Summer |
| Thayer's Gull | <i>Larus thayeri</i> | SNA | - | Winter |
| Iceland Gull | <i>Larus glaucoides</i> | S4N | - | Winter |
| Glaucous Gull | <i>Larus hyperboreus</i> | S4N | - | Winter |
| Great Black-backed Gull | <i>Larus marinus</i> | S2B | - | Winter |

| Common Name | Scientific Name | Provincial Status ² | Recorded By OBBA | Season |
|---------------------------|-----------------------------------|--------------------------------|------------------|------------|
| Common Tern | <i>Sterna hirundo</i> | S4B | Confirmed | Summer |
| Forster's Tern | <i>Sterna forsteri</i> | S2B | Possible | Summer |
| Black Tern | <i>Chlidonias niger</i> | S3B | Probable | Summer |
| Rock Dove | <i>Columba livia</i> | SNA | Confirmed | Year round |
| Mourning Dove | <i>Zenaidura macroura</i> | S5 | Confirmed | Year round |
| Black-billed Cuckoo | <i>Coccyzus erythrophthalmus</i> | S5B | Confirmed | Summer |
| Yellow-billed Cuckoo | <i>Coccyzus americanus</i> | S4B | Confirmed | Summer |
| Eastern Screech-owl | <i>Megascops asio</i> | S5 | Confirmed | Year round |
| Great Horned Owl | <i>Bubo virginianus</i> | S5 | Confirmed | Year round |
| Snowy Owl | <i>Bubo scandiacus</i> | SNA | - | Winter |
| Long-eared Owl | <i>Asio otus</i> | S4 | Probable | Year round |
| Short-eared Owl | <i>Asio flammeus</i> | S2N,S4B | Confirmed | Year round |
| Northern Saw-whet Owl | <i>Aegolius acadicus</i> | S4 | - | Year round |
| Common Night-hawk | <i>Chordeiles minor</i> | S4B | Confirmed | Summer |
| Chuck-will's Widow | <i>Caprimulgus carolinensis</i> | SNA | Possible | Summer |
| Whip-poor-will | <i>Caprimulgus vociferus</i> | S4B | Possible | Summer |
| Chimney Swift | <i>Chaetura pelagica</i> | S4B,S4N | Confirmed | Summer |
| Ruby-throated Hummingbird | <i>Archilochus colubris</i> | S5B | Confirmed | Summer |
| Belted Kingfisher | <i>Ceryle alcyon</i> | S4B | Confirmed | Year round |
| Red-headed Woodpecker | <i>Melanerpes erythrocephalus</i> | S4B | Confirmed | Year round |
| Red-bellied Woodpecker | <i>Melanerpes carolinus</i> | S4 | Confirmed | Year round |
| Downy Woodpecker | <i>Picoides pubescens</i> | S5 | Confirmed | Year round |
| Hairy Woodpecker | <i>Picoides villosus</i> | S5 | Confirmed | Year round |
| Northern Flicker | <i>Colaptes auratus</i> | S4B | Confirmed | Year round |
| Eastern Wood-pewee | <i>Contopus virens</i> | S4B | Confirmed | Summer |
| Acadian Flycatcher | <i>Empidonax virescens</i> | S2S3B | Confirmed | Summer |
| Willow Flycatcher | <i>Empidonax traillii</i> | S5B | Confirmed | Summer |
| Eastern Phoebe | <i>Sayornis phoebe</i> | S5B | Confirmed | Summer |
| Great Crested Flycatcher | <i>Myiarchus crinitus</i> | S4B | Confirmed | Summer |
| Eastern Kingbird | <i>Tyrannus tyrannus</i> | S4B | Confirmed | Summer |
| Northern Shrike | <i>Lanius excubitor</i> | SNA | - | Winter |
| White-eyed Vireo | <i>Vireo griseus</i> | S2B | Possible | Summer |
| Yellow-throated Vireo | <i>Vireo flavifrons</i> | S4B | Confirmed | Summer |

| Common Name | Scientific Name | Provincial Status ² | Recorded By OBBA | Season |
|-------------------------------|-----------------------------------|--------------------------------|------------------|------------|
| Warbling Vireo | <i>Vireo gilvus</i> | S5B | Confirmed | Summer |
| Red-eyed Vireo | <i>Vireo olivaceus</i> | S5B | Confirmed | Summer |
| Blue Jay | <i>Cyanocitta cristata</i> | S5 | Confirmed | Year round |
| American Crow | <i>Corvus brachyrhynchos</i> | S5B | Confirmed | Year round |
| Horned Lark | <i>Eremophila alpestris</i> | S5B | Confirmed | Year round |
| Purple Martin | <i>Progne subis</i> | S4B | Confirmed | Summer |
| Tree Swallow | <i>Tachycineta bicolor</i> | S4B | Confirmed | Summer |
| Northern Rough-winged Swallow | <i>Stelgidopteryx serripennis</i> | S4B | Confirmed | Summer |
| Bank Swallow | <i>Riparia riparia</i> | S4B | Confirmed | Summer |
| Cliff Swallow | <i>Petrochelidon pyrrhonota</i> | S4B | Confirmed | Summer |
| Barn Swallow | <i>Hirundo rustica</i> | S4B | Confirmed | Summer |
| Black-capped Chickadee | <i>Poecile atricapillus</i> | S5 | Confirmed | Year round |
| White-breasted nuthatch | <i>Sitta carolinensis</i> | S5 | Confirmed | Year round |
| Brown Creeper | <i>Certhia americana</i> | S5B | Probable | Winter |
| Carolina Wren | <i>Thryothorus ludovicianus</i> | S4 | Confirmed | Year round |
| House Wren | <i>Troglodytes aedon</i> | S5B | Confirmed | Summer |
| Winter Wren | <i>Troglodytes troglodytes</i> | S5B | - | Winter |
| Sedge Wren | <i>Cistothorus platensis</i> | S4B | Confirmed | Summer |
| Marsh Wren | <i>Cistothorus palustris</i> | S4B | Confirmed | Summer |
| Golden-crowned Kinglet | <i>Regulus satrapa</i> | S5B | - | Winter |
| Ruby-crowned Kinglet | <i>Regulus calendula</i> | S4B | - | Winter |
| Blue-grey Gnatcatcher | <i>Polioptila caerulea</i> | S4B | Confirmed | Summer |
| Eastern Bluebird | <i>Sialia sialis</i> | S5B | Confirmed | Year round |
| Wood Thrush | <i>Hylocichla mustelina</i> | S4B | Confirmed | Summer |
| American Robin | <i>Turdus migratorius</i> | S5B | Confirmed | Year round |
| Grey Catbird | <i>Dumetella carolinensis</i> | S4B | - | Summer |
| Northern Mockingbird | <i>Mimus polyglottos</i> | S4 | Confirmed | Summer |
| Brown Thrasher | <i>Toxostoma rufum</i> | S4B | Confirmed | Summer |
| European Starling | <i>Sturnus vulgaris</i> | SNA | Confirmed | Year round |
| Bohemian Waxwing | <i>Bombycilla garrulus</i> | SNA | - | Winter |
| Cedar Waxwing | <i>Bombycilla cedrorum</i> | S5B | Confirmed | Year round |
| Blue-winged Warbler | <i>Vermivora pinus</i> | S4B | Probable | Summer |
| Golden-winged Warbler | <i>Vermivora chrysoptera</i> | S4B | - | Summer |

| Common Name | Scientific Name | Provincial Status ² | Recorded By OBBA | Season |
|-------------------------|--------------------------------------|--------------------------------|------------------|------------|
| Yellow Warbler | <i>Dendroica petechia</i> | S5B | Confirmed | Summer |
| Chestnut-sided Warbler | <i>Dendroica pensylvanica</i> | S5B | Possible | Summer |
| Cerulean Warbler | <i>Dendroica cerulea</i> | S3B | Confirmed | Summer |
| American Redstart | <i>Setophaga ruticilla</i> | S5B | Probable | Summer |
| Prothonotary Warbler | <i>Protonotaria citrea</i> | S1B | Probable | Summer |
| Common Yellowthroat | <i>Geothlypis trichas</i> | S5B | Confirmed | Summer |
| Yellow-breasted Chat | <i>Icteria virens</i> | S2B | Confirmed | Summer |
| Scarlet tanager | <i>Piranga olivacea</i> | S4B | Confirmed | Summer |
| Eastern Towhee | <i>Pipilo erythrophthalmus</i> | S4B | Confirmed | Summer |
| American Tree Sparrow | <i>Spizella arborea</i> | S4B | - | Year round |
| Chipping Sparrow | <i>Spizella passerina</i> | S5B | Confirmed | Summer |
| Field Sparrow | <i>Spizella pusilla</i> | S4B | Confirmed | Year round |
| Vesper Sparrow | <i>Poocetes gramineus</i> | S4B | Confirmed | Summer |
| Savannah Sparrow | <i>Passerculus sandwichensis</i> | S4B | Confirmed | Summer |
| Song Sparrow | <i>Melospiza melodia</i> | S5B | Confirmed | Year round |
| Swamp Sparrow | <i>Melospiza georgiana</i> | S5B | Confirmed | Year round |
| White-throated Sparrow | <i>Zonotrichia albicollis</i> | S5B | Probable | Winter |
| Dark-eyed Junco | <i>Junco hyemalis</i> | S5B | - | Winter |
| Lapland Longspur | <i>Calcarius lapponicus</i> | S3B | - | Winter |
| Snow Bunting | <i>Plectrophenax nivalis</i> | SNA | - | Winter |
| Northern Cardinal | <i>Cardinalis cardinalis</i> | S5 | Confirmed | Year round |
| Rose-breasted grosbeak | <i>Pheucticus ludovicianus</i> | S4B | Confirmed | Summer |
| Indigo Bunting | <i>Passerina cyanea</i> | S4B | Confirmed | Summer |
| Bobolink | <i>Dolichonyx oryzivorus</i> | S4B | Confirmed | Summer |
| Red-winged Blackbird | <i>Agelaius phoeniceus</i> | S5 | Confirmed | Year round |
| Eastern Meadowlark | <i>Sturnella magna</i> | S4B | Confirmed | Year round |
| Western Meadowlark | <i>Sturnella neglecta</i> | S3B | Possible | Summer |
| Yellow-headed blackbird | <i>Xanthocephalus xanthocephalus</i> | S2B | Possible | Summer |
| Rusty Blackbird | <i>Euphagus carolinus</i> | S4B | - | Winter |
| Brewer's Blackbird | <i>Euphagus cyanocephalus</i> | S4B | - | Summer |
| Common Grackle | <i>Quiscalus quiscula</i> | S5B | Confirmed | Year round |
| Brown-headed Cowbird | <i>Molothrus ater</i> | S4B | Confirmed | Year round |
| Orchard Oriole | <i>Icterus spurius</i> | S4B | Confirmed | Summer |

| Common Name | Scientific Name | Provincial Status ² | Recorded By OBBA | Season |
|------------------------|-----------------------------------|--------------------------------|------------------|------------|
| Baltimore Oriole | <i>Icterus galbula</i> | S4B | Confirmed | Summer |
| Pine Grosbeak | <i>Pinicola enucleator</i> | S4B | - | Winter |
| Purple Finch | <i>Carpodacus purpureus</i> | S4B | - | Winter |
| House Finch | <i>Carpodacus mexicanus</i> | SNA | Confirmed | Year round |
| Red Crossbill | <i>Loxia curvirostra</i> | S4B | - | Winter |
| White-winged Crossbill | <i>Loxia leucoptera</i> | S5B | - | Winter |
| Common Redpoll | <i>Carduelis flammea</i> | S4B | - | Winter |
| Hoary Redpoll | <i>Carduelis hornemanni</i> | SNA | - | Winter |
| Pine Siskin | <i>Carduelis pinus</i> | S4B | - | Winter |
| American Goldfinch | <i>Carduelis tristis</i> | S5B | Confirmed | Year round |
| Evening Grosbeak | <i>Coccothraustes vespertinus</i> | S4B | - | Winter |
| House Sparrow | <i>Passer domesticus</i> | SNA | Confirmed | Year round |

Source: Bezener 2000

²NHIC (2008) Provincial Ranks. S5 = secure; S4 = apparently secure; S3 = vulnerable; S2 = imperiled; S1 = critically imperiled; SNA = not a suitable target for conservation activities.

According to NHIC (2009), the Acadian Flycatcher (*Empidonax virescens*), a federally and provincially endangered species (END, S2B), has been 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 (*Asio flammeus*), 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 saviarum*), Western Meadowlark (*Sturnella neglecta*), and Least Flycatcher (*Empidonax minimus*). A summary of the Species at Risk (SAR) found within the study areas is presented in **Section 2.1.12**.

Herpetofauna

Grouped together, amphibians and reptiles are called herpetiles. According to Fisher, Joynt and Brooks (2007), there are a total of 36 herpetile species that are recorded within Essex County. This 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 Kingsville study area. These include five amphibians; American Toad (*Bufo americanus*), Spring Peeper, (*Pseudacris crucifer crucifer*), Western Chorus Frog (*Pseudacris triseriata*), Northern Leopard Frog (*Rana pipiens*) and the Green Frog (*Rana clamitans melanota*). Four reptiles were recorded, including the Snapping Turtle (*Chelydra serpentina*), Midland Painted Turtle (*Chrysemys picta*), Eastern Gartersnake (*Thamnophis sirtalis sirtalis*) and a sensitive endangered reptile species.

In the Leamington study area, there are two species of salamander which were recorded within or close to the study area. These are the Northern Red-backed Salamander (*Plethodon cinereus*), and Spotted Salamander (*Ambystoma maculatum*). The following species were also recorded: two frog species, the Spring Peeper (*Pseudacris crucifer crucifer*) and the Bull Frog (*Rana catesbeiana*), Brownsnake (*Storeria dekayi*) and a sensitive endangered reptile species.

One turtle species, Blanding's Turtle, (*Emydoidea blandingii*), was recorded within or near to the Lauzon study area.

Finally, the following species were recorded within or close to both the Leamington and Lauzon study areas: the American Toad (*Bufo americanus*), the Northern Leopard Frog (*Rana pipiens*), the Green Frog (*Rana clamitans melanota*), the Western Chorus Frog (*Pseudacris triseriata*), the Snapping Turtle (*Chelydra serpentina*), Painted Turtle (*Chrysemys picta*), the Eastern Gartersnake (*Thamnophis sirtalis sirtalis*), and an endangered reptile species. Overall, 14 species of amphibians and reptiles were recorded within or close to at least one of the study areas. **Table**

2-6 lists the amphibian and reptile species that may be found within Essex County, and indicates which species may be found within the study areas.

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. A summary of the Species at Risk (SAR) found within the study areas is presented in **Section 2.1.12**.

Table 2-6 Amphibian and Reptile Species Recorded Within Essex County¹

| Common Name | Scientific Name | NHIC Status ² | Study Area | | |
|-------------------------------|-------------------------------------|--------------------------|------------|--------|------------|
| | | | Kingsville | Lauzon | Leamington |
| Snapping Turtle | <i>Chelydra serpentina</i> | S3 | √ | √ | √ |
| Stinkpot | <i>Sternotherus odoratus</i> | S3 | | | |
| Spiny Softshell | <i>Apalone spinifera</i> | S3 | | | |
| Painted Turtle | <i>Chrysemys picta</i> | S5 | √ | √ | √ |
| Spotted Turtle | <i>Clemmys guttata</i> | S3 | | | |
| Blanding's Turtle | <i>Emydoidea blandingii</i> | S3 | | √ | |
| Northern Map Turtle | <i>Graptemys geographica</i> | S3 | | | |
| Five-lined Skink | <i>Eumeces fasciatus</i> | S3 | | | |
| Ring-necked Snake | <i>Diadophis punctatus</i> | S4 | | | |
| Eastern Hog-nosed Snake | <i>Heterodon platirhinos</i> | S3 | | | |
| Milksnake | <i>Lampropeltis triangulum</i> | S3 | | | |
| Northern Watersnake | <i>Nerodia sipedon</i> | S5 | | | |
| Smooth Greensnake | <i>Ophedrys vernalis</i> | S4 | | | |
| Queen Snake | <i>Regina septemvittata</i> | S2 | | | |
| Brownsnake | <i>Storeria dekayi</i> | S5 | | | √ |
| Red-bellied Snake | <i>Storeria occipitomaculata</i> | S5 | | | |
| Butler's Gartersnake | <i>Thamnophis butleri</i> | S2 | | | |
| Eastern Ribbonsnake | <i>Thamnophis sauritus</i> | S3 | | | |
| Eastern Gartersnake | <i>Thamnophis sirtalis sirtalis</i> | S5 | √ | √ | √ |
| Massasauga | <i>Sistrurus catenatus</i> | S3 | | | |
| Eastern Newt | <i>Notophthalmus viridescens</i> | S5 | | | |
| Mudpuppy | <i>Necturus maculosus</i> | S4 | | | |
| Blue-spotted Salamander | <i>Ambystoma laterale</i> | S4 | | | |
| Spotted Salamander | <i>Ambystoma maculatum</i> | S4 | | | √ |
| Eastern Red-backed Salamander | <i>Plethodon cinereus</i> | S5 | | | √ |
| American Toad | <i>Bufo americanus</i> | S5 | √ | √ | √ |
| American Bullfrog | <i>Rana catesbeiana</i> | S4 | | | √ |
| Green Frog | <i>Rana clamitans</i> | S5 | √ | √ | √ |

| Common Name | Scientific Name | NHIC Status ² | Study Area | | |
|-----------------------|------------------------------|--------------------------|------------|--------|------------|
| | | | Kingsville | Lauzon | Leamington |
| Pickereel Frog | <i>Rana palustris</i> | S4 | | | |
| Northern Leopard Frog | <i>Rana pipiens</i> | S5 | √ | √ | √ |
| Wood Frog | <i>Rana sylvatica</i> | S5 | | | |
| Gray Treefrog | <i>Hyla versicolor</i> | S5 | | | |
| Spring Peeper | <i>Pseudacris crucifer</i> | S5 | √ | | √ |
| Western Chorus Frog | <i>Pseudacris triseriata</i> | S4 | √ | √ | √ |

¹Source: Fisher, Joynnt and Brooks 2007

²NHIC (2008) Provincial Ranks: S5 = secure; S4 = apparently secure; S3 = vulnerable; S2 = imperiled.

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). A summary of the Species at Risk (SAR) found within the study areas is presented in **Section 2.1.12**.

2.1.11 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. **Table 2-7** lists the fish species that may be present within or near the study areas.

ERCA (2009) identifies 16 fish species in Essex County that are at risk. Like many plant species, these fish species are considered rare in Ontario because Essex County is the northern limit of their range. One primary core area (region affected) of Essex County overlaps the study areas in Kingsville, Leamington and Lauzon. This is the Lake St. Clair South Shore core area. The Detroit River core area also overlaps the Lauzon study area. In these regions there are 12 fish SAR, including 10 additional species that were not included by Mandrak and Crossman. According to NHIC (2009), there have been no fish species of concern recorded within the study areas. However, the range of these 12 species overlaps the study areas; therefore, it is possible that one of these species could potentially be found within the study areas in the future.

Table 2-8c in Section 2.1.12 includes a list of the 12 fish SAR for Lake St. Clair South Shore and Detroit River primary core areas.

Table 2-7 Fish Species Likely Present Within or Near the Study Areas¹

| Common Name | Scientific Name | Provincial Status² |
|------------------------|--------------------------------|--------------------------------------|
| Alewife | <i>Alosa pseudoharengus</i> | S5 |
| American Brook lamprey | <i>Lampetra appendix</i> | S3 |
| Blackside darter | <i>Percina maculata</i> | S4 |
| Black bullhead | <i>Ameiurus melas</i> | S4 |
| Black crappie | <i>Pomoxis nigromaculatus</i> | S4 |
| Bluntnose minnow | <i>Pimephales notatus</i> | S5 |
| Brook stickleback | <i>Culaea inconstans</i> | S5 |
| Brown bullhead | <i>Ameiurus nebulosus</i> | S5 |
| Central Mudminnow | <i>Umbra limi</i> | S5 |
| Channel Catfish | <i>Ictalurus punctatus</i> | S4 |
| Common carp | <i>Cyprinus carpio</i> | SNA |
| Common Shiner | <i>Luxilus cornutus</i> | S5 |
| Creek chub | <i>Semotilus atromaculatus</i> | S5 |
| Emerald Shiner | <i>Notropis atherinoides</i> | S5 |
| Fathead minnow | <i>P. promelas</i> | S5 |
| Freshwater drum | <i>Aplodinotus grunniens</i> | S5 |
| Gizzard shad | <i>Dorosoma cepedianum</i> | S4 |
| Goldfish | <i>Carassius auratus</i> | SNA |
| Green sunfish | <i>Lepomis cyanellus</i> | S4 |
| Hornyhead chub | <i>Nocomis biguttatus</i> | S4 |
| Johnny darter | <i>Etheostoma nigrum</i> | S5 |
| Longnose Gar | <i>Lepisosteus osseus</i> | S4 |
| Longnose sucker | <i>Catostomus catostomus</i> | S5 |
| Mooneye | <i>Hiodon tergisus</i> | S4 |
| Northern pike | <i>Esox lucius</i> | S5 |
| Orangespotted sunfish | <i>Lepomis humilis</i> | SNA |
| Pumpkinseed | <i>Lepomis gibbosus</i> | S5 |
| Quillback | <i>Carpionodes cyprinus</i> | S4 |
| Redfin Shiner | <i>Lythrurus umbratilis</i> | S4 |
| Silver Chub | <i>Macrhybopsis storeriana</i> | S2 |
| Spotfin Shiner | <i>Cyprinella spiloptera</i> | S4 |
| Spottail shiner | <i>Notropis hudsonius</i> | S5 |
| Striped Shiner | <i>Luxilus chrysocephalus</i> | S4 |
| Tadpole madtom | <i>Noturus gyrinus</i> | S4 |
| Trout-perch | <i>Percopsis omiscomaycus</i> | S5 |
| Walleye | <i>Sander vitreus</i> | S5 |
| White bass | <i>Morone chrysops</i> | S4 |
| White crappie | <i>Pomoxis annularis</i> | S4 |
| White perch | <i>Morone americana</i> | SNA |

| Common Name | Scientific Name | Provincial Status ² |
|-----------------|-------------------------------|--------------------------------|
| White sucker | <i>Catostomus commersonii</i> | S5 |
| Yellow Bullhead | <i>Ameiurus natalis</i> | S4 |
| Yellow perch | <i>Perca flavescens</i> | S5 |

¹Source: Mandrak & Crossman 1992

²NHIC (2008) Provincial Ranks: S5 = secure; S4 = apparently secure; S3 = vulnerable; S2 = imperiled; SNA = not a suitable target for conservation activities.

2.1.12 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 2-8a, 2-8b and 2-8c list the SAR recorded in the study areas within the last 25 years.

Table 2-8a 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 | <i>Juglans cinerea</i> | Butternut | S3? | END | END | 1985 |
| 63841 | Moraceae | <i>Morus rubra</i> | Red Mulberry | S2 | END | END | 1986 |
| 2290 | Lythraceae | <i>Ammannia robusta</i> | Scarlet Ammannia | S1 | END | END | 1997 |
| 67073 | Rosaceae | <i>Rosa setigera</i> | 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** = vulnerably; **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 2-8b 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 | <i>Castanea dentata</i> | American Chestnut | S2 | END | END | 1986 |
| 2155 | Fagaceae | <i>Quercus shumardii</i> | Shumard Oak | S3 | SC | SC | 1983 |
| 66663 | Cornaceae | <i>Cornus florida</i> | Eastern Flowering Dogwood | S2? | END | END | 1994 |
| 17053 | Rosaceae | <i>Rosa setigera</i> | Climbing Prairie Rose | S3 | SC | SC | 2000-2001 |
| 3554 | Smilacaceae | <i>Smilax rotundifolia</i> | Round-leaved Greenbrier | S2 | THR | THR | 1990 |
| 17246 | Thelypteridaceae | <i>Phegopteris hexagonoptera</i> | Broad Beech Fern | S3 | SC | SC | 1977 |
| 435 | Tyrannidae | <i>Empidonax virescens</i> | Acadian Flycatcher | S2B | END | END | 1994 |
| N/A* | | <i>Emydoidea blandingii</i> | Blanding's Turtle | S3 | THR | THR | Post-1983 |
| 13135 | Talpidae | <i>Scalopus aquaticus</i> | 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 Herpetofaunal Atlas (NHIC, 2009)

Table 2-8c 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 | <i>Notropis anogenus</i> | Pugnose Shiner | S2 | END | END | N,V | Lake St. Clair, Detroit River, 5 others |
| Cyprinidae | <i>Macrhybopsis storeriana</i> | Silver Chub | S2 | SC | SC | N,V | Lake St. Clair, 3 others |
| Cyprinidae | <i>Opsopoeodus emiliae</i> | Pugnose Minnow | S2 | SC | SC | N,V | Detroit River, 3 others |
| Ictaluridae | <i>Noturus stigmatosus</i> | Northern Madtom | S1 | END | END | I(5,F) | Lake St. Clair, Detroit River, 1 other |
| Acipenseridae | <i>Acipenser fulvescens</i> | Lake Sturgeon | S3 | SC | END, THR | N | Lake St. Clair, Detroit River, 4 others |
| Percidae | <i>Ammocrypta pellucida</i> | Eastern Sand Darter | S2 | THR | THR | N | Lake St. Clair, 3 others |
| Percidae | <i>Percina copelandi</i> | Channel Darter | S2 | THR | THR | N | Lake St. Clair, Detroit River, 2 others |
| Lepisosteidae | <i>Lepisosteus oculatus</i> | Spotted Gar | S1 | THR | THR | N,V | Lake St. Clair, 4 others |
| Catostomidae | <i>Minytrema melanops</i> | Spotted Sucker | S2 | SC | SC | N,V | Lake St. Clair, Detroit River, 1 other |
| Catostomidae | <i>Ictiobus cyprinellus</i> | Bigmouth Buffalo | SU | SC | NAR | I(5,F),V | Lake St. Clair, Detroit River, 5 others |
| Esocidae | <i>Esox americanus vermiculatus</i> | Grass Pickerel | - | SC | SC | N | Lake St. Clair, 3 others |
| Centrarchidae | <i>Leopomis humilis</i> | Orangespotted Sunfish | SNA | SC | - | I(5,F),V | Lake St. Clair, Detroit River, 1 other |

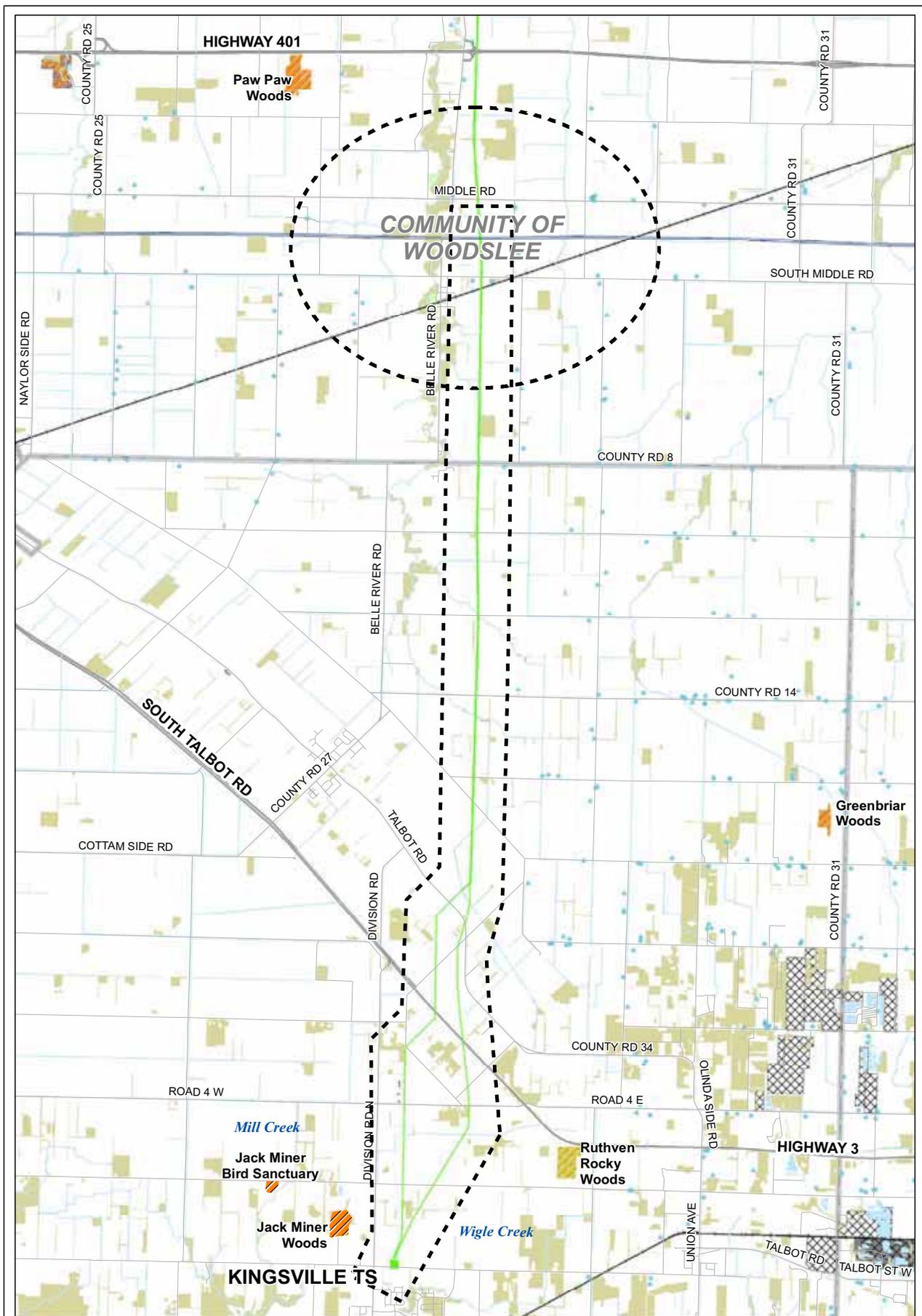
a, Scientific and common names according to NHIC (2008).

b, Provincial ranks used by NHIC (2008): **S1** = critically imperiled; **S2** = imperiled; **S3** = vulnerable; **S4** = apparently imperiled; **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).



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| | | | |
|-----------------------------|--------------------|-------------------|------------|
| Transmission Lines | Municipal Boundary | Wetland | Parks |
| 230 kV | Study Areas | Conservation Area | Watersheds |
| 115 kV | Water | Wooded Area | Mine Sites |
| Transformer Stations | Drainage Lines | ANSI | Waterwells |
| 230 kV | Rail | ESA | |
| 115 kV | Highway | Pit or Quarry | |

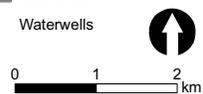


Figure 2-2: Natural Environment Features: Kingsville Study Area

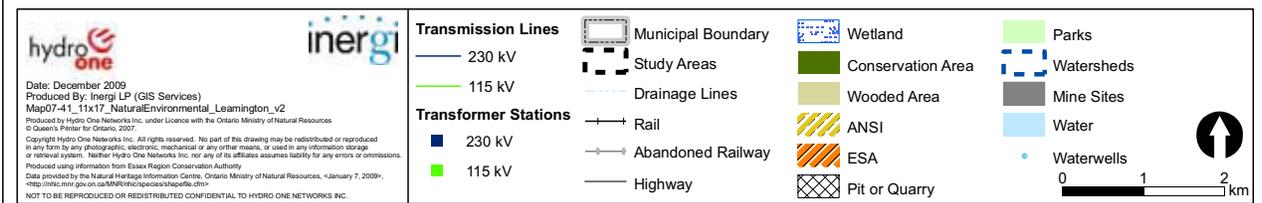
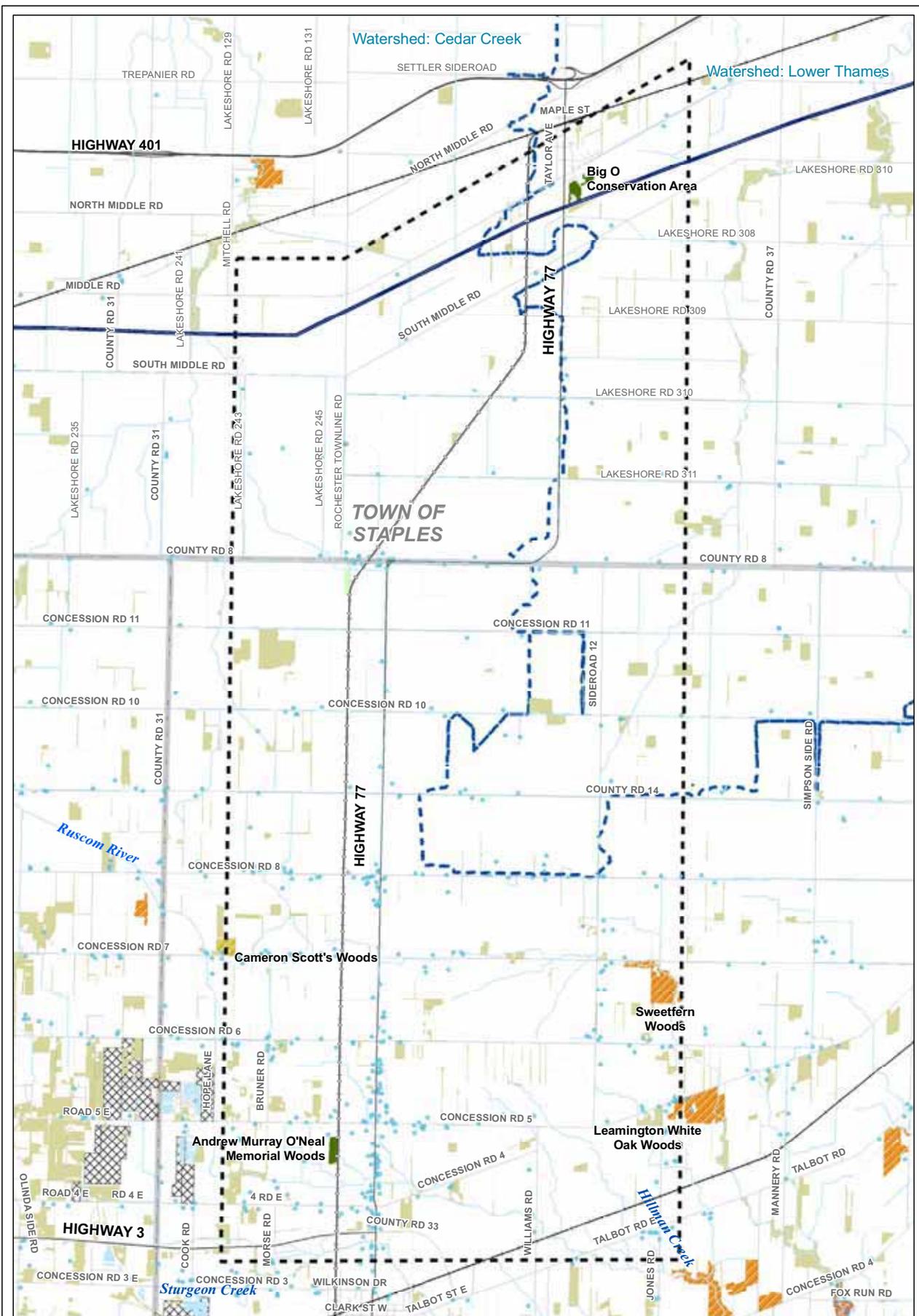
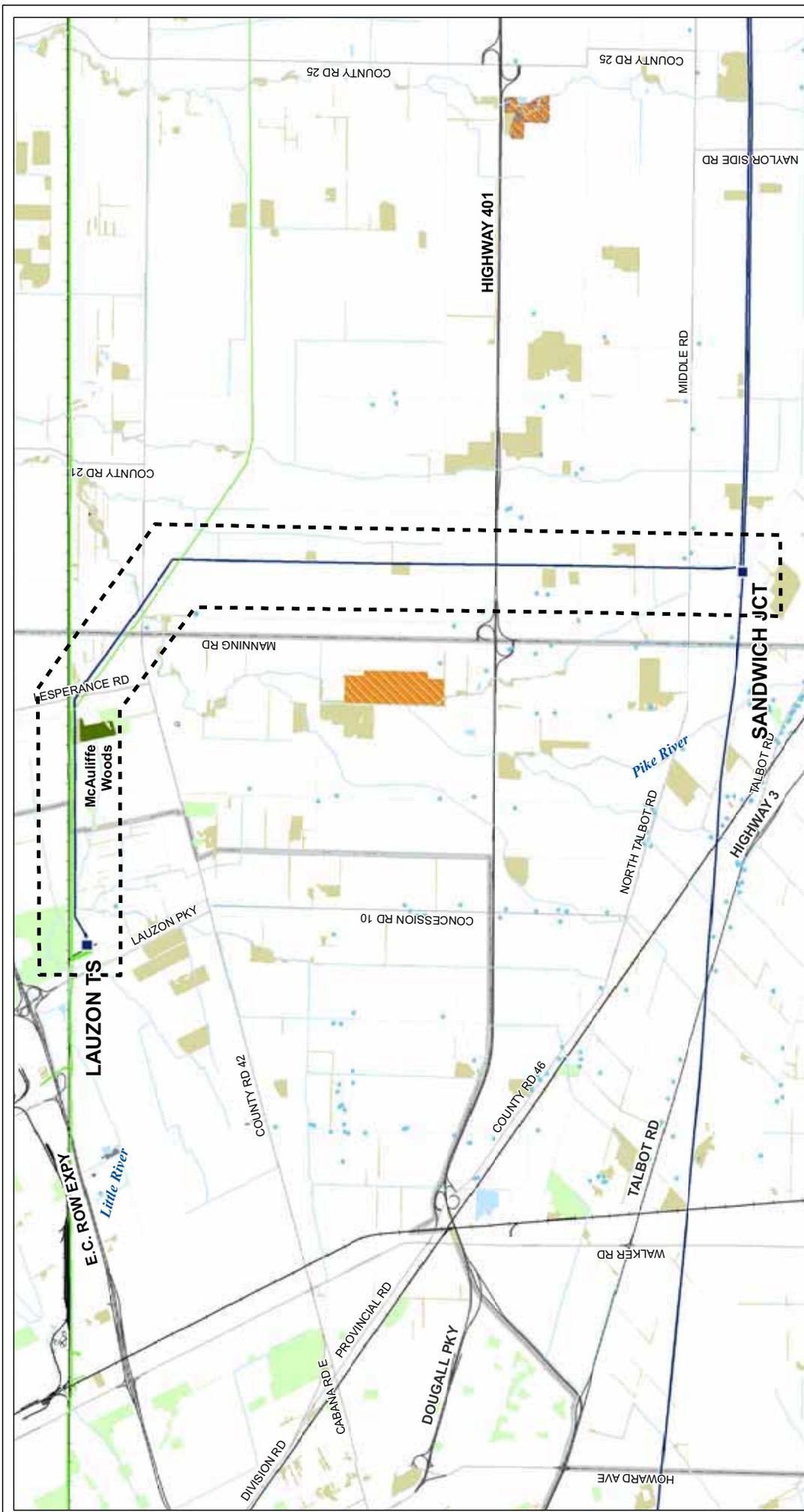


Figure 2-3: Natural Environment Features: Leamington Study Area



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 Report # 4 - TRV 2 - Natural Environment - Lauzon, NIIC, NARes, 42
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Transmission Lines

- 230 kV
- 115 kV

Transformer Stations

- 230 kV
- 115 kV

Municipal Boundary

- Study Areas
- Water
- Drainage Lines
- Rail
- Highway

Wetland

- Conservation Area
- Wooded Area

Parks

- Watersheds
- Mine Sites
- Waterwells

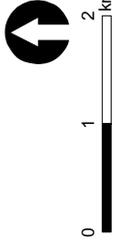
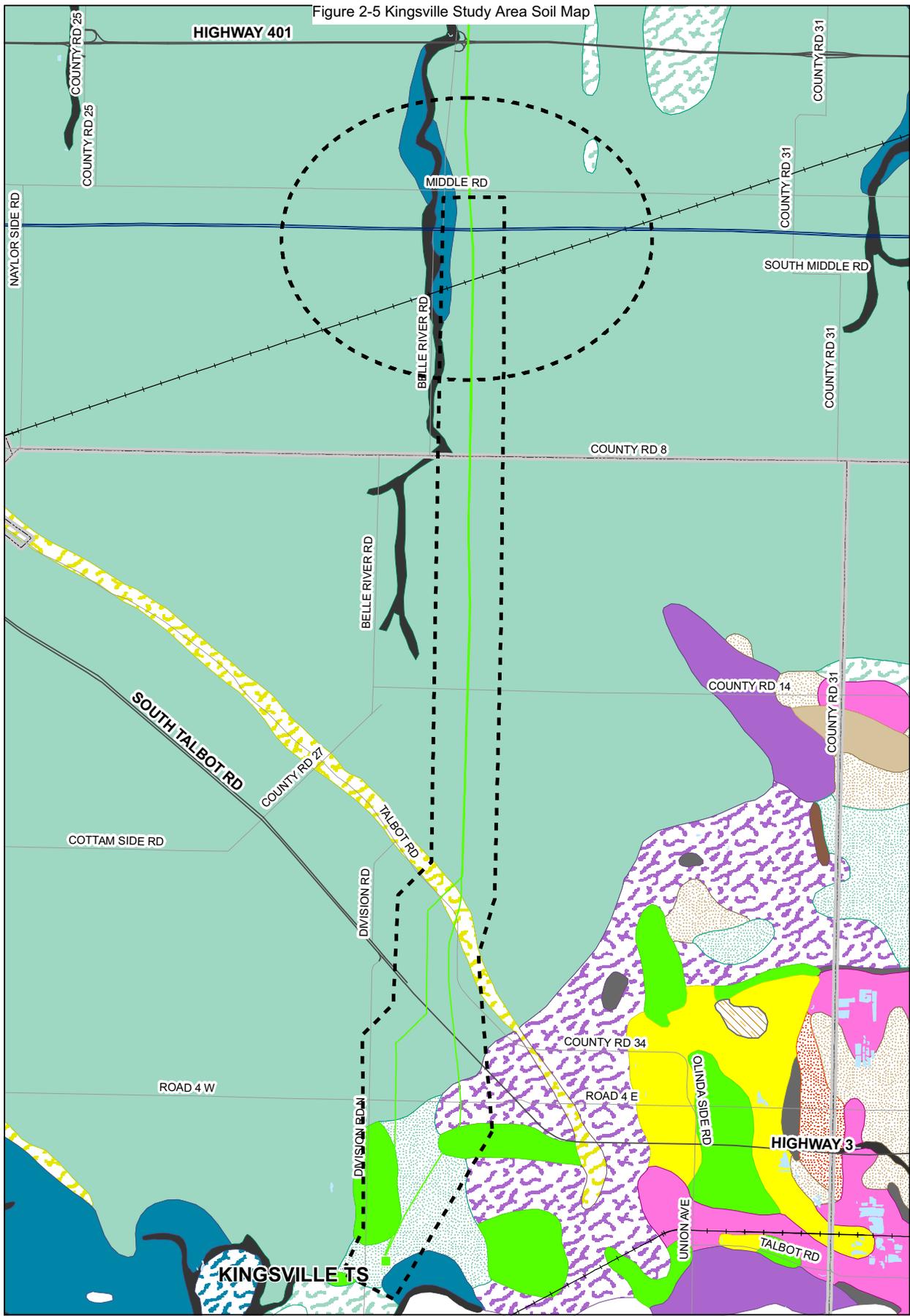


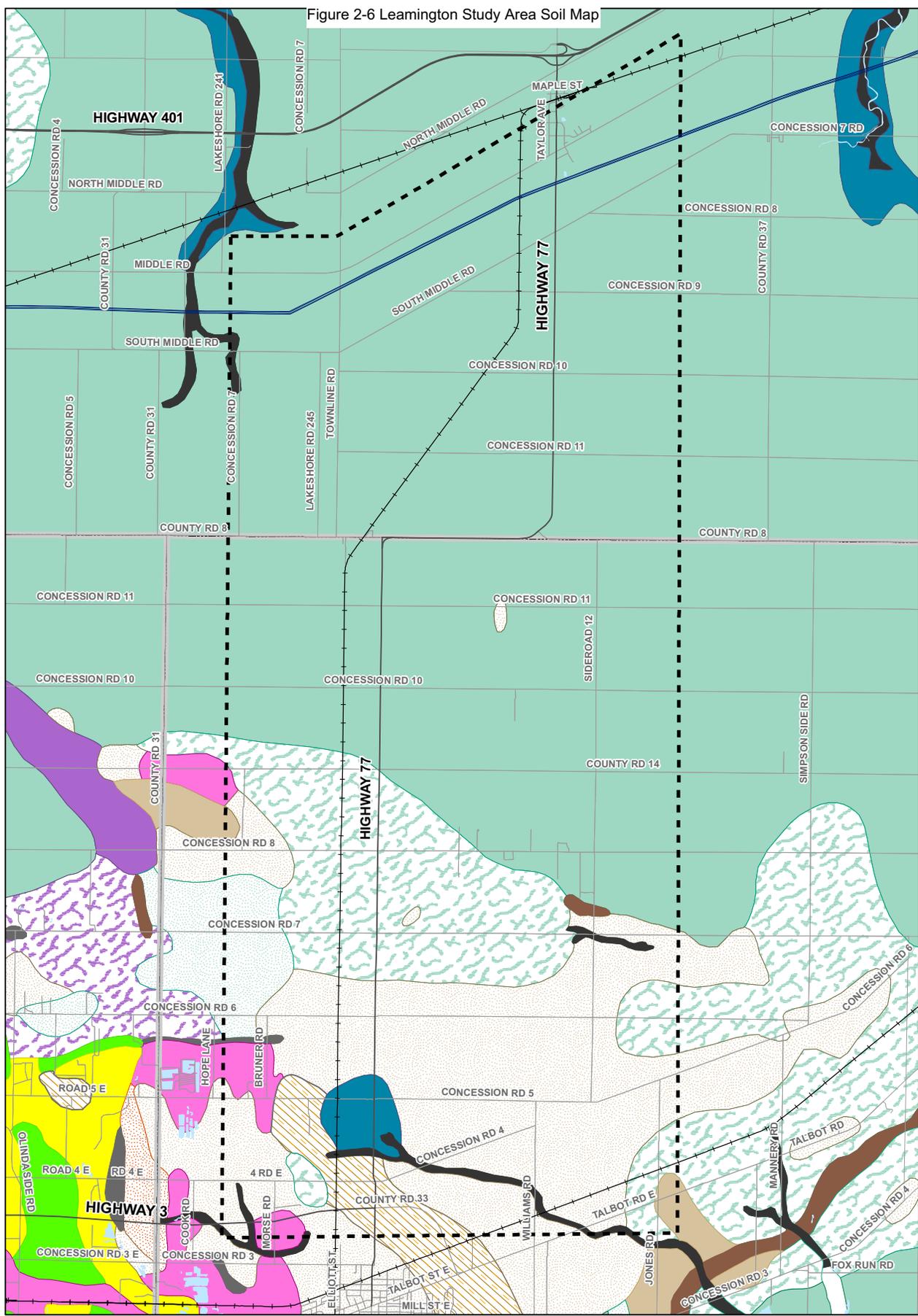
Figure 2-4: Natural Environment Features: Lauzon Study Area

Figure 2-5 Kingsville Study Area Soil Map



| | | | | | |
|---|--|--|--|--|---------------------------|
| Date: August 2009 Produced By: Inergi LP (GIS Services) Map07-41_11x17_Soil_Kingsville <small>Copyright Hydro One Networks Inc. All rights reserved. No part of this drawing may be redistributed or reproduced in any form by any photographic, electronic, mechanical or any other means, or used in any information storage or retrieval systems. Neither Hydro One Networks Inc. nor any of its affiliates assumes liability for any errors or omissions.</small> <small>Produced by Hydro One under agreement with the Ontario Ministry of Agriculture, Food and Rural Affairs © Queen's Printer for Ontario, 2006</small> NOT TO BE REPRODUCED OR REDISTRIBUTED CONFIDENTIAL TO HYDRO ONE NETWORKS INC. | Transmission Lines — 230 kV — 115 kV Transformer Stations ■ 230 kV ■ 115 kV | [Dashed Circle] Study Areas [Dashed Rectangle] Study Areas [Dotted Line] Municipal Boundary [Blue Area] Water [Cross-hatch] Rail [Thick Line] Highway [Brown Area] Plainfield Sand [Grey Area] Muck [Black Area] Bottom Land | [Brown Area] BERRIEN SAND [Dotted Area] BERRIEN SANDY LOAM [Light Green Area] BROOKSTON CLAY [Light Blue Area] BROOKSTON CLAY LOAM [Light Green Area] BROOKSTON CLAY SAND-SPOT [Yellow Area] BURFORD LOAM [Yellow Area] BURFORD LOAM-SHALLOW [Blue Area] CAISTOR CLAY | [Blue Area] CAISTOR SAND - SPOT [Dotted Area] COLWOOD FINE SANDY LOAM [Pink Area] FOX SANDY LOAM [Light Green Area] HARROW LOAM [Light Green Area] PARKHILL LOAM RED SAND-SPOT [Purple Area] PARKHILL LOAM [Dotted Area] TUSCOLA FINE SANDY LOAM | [North Arrow] 0 1 2 km |
|---|--|--|--|--|---------------------------|

Figure 2-6 Leamington Study Area Soil Map



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 Map07-41_11x17_Soil_Leamington

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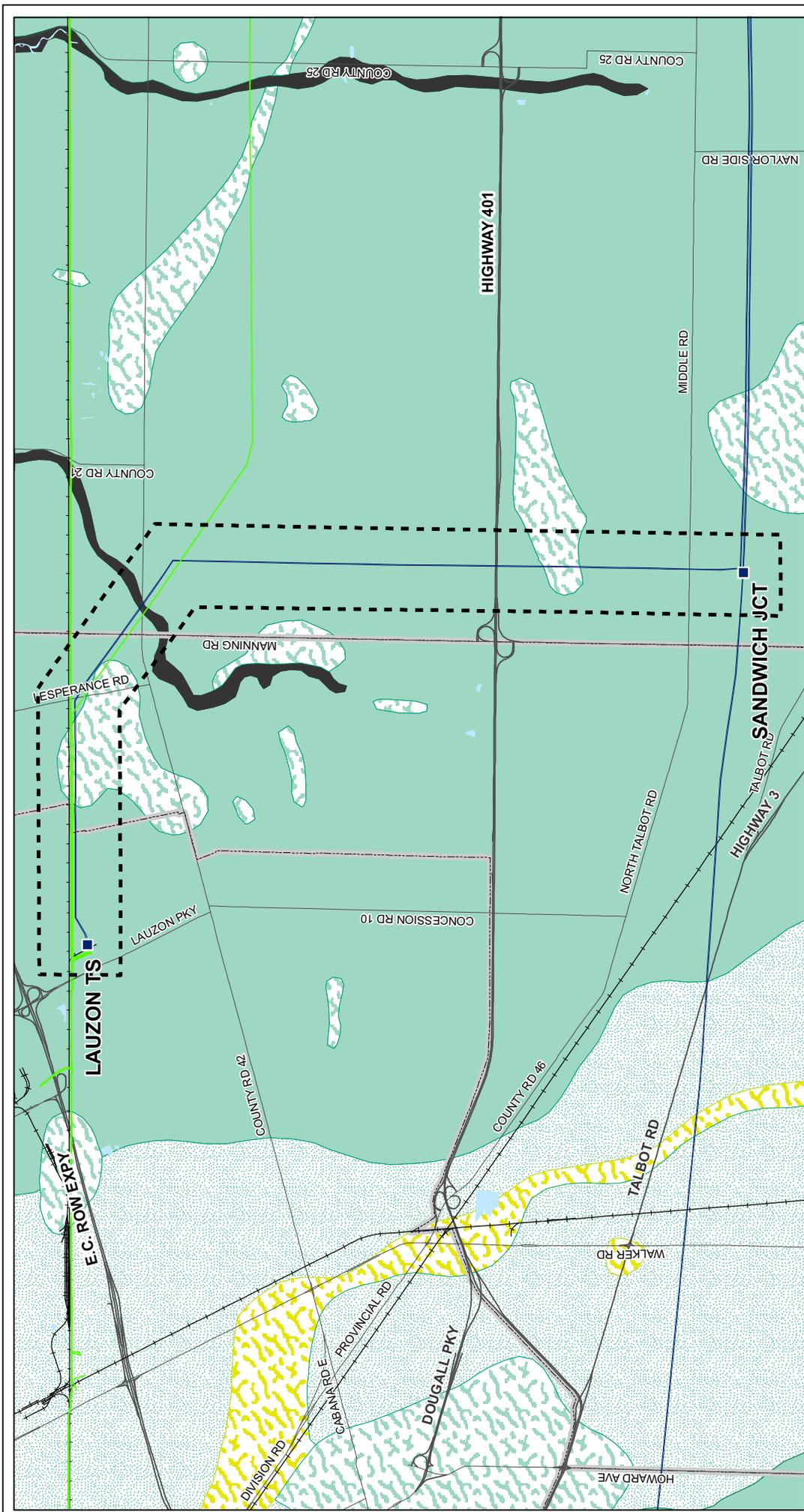
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- Transmission Lines**
- 230 kV
 - 115 kV
- Transformer Stations**
- 230 kV
 - 115 kV
- Other Features**
- Municipal Boundary
 - Study Areas
 - Water
 - Rail
 - Highway

- BERRIEN SAND
- BERRIEN SANDY LOAM
- BROOKSTON CLAY
- BROOKSTON CLAY LOAM
- BROOKSTON CLAY SAND-SPOT
- BURFORD LOAM
- CAISTOR CLAY
- COLWOOD FINE SANDY LOAM
- FOX SANDY LOAM
- HARROW LOAM
- PARKHILL LOAM
- PARKHILL LOAM RED SAND-SPOT
- TUSCOLA FINE SANDY LOAM
- PLAINFIELD SAND
- BOTTOM LAND
- MUCK





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Figure 2-7 Lauzon Study Area Soil Map

Transmission Lines

- 230 kV
- 115 kV

Transformer Stations

- 230 kV
- 115 kV

Municipal Boundary

- ▭ Study Areas
- ▭ Water
- Rail
- Highway

Soil Types

- BROOKSTON CLAY
- BROOKSTON CLAY LOAM
- BROOKSTON CLAY SAND - SPOT PHASE
- BURFORD LOAM - SHALLOW PHASE
- BOTTOM LAND

0 1 2 km

2.2 SOCIO-ECONOMIC SETTING

A detailed description of the population, existing land uses, future development plans and other socio-economic characteristics of Essex County are described below and illustrated in the corresponding Official Plan land use maps (**Figures 2-11 to 2-17**).

2.2.1 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 (km²) 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).

2.2.2 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).

2.2.3 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. See **Figures 2-8, 2-9 and 2-10** for CLI agricultural land classifications.

2.2.4 First Nations Communities

No Reserve 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.

2.2.5 Cultural Environment

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.” As illustrated in **Figure 2-11**, 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 also further than 100 m from the existing 230 kV transmission line.

Archaeological and Heritage Features

A Stage 1 Heritage/Archaeological Assessment was conducted by Timmins Martelle Heritage Consultants Inc. in 2008 for each of the 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 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. The letters of acceptance for these reports can be found in **Appendix D** of the Supply to Essex County Environmental Study Report.

2.2.6 Existing Land Use

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 (see Section 2.1.8).

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 (see Section 2.1.8). 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.

Figures 2-11 and 2-12 present the Official Plan land use maps for the Town of Kingsville’s Gosfield North and Gosfield South areas, respectively.

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 (see Section 2.1.8).

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 (See Section 2.1.9).

The Leamington utility corridor (i.e. abandoned CN railway) is designated as “Open Space and Recreation” according to 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).

Figure 2-13 presents the Official Plan land use map for the Municipality of Leamington.

Figures 2-14 and 2-15 present the Official Plan land use maps for Town of Lakeshore’s rural areas and Comber community, respectively.

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” (see Section 2.1.9). 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”.

Figures 2-16 and 2-17 present the Official Plan Land use maps for the Town of Tecumseh and the City of Windsor, respectively.

2.2.7 Future Development Plans

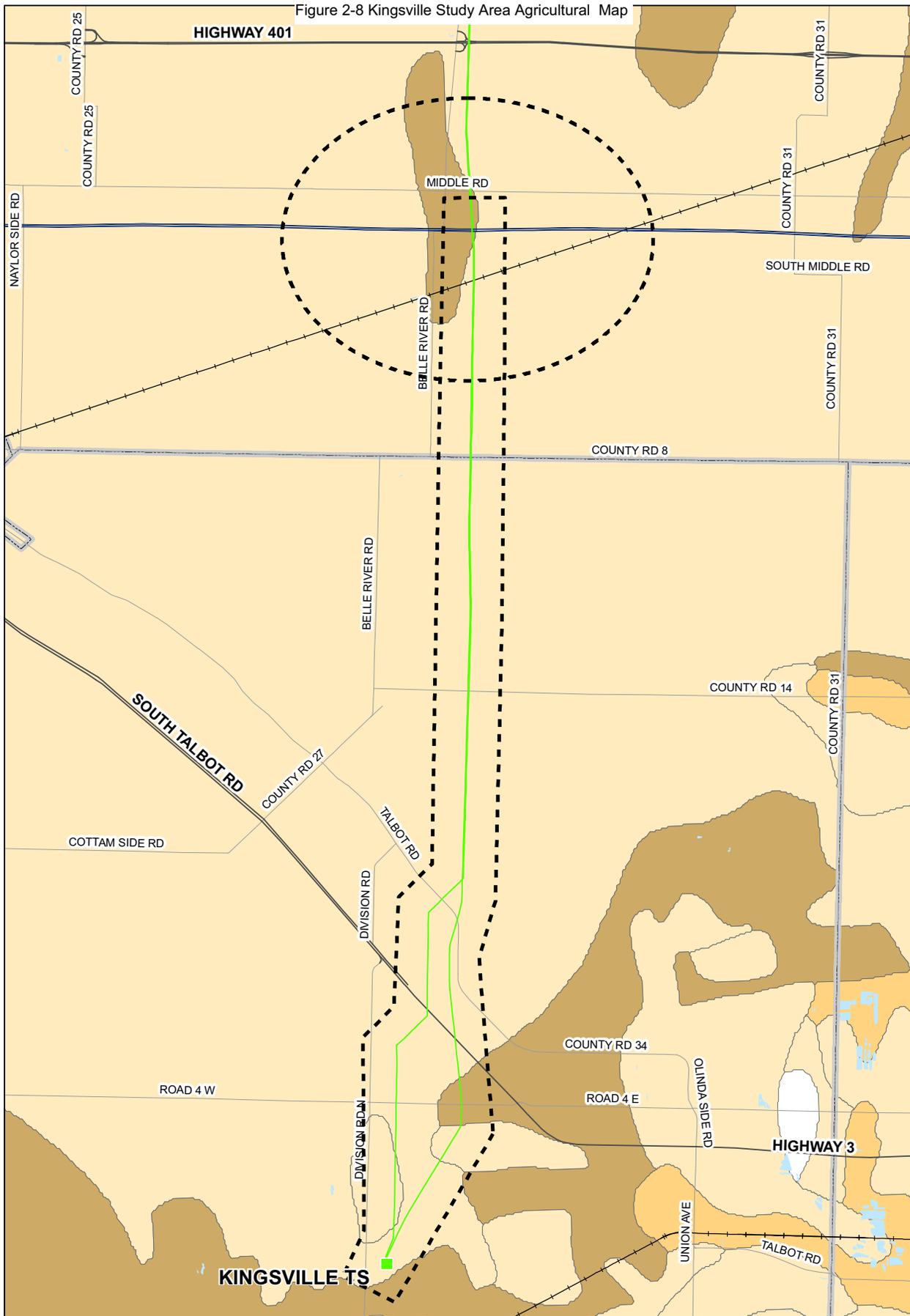
Within the Kingsville study area, Brookfield Renewable Power Inc. (Brookfield Power) has received approval to construct the Gosfield substation and wind turbines in the vicinity of the Belle River Jct. x Kingsville TS transmission line in the Town of Kingsville. There are also wind turbines planned for the Comber Wind Project in the Town of Lakeshore and Municipality of Leamington which affect 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 2007 in the vicinity of Mersea Road 7 and the Leamington utility corridor.

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.

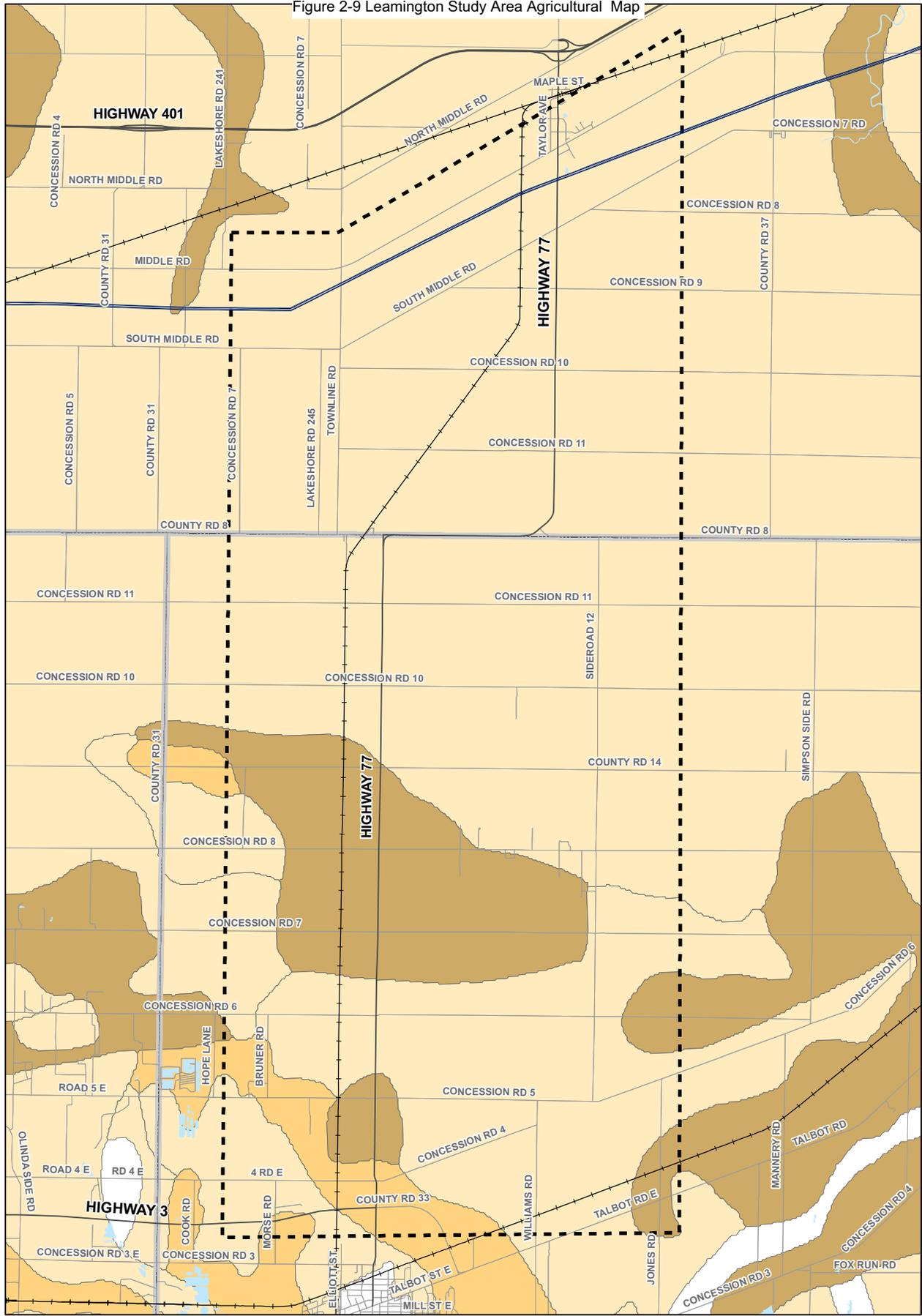
Since the proposed works within the Lauzon study area are contained within an existing transmission line ROW, future development for this area is under the jurisdiction of Hydro One as well as the Town (Tecumseh, 2008). The Town of Tecumseh, in the Tecumseh Official Plan (2008) have proposed the construction 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.

Figure 2-8 Kingsville Study Area Agricultural Map



| | | | | | |
|---|---|---|---|--|--------------|
| Date: August 2009 Produced By: Inergi LP (GIS Services) Map07-41_11x17_Agriculture_Kingsville <small>Copyright Hydro One Networks Inc. All rights reserved. No part of this drawing may be redistributed or reproduced in any form by any photographic, electronic, mechanical or any other means, or used in any information storage or retrieval system. Neither Hydro One Networks Inc. nor any of its affiliates assumes liability for any errors or omissions.</small> <small>Produced by Hydro One under agreement with the Ontario Ministry of Agriculture, Food and Rural Affairs © Queen's Printer for Ontario, 2006</small> NOT TO BE REPRODUCED OR REDISTRIBUTED CONFIDENTIAL TO HYDRO ONE NETWORKS INC. | Transmission Lines — 230 kV — 115 kV | Transformer Stations ■ 230 kV ■ 115 kV | Study Areas [Dashed Box] Study Areas [Grey Box] Municipal Boundary [Blue Box] Water [Crossed Box] Rail [Thick Line] Highway | Agriculture [Light Orange] Class 1-No Significant Limitations [Medium Orange] Class 2-Moderate Limitations, Moderate Conservation Practices [Dark Orange] Class 3-Moderately Severe Limitations, Range of Crops Restricted | 0 1 2 km |
|---|---|---|---|--|--------------|

Figure 2-9 Leamington Study Area Agricultural Map



Date: August 2009
 Produced By: Inergi LP (GIS Services)
 Map07-41_11x17_Agriculture_Leamington

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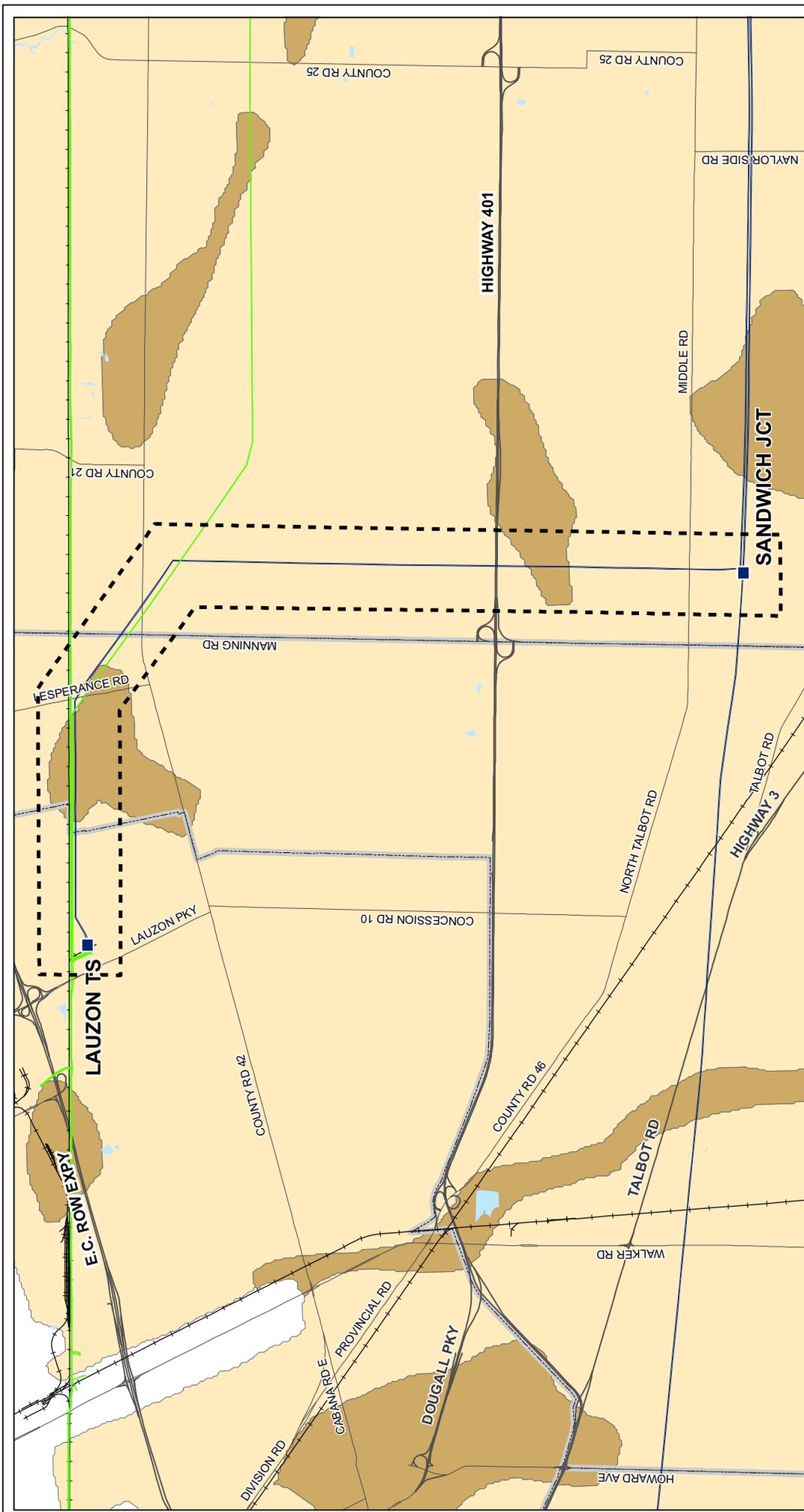
Produced by Hydro One under agreement with the Ontario Ministry of Agriculture, Food and Rural Affairs © Queen's Printer for Ontario, 2008
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- Transmission Lines**
- 230 kV
 - 115 kV
- Transformer Stations**
- 230 kV
 - 115 kV

- Municipal Boundary
- Study Areas
- Water
- Rail
- Highway

- Agriculture**
- Class 1-No Significant Limitations
 - Class 2-Moderate Limitations, Moderate Conservation Practices
 - Class 3-Moderately Severe Limitations, Range of Crops Restricted







Date: August 2009
 Produced By: Inergi LP (GIS Services)
 Report # 1, TR17, Agriculture, Lauzon

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hydro one

inergi

Transmission Lines

- 230 kV
- 115 kV

Transformer Stations

- 230 kV
- 115 kV

Municipal Boundary

- Study Areas
- Water
- Rail
- Highway

Agriculture

- Class 1-No Significant Limitations
- Class 2-Moderate Limitations, Moderate Conservation Practices
- Class 3-Moderately Severe Limitations, Range of Crops Restricted

Figure 2-10 Lauzon Study Area
Agricultural Map




Figure 2-11 Town of Kingsville Official Plan Land Use Map - Gosfield North

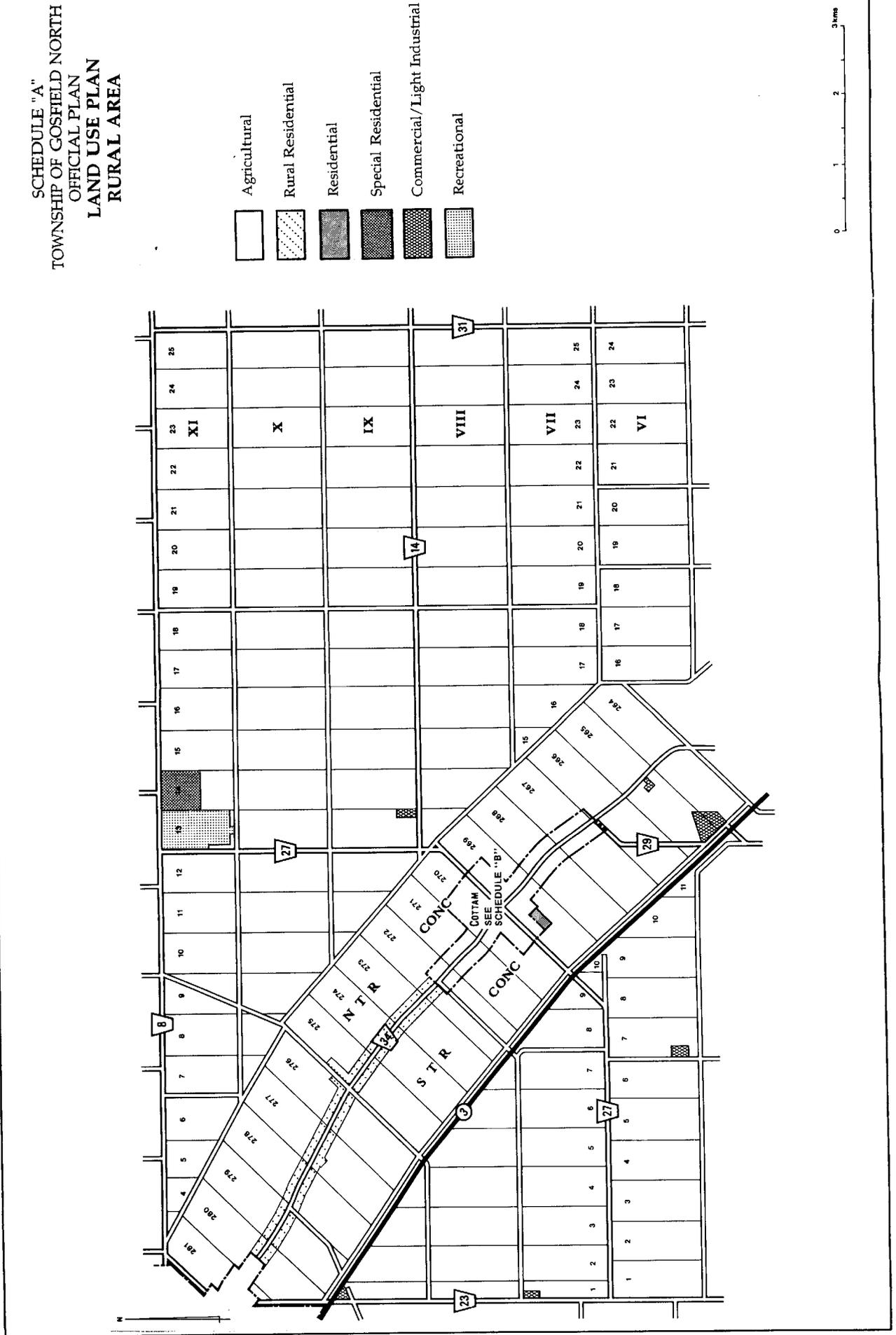
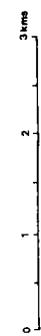



Figure 2-12 Town of Kingsville Official Plan Land Use Map - Gosfield South

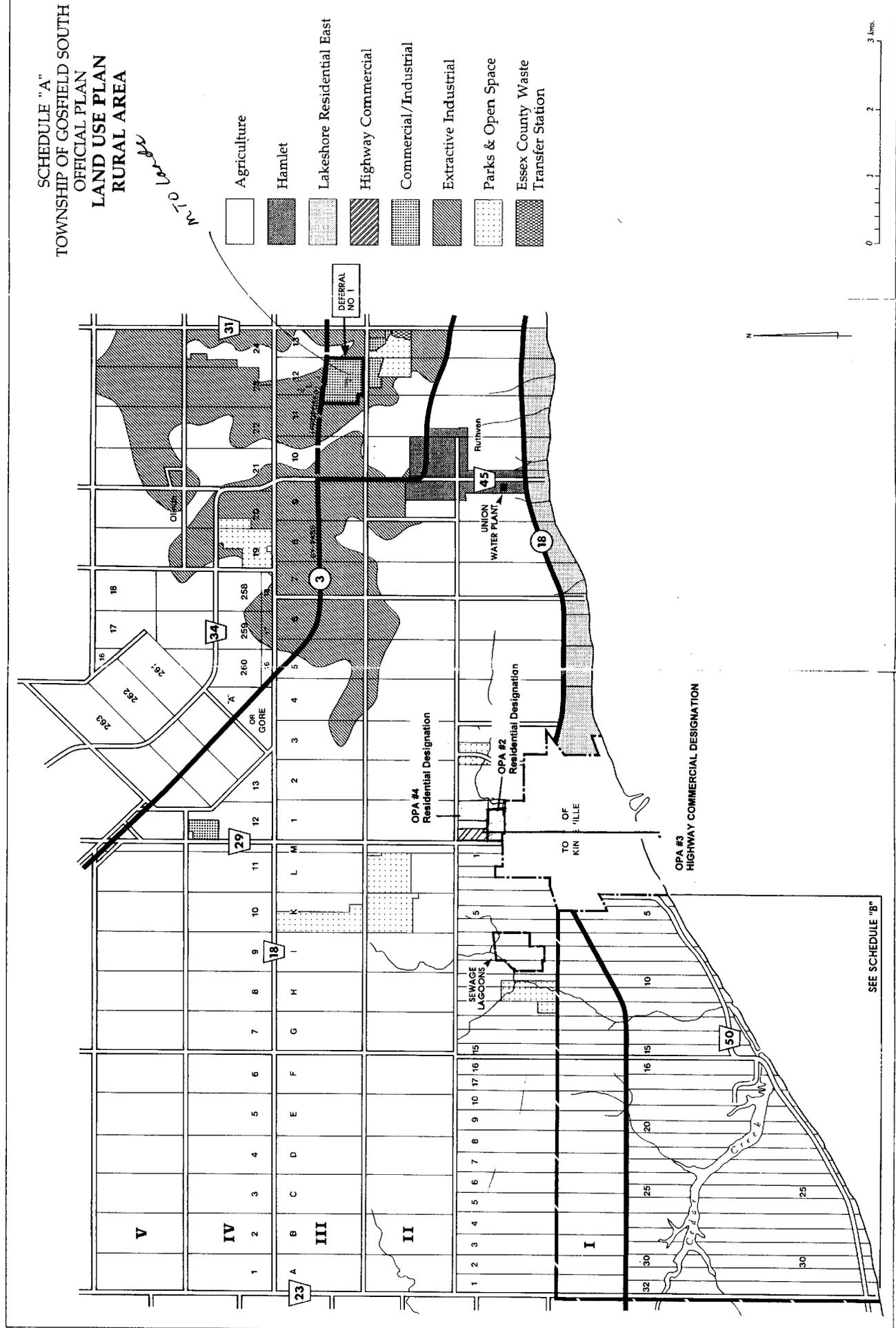
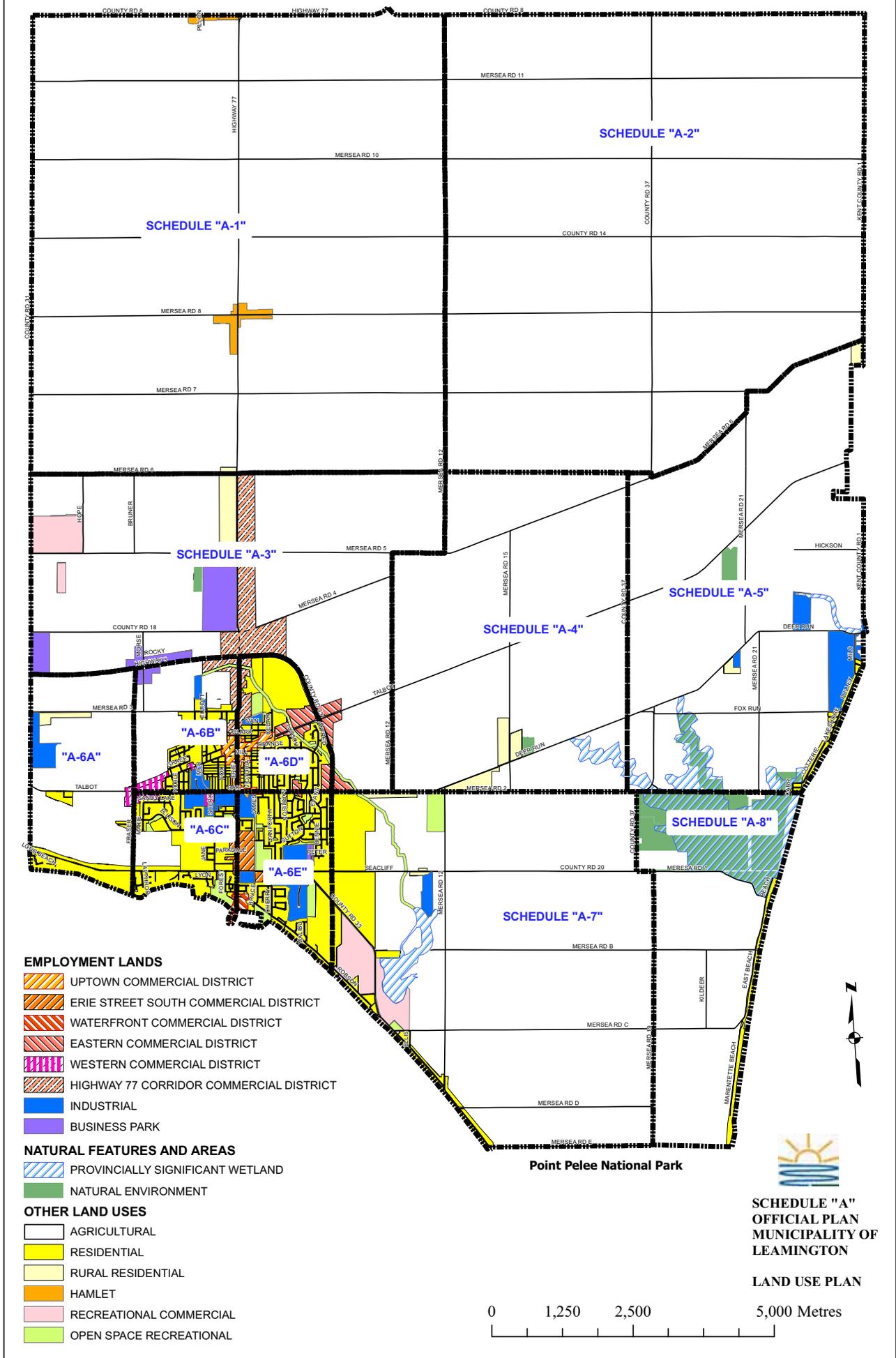


Figure 2-13 Municipality of Leamington Official Plan Land Use Map



EMPLOYMENT LANDS

- UPTOWN COMMERCIAL DISTRICT
- ERIE STREET SOUTH COMMERCIAL DISTRICT
- WATERFRONT COMMERCIAL DISTRICT
- EASTERN COMMERCIAL DISTRICT
- WESTERN COMMERCIAL DISTRICT
- HIGHWAY 77 CORRIDOR COMMERCIAL DISTRICT
- INDUSTRIAL
- BUSINESS PARK

NATURAL FEATURES AND AREAS

- PROVINCIALLY SIGNIFICANT WETLAND
- NATURAL ENVIRONMENT

OTHER LAND USES

- AGRICULTURAL
- RESIDENTIAL
- RURAL RESIDENTIAL
- HAMLET
- RECREATIONAL COMMERCIAL
- OPEN SPACE RECREATIONAL

**SCHEDULE "A"
OFFICIAL PLAN
MUNICIPALITY OF
LEAMINGTON
LAND USE PLAN**

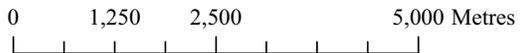


Figure 2-14 Town of Lakeshore Official Plan Land Use Map - Rural Areas

Lake St. Clair



LAND USE DESIGNATION (SECTION 6.0)

| | |
|--|-------------------------------------|
| | Agricultural Designation |
| | Hamlet Designation |
| | Waterfront Residential Designation |
| | Urban Fringe Designation |
| | Residential Designation |
| | Service Commercial Designation |
| | Recreational Commercial Designation |
| | Mixed Use Designation |
| | Central Area Designation |
| | Employment Designation |
| | Major Institutional Designation |
| | Natural Conservation Designation |
| | Parks and Open Space Designation |
| | Urban Reserve Designation |

LEGEND

| | |
|--|----------------------------|
| | Urban Area Boundary |
| | Hamlet Area Boundary |
| | Waterfront Area Boundary |
| | Urban Fringe Area Boundary |
| | Town Boundary |
| | Site-Specific Policy Area |
| | Special Planning Area |

| | |
|--|--|
| | Lake St. Clair Floodprone Areas/ Inland Floodplain Development Control Area |
| | Limit of the Regulated Area |
| | Woodlands |
| | Candidate Provincially Significant Wetlands |

0 2.5 5 km

Interpretation Note: This Schedule will be read and interpreted in conjunction with the Official Plan in its entirety. Land Use Designations on this Schedule must be interpreted in conjunction with Schedule B.2 (Natural Heritage Features).

Town of Lakeshore
OFFICIAL PLAN

SCHEDULE "C.1" LAND USE (RURAL AREA)

MMM GROUP
Revision Date: May 26, 2008
(Adopted by Council)

Figure 2-15 Town of Lakeshore Official Plan Land Use Map - Comber



LAND USE DESIGNATION (SECTION 6.0)

- Agricultural Designation
- Hamlet Designation
- Waterfront Residential Designation
- Urban Fringe Designation
- Residential Designation
- Service Commercial Designation
- Recreational Commercial Designation
- Mixed Use Designation
- Central Area Designation
- Employment Designation
- Major Institutional Designation
- Natural Conservation Designation
- Parks and Open Space Designation
- Urban Reserve Designation

LEGEND

- Urban Area Boundary
- Hamlet Area Boundary
- Waterfront Area Boundary
- Urban Fringe Area Boundary
- Town Boundary
- Site-Specific Policy Area
- Special Planning Area
- Lake St. Clair Floodprone Areas/
Inland Floodplain Development Control Area
- Limit of the Regulated Area
- Woodlands
- Candidate Provincially Significant Wetlands

0 0.5 1 km

Interpretation Note: This Schedule will be read and interpreted in conjunction with the Official Plan in its entirety. Land Use Designations on this Schedule must be interpreted in conjunction with Schedule B.2 (Natural Heritage Features).

Town of Lakeshore OFFICIAL PLAN

SCHEDULE "C.10" LAND USE (COMBER)

MMM GROUP
Revision Date: May 26, 2008
(Adopted by Council)

Figure 2-16 Town of Tecumseh Official Plan Land Use Map

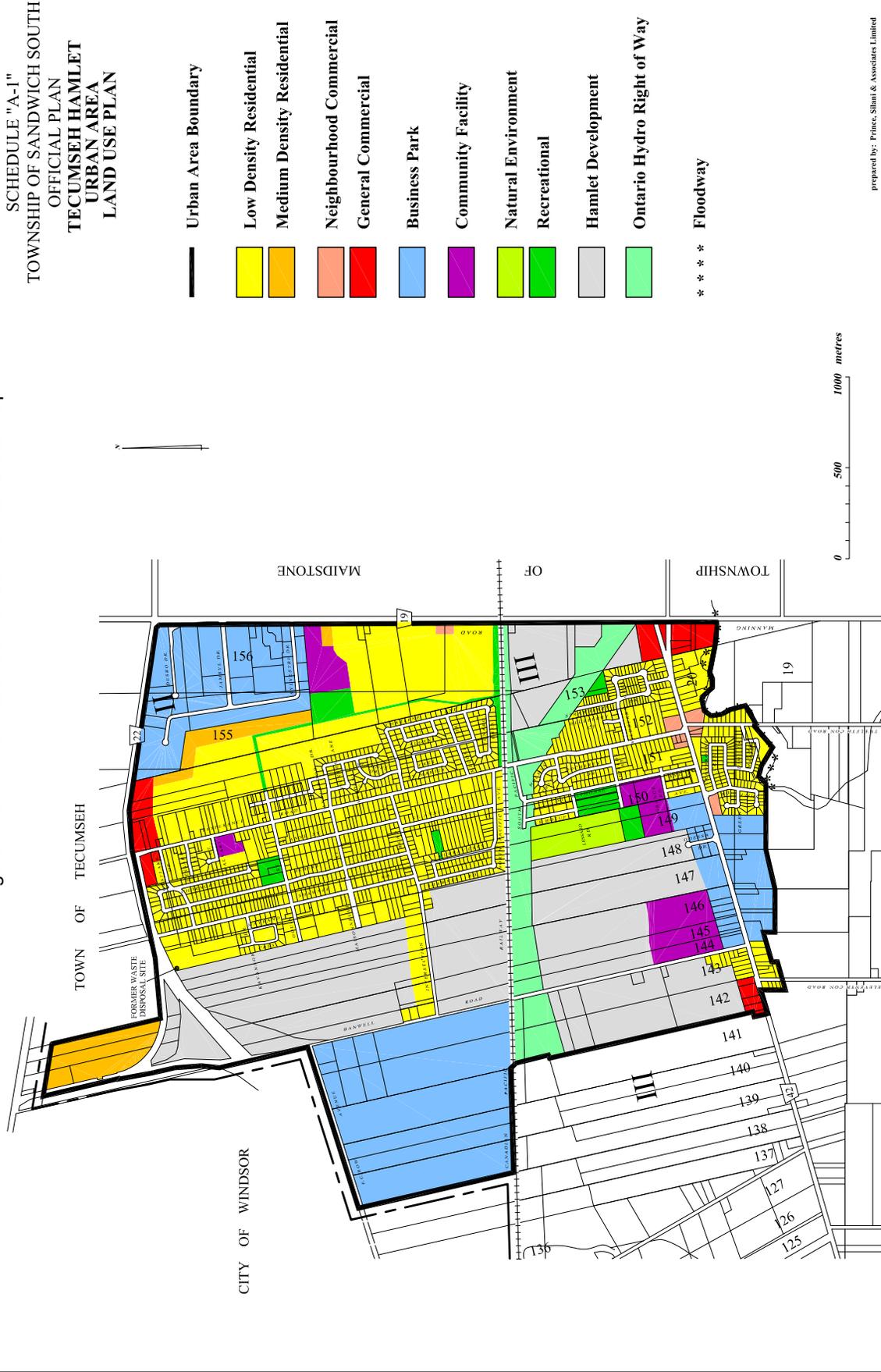
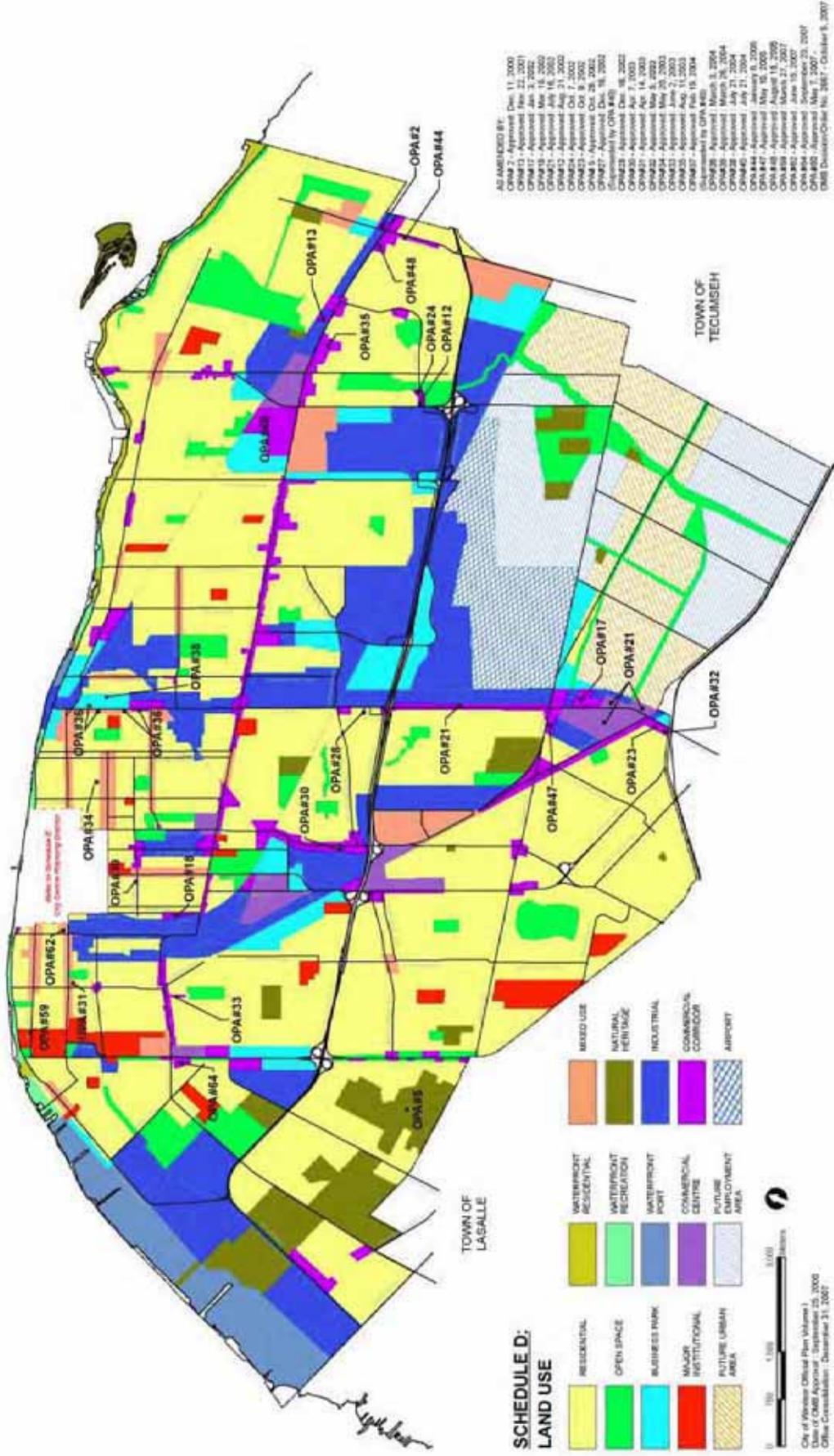


Figure 2.1: City of Windsor Official Plan: Schedule D - Land Use Map



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ACRONYMS

| | |
|-------------------|--|
| AMOMW | Andrew Murray O’Neal Memorial Woods |
| ANSI | Area of Natural and Scientific Interest |
| B.P. | Before present (years) |
| Brookfield Power | Brookfield Renewable Power Inc. |
| CLI | Canada Land Inventory |
| CO | Carbon Monoxide |
| COSEWIC | Committee on the Status of Endangered Wildlife in Canada |
| COSSARO | Committee on the Status of Species at Risk in Ontario |
| DAs | Dissemination Areas |
| <i>EA Act</i> | <i>Ontario Environmental Assessment Act</i> |
| e.g. | For Example (<i>exempli gratia</i>) |
| END | Endangered Species |
| ERCA | Essex Region Conservation Authority |
| ESA | Environmentally Sensitive Area |
| <i>et al.</i> | And others (<i>et alii</i>) |
| HMT _h | High Moderate Temperate Ecoclimatic Region |
| Hwy | Highway |
| i.e. | That is (<i>id est</i>) |
| Jct. | Junction |
| LTVCA | Lower Thames Valley Conservation Authority |
| MNR | Ontario Ministry of Natural Resources |
| MOE | Ontario Ministry of the Environment |
| NEA | Natural Environment Area |
| NHIC | Natural Heritage Information Centre |
| NO ₂ | Nitrogen Dioxide |
| NO _x | Nitrogen Oxide |
| O ₃ | Ground Level Ozone |
| OBBA | Ontario Breeding Bird Atlas |
| OP | Official Plan |
| PM _{2.5} | Airborne Particulate Matter |
| PSW | Provincially Significant Wetland |
| 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. |

ACRONYMS

| | |
|-----------------|--|
| 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 | <i>Species at Risk Act</i> |
| SARO | Species at Risk in Ontario |
| SC | Special Concern |
| SNA | NHIC Provincial Rank: Not Applicable |
| SO ₂ | Sulphur Dioxide |
| SZB | NHIC Provincial Rank: Breeding Migrants/Vagrants |
| TS | Transformer Station |
| TRS | Total Reduced Sulfur |
| VOC | Volatile Organic Compound |

MEASUREMENT UNITS

| | |
|-----------------|-------------------|
| cm | centimetre |
| ° | degree |
| °C | degree Celsius |
| ha | hectare |
| km | kilometre |
| km ² | square kilometre |
| kV | kilovolt |
| m | metre |
| mm | millimetre |
| ppb | parts per billion |
| % | percent |